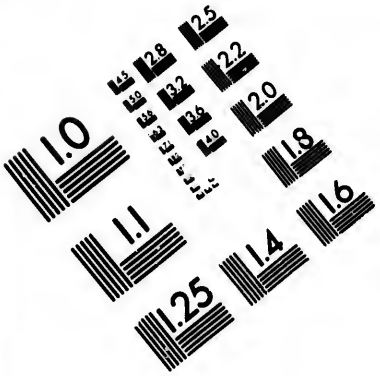

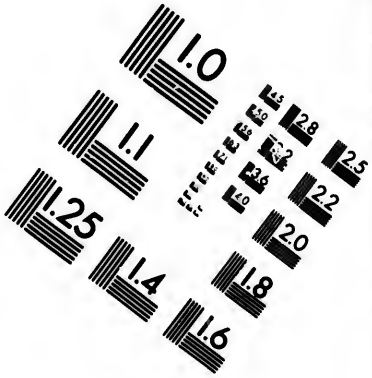

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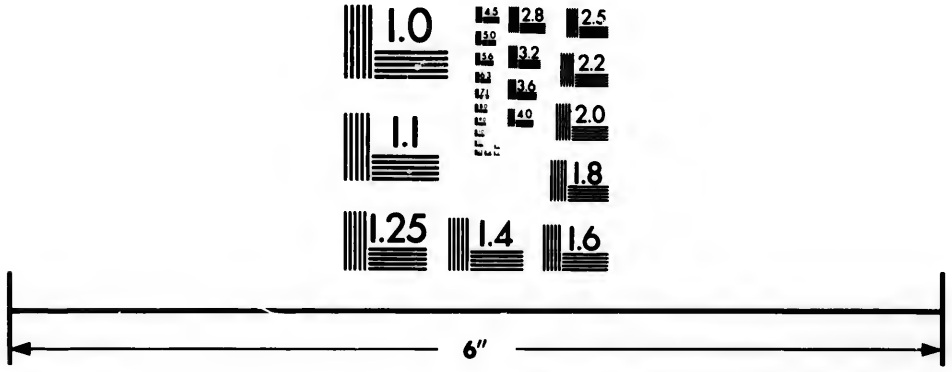

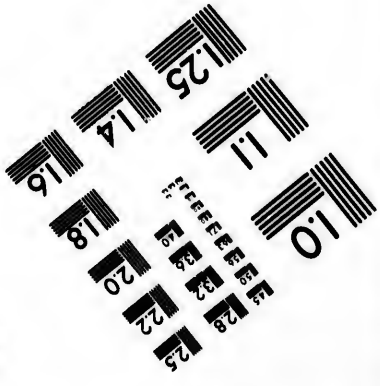

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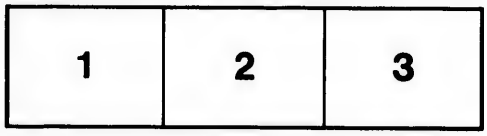

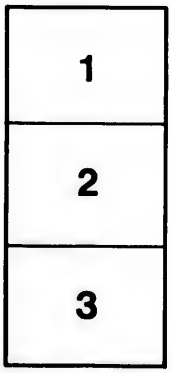

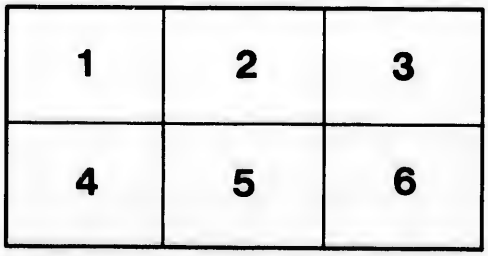

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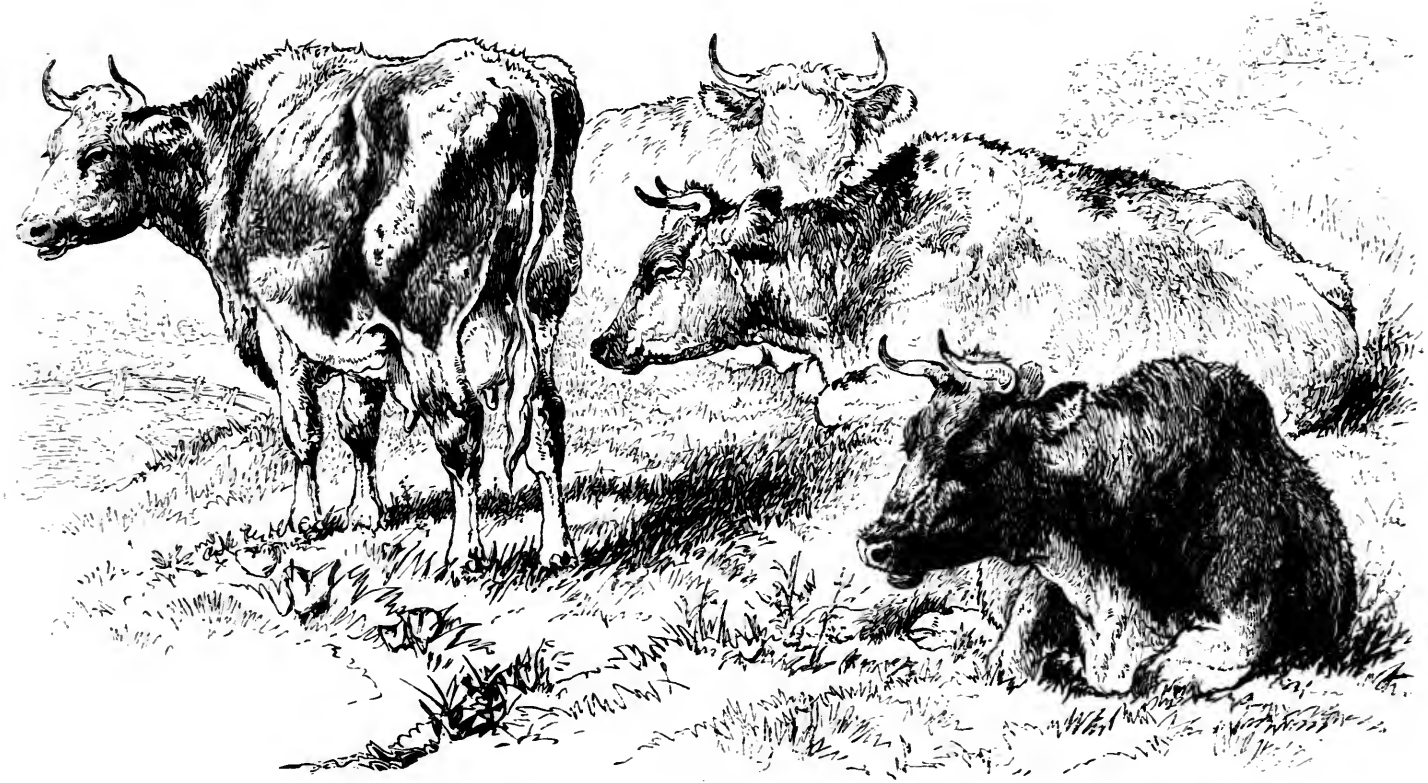

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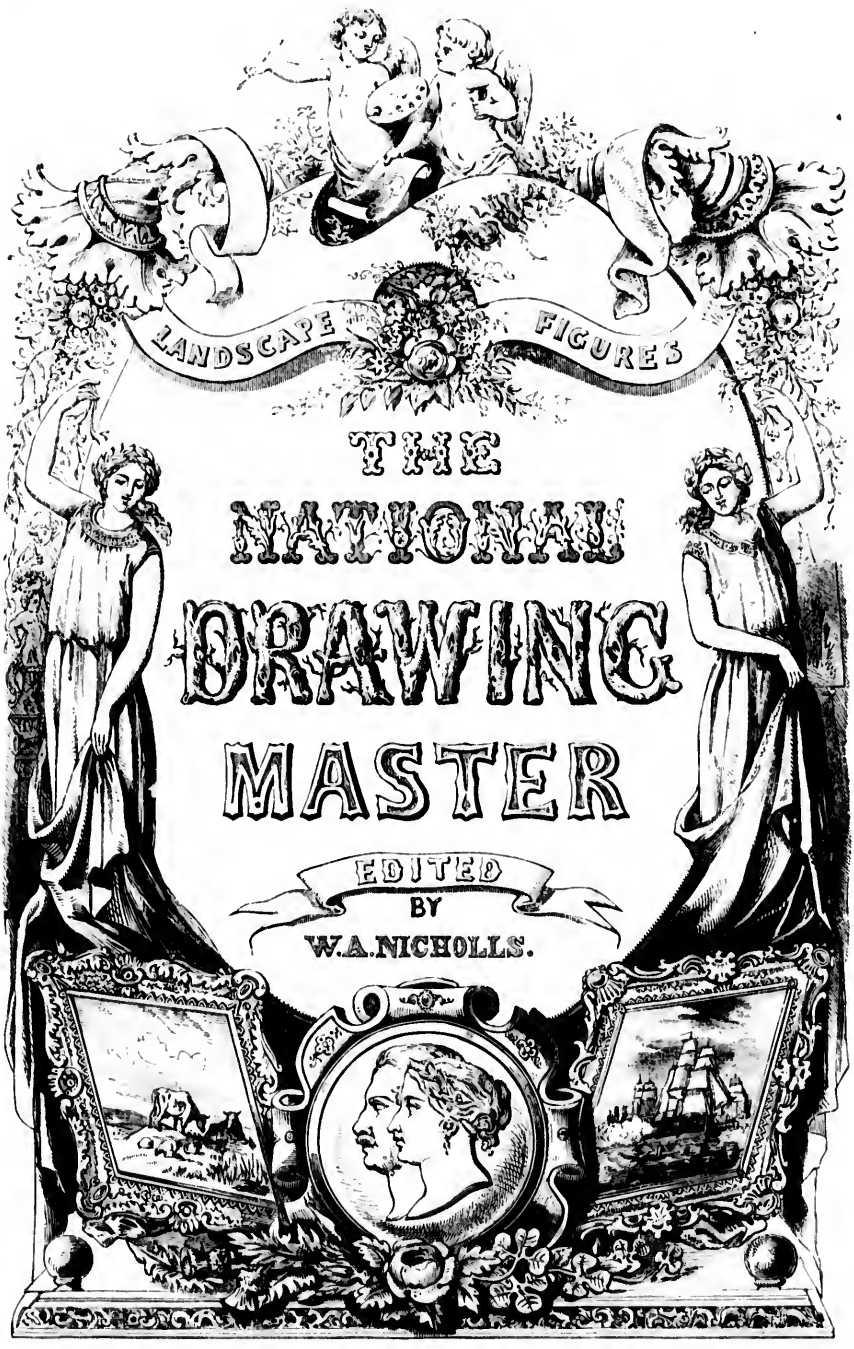

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GREATLY FACILITATING SELF-INSTRUCTION IN LANDSCAPE AND FIGURE DRAWING;

WITH SEVERAL HUNDRED

ILLUSTRATIONS AND COPY STUDIES

LEADING FROM THE ELEMENTARY TO THE HIGHER BRANCHES OF ART IN PENCIL AND COLOR

ALSO

NATURAL PERSPECTIVE,

AN ENTIRELY NEW SYSTEM OF PRACTICAL PERSPECTIVE, EASY, SIMPLE, AND AVOIDING THE ORDINARY ERRORS OF OTHER SYSTEMS.

BY

W. A. NICHOLLS.

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

LONDON:
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INTRODUCTION

N presenting to the Public a work professing to advance a novel educational principle, a few words may not be uncalled for, explanatory of the latter and of the purposes of the work.

That "use is second nature" is a truism admitted by all; and it is on this basis that the following system of self-instruction in drawing is formed.

For on examining this work it will be found to contain Copies and appropriate Drawing-paper, each printed over with red lines and dots, imparting a power of imitating the Copies with considerable fidelity, or of immediately detecting and rectifying any important mistakes made by the copyist, either as regards the direction or the length of a line.

Thus, from the outset and without the supervision of a Teacher, the study of Drawing in perfect accordance with this system will invariably accustom the *eye* and *hand*, employed therein, to a great degree of correctness and precision of proceeding, by preventing them from erring to any extent at the time of practice; and consequently, when such study is of an assiduous character, must soon *habituate them, unassisted*, the one to judge and the other to move with certainty and truthfulness.

At the same time, to enable the student to test the progress he makes towards acquiring this desirable habit, and to lead him gradually to rely entirely upon his own skill and attention, there are, intermingled with the squared copies, others not squared—to be practised alternately with the former.

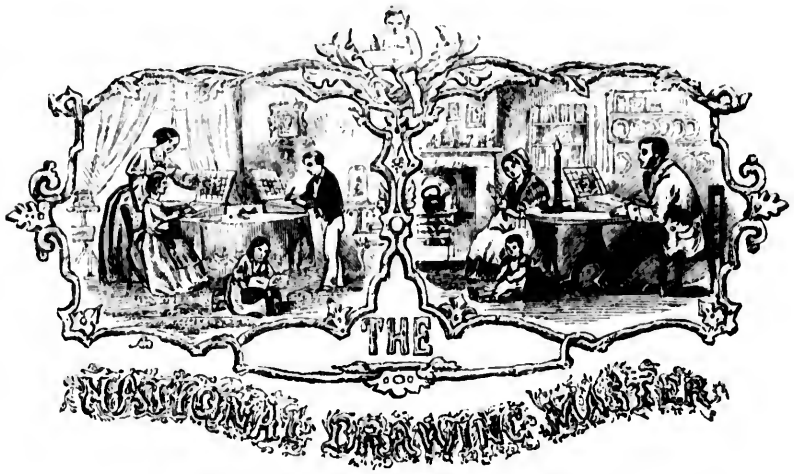
The purport of the work is to popularize the study of art; to endeavour to render the cultivation and love of art a national taste—fraught as such a taste is with national advantages; and thereby to aid in promoting the welfare of society, especially of such of its numerous and estimable members as are chiefly dependent upon their own exertions for instruction. Since the minds and pursuits of this class become refined, and their attainments prove serviceable to them, in proportion as their self-educational opportunities are augmented by the production of efficient inexpensive works, affording to their leisure hours an elevating useful study, in a form at once agreeable and devoid of difficulties—

works, in fact, of a character such as it has been the earnest endeavour of the author to render "the National Drawing Master."

The copies are all after Nature, and the utmost pains have been taken to make them progressive, attractive, and so varied as never to be wearisome, while the accompanying text explains every step the self-instructing student should take, or points out the best method of practising every branch of drawing, from the proper holding of the pencil and brush to the higher and more complicated processes required in finished drawing.

The portion of the work on Perspective also developes a new and original system, the result of close study and practical experiment, equally simplifying and reducing to certainty what has hitherto been a most bewildering and imperfect branch of study. But as Section VI. on this subject is merely intended to prove that there is a distinct perspective law of Nature, and to show that we ought to base the science of perspective on what we know of the phenomena of this law, and not, as customary, upon principles deduced from the science of optics, it may be as well to observe here, that the youthful student who is not prepared to follow its arguments may pass over that Section, and proceed to Section VII. containing lessons on perspective. It will, likewise, be advisable before attempting to study the science fully—yet not until after having read over the first lesson thereon—to peruse the first twelve paragraphs of the tenth lesson, as they contain a brief summary showing the simplicity of the system and the ease with which its principles may be mastered.

In conclusion, the author begs to offer his best thanks for the kind encouragement received by him from correspondents during the progress of his work; and trusts, now it is completed, that the more it is known and the more widely it is diffused, the more it may be found in every way worthy of the flattering encomiums that have been bestowed upon it, both by self-instructors and teachers amongst every class of society.



SECTION I.

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 OCCUPIED IN 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 is provided with 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 is oftentimes, in sickness as in health, available as a means of honourable and lucrative 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. 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 a copy, 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 red intersecting lines precisely like those on the copy.

Firstly, it is necessary, then, when a copy line is to be imitated, to select one of its ends, and note carefully whether it be 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, it is requisite, should the selected end of the line be the nearer to a particular red dot than to any portion of red boundary line, next to remark how far it lies from that dot; or should it approach, on the contrary, nearer to a specific portion of red boundary line than to any red dot, to observe, in that case, the exact distance of that end of the line from such portion of red boundary.

Thirdly, the place must be sought on the drawing paper that corresponds with the position that the selected end of the line occupies on the copy, and, when found, be denoted by a slight mark; and

Fourthly, the process to be gone through with regard to one end of a copy line, must be employed again with respect to its other end, and two marks having been placed on the drawing paper to designate both ends of the line, a faint sketchy line should be drawn, somewhat thus....., from one to the other, and the correctness of its position be tested after the manner described in the following lesson. When it has been ascertained that its position is correct, a firm line should be drawn over it in accordance with the rules given in the succeeding lessons.

LESSON II.

ON TESTING THE CORRECTNESS OF PROCEEDING.

Two marks, etc., having been made on the drawing paper, the sketchy line drawn 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 sketched line* does not lie similarly even with the corresponding red boundary line contained 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 sketchy 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 sketchy line does not cross through a red boundary on the drawing paper, as the copy indicates that it should, the sketchy 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 sketchy 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 sketched 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 to effectually 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

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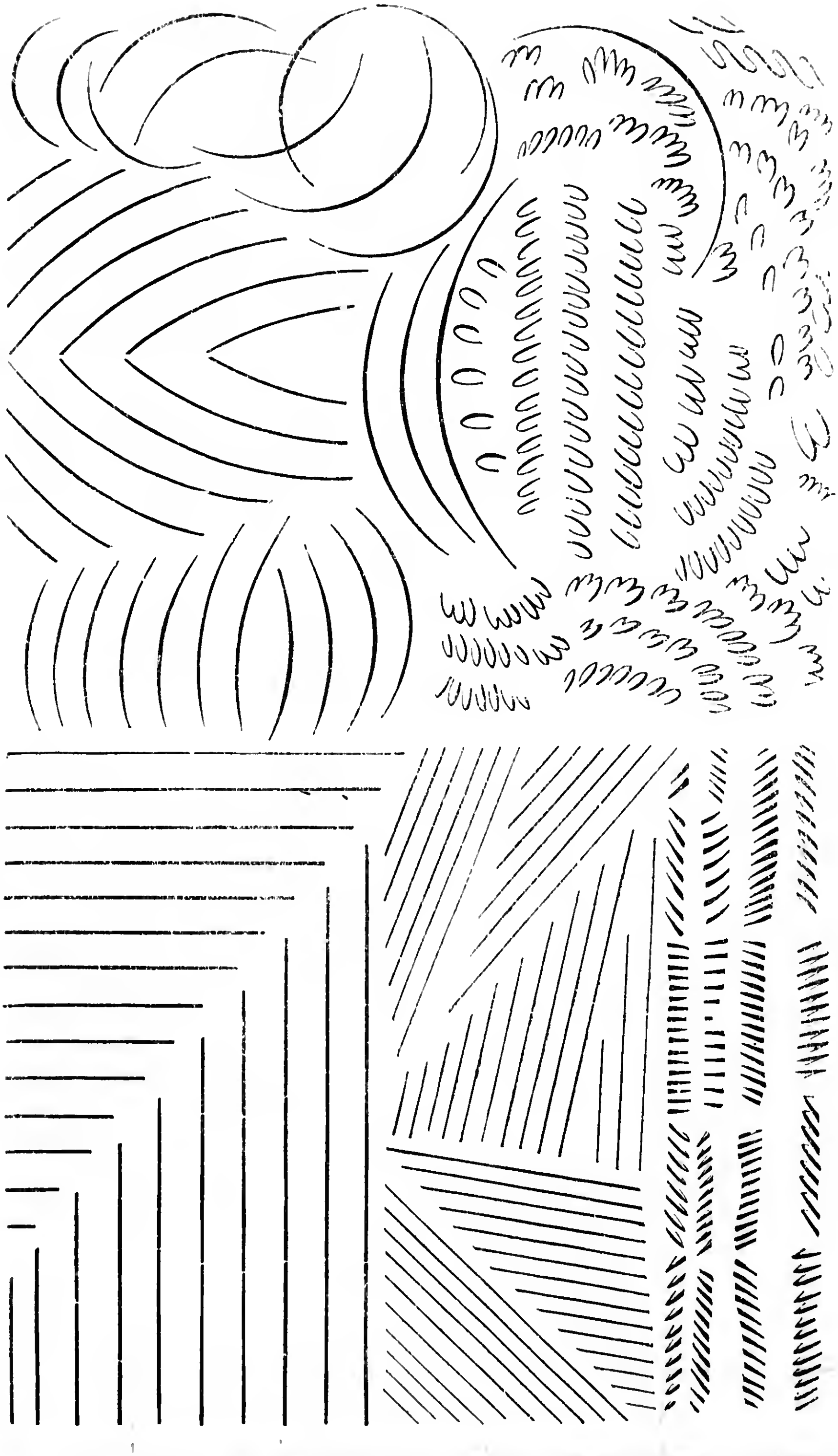


time of study; therefore, *attention* and *judgment* must be brought into play, as much in learning to draw through the medium of the system that has been laid down, as through that of any other system.

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, called straight, curved, and what may be termed composite, whilst each description of line must have 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.

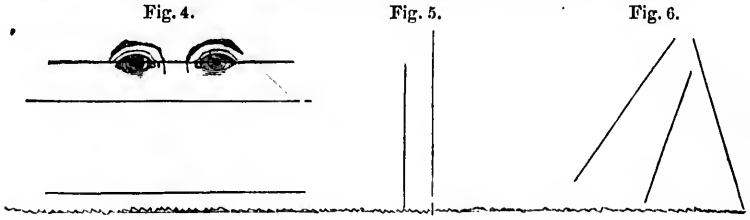
A curved line, is a line that either forms a circle or a part of a circle, as represented in Fig. 2.

A composite line, is a line which is, in fact, a number of small, straight, and curved lines combined, such as must be used to represent the stem, branches, and foliage of trees, the outlines of picturesque old buildings, and objects having similar characteristics of form, as represented in Fig. 3.

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

Firstly, the direction of a line is called *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, and in both this and the former case perfectly parallel (that is even) with an imaginary straight line, that may be supposed to run through the pupils of a person's eyes, when the head is held perfectly erect, as represented in Fig. 4.

Fig. 4. Fig. 5. Fig. 6.



Secondly, when a line stands upon the earth's surface, but leans neither to the right hand nor to the left, as represented in Fig. 5, its direction is called *perpendicular*, and,

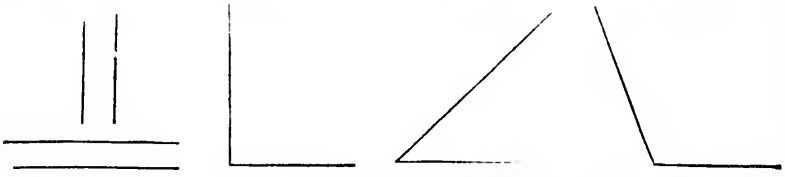
Thirdly, when a line either lies or stands upon, or above the surface of the earth, in any other way than has been specified, as represented in Fig. 6, the direction of it is styled *diagonal*.

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, the two lines may exist equally apart from each other throughout their whole length, as represented in Fig. 7.

Fig. 7. Fig. 8. Fig. 9. Fig. 10.



Secondly, one line may lie or stand at a *right angle* with another line; that is, as one line forming one portion of the corner of a square floor *lies*, with respect to the line forming the other portion of the same corner; or as a perpendicular line *stands*, with respect to the surface of the earth, or would stand with respect to a horizontal line, if one were placed under it; a right angle being represented in Fig. 8.

Thirdly, one line may lie or stand at an *acute angle* with another line; that is, the two lines may mutually exist *more closely together* than they could if they were to lie or stand at a right angle with each other; an acute angle being represented in Fig. 9.

Fourthly, one line may lie or stand at an *obtuse angle* with another; that is, the two lines may mutually exist *more widely apart* 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. 10.

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 we then 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 also 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, finally, if we next open the compasses, though *ever so slightly more than half way*, the legs will instantly represent lines, the relative position of which, with regard to each other, is that of an *obtuse angle*, and will continue to represent the same, however much more we may separate them, unless we stretch the legs out into one united line; the angle, in each of the foregoing cases, exhibiting itself at the junction end of the legs.

It must be borne in mind, likewise, that whether the compasses were laid upon a table in any direction, or made to stand upon one leg, or both legs, or were placed in any other position whilst the above various illustrations were being demonstrated, they would in every instance exemplify what has been stated, but in accordance only with the degree to which the legs might be opened or shut, and not in connexion with any particular position in which the compasses were placed.

As the form of an object entirely depends upon the character of the lines composing its outline, as to whether they are straight, circular, or composite, and on the particular direction, length, and relative position of such lines, it is absolutely requisite that lines should be drawn invariably with especial reference to their characteristics, in those as in all other respects, whilst delineating the representation of an object, or the result will be imperfect, and therefore comparatively useless.

LESSON IV.

ON THE PENCIL TO BE USED, ETC.

In delineating the outline of an object which is not required to be represented with a fine or thin line, a blunt-pointed F pencil should be used for the light parts, and a similar pointed B or BB for the darker parts. If, however, light and dark places occur together

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Fig. 10.

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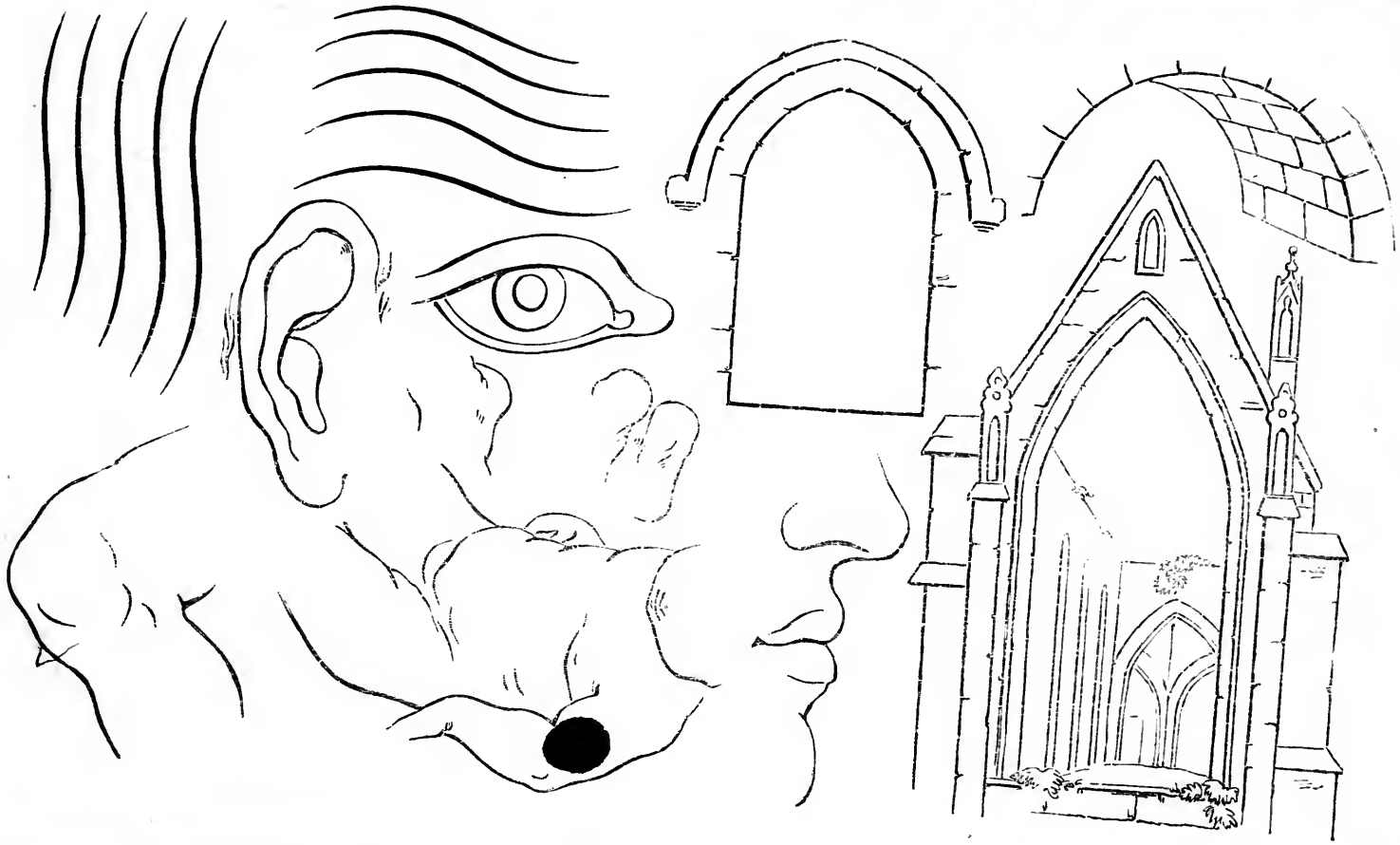


in one line, either the B or BB should be employed entirely, to be pressed very slightly upon the paper when light portions of the line, more heavily when darker portions, and with considerable force when very dark portions are to be delineated.

When it is necessary to draw a light thin line, a fine pointed F pencil should be used.

A dark thin line should be drawn with 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 in delineating the thin and light portions of the line, but with the requisite proportionally heavier pressure in drawing that which is thin and dark.

When a line must be represented as diversified with thick and thin, and light and dark places, as in the instance of the stems and foliage of trees, the outlines of old buildings, etc., a B or BB pencil only should be used. The point, however, must be flattened previously to use, on a piece of waste paper, until it appears as in Fig. 11; the thin portions of a 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 also through the medium of the latter, and a judicious pressure of it upon the paper.

Fig. 11.

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. 12.

The point of a pencil should always be cut smoothly, and of a tolerable length, as represented in Fig. 12.

LESSON V.

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

THE pencil, in one respect, must be held as a pen should be—that is, lightly, yet steadily between the thumb and first two fingers (see Fig. 13), 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.

Fig. 13.

For the delineation, either of a horizontal line, or of a diagonal line running as indicated in Fig. 14, the pencil should be held, also, with its upper end directed *continuously* towards the right shoulder; and, in both cases, the first two fingers be kept as straight as possible, the right elbow being held at the same time steadily fixed, without pressure, against the side.

Fig. 14. Fig. 15.

On delineating either a perpendicular line, or a diagonal line which runs as shewn in Fig. 15, the upper end of the pencil should be directed entirely away from the right shoulder, and therefore from any part of the body; and the right elbow be held as *far* from the *side* as it can be maintained; or about the distance of one foot therefrom.

A circular line should be produced by directing the top of the pencil during the delineation away from the right shoulder, when the curve runs as represented in Fig. 16; and by directing it continuously towards the right shoulder, when the curve runs as represented in Fig. 17; the right elbow being held the meanwhile firmly, but without pressure, against the side.

Fig. 16. Fig. 17.

Invariably during the use of the pencil, the first two fingers, likewise, should be kept

straight or perfectly out-stretched, and the upper part of the pencil be all but allowed to rest upon the knuckle of the first finger. (See Fig. 18). At the same time the third and fourth fingers should always be placed completely under the first two fingers, and rest with the wrist firmly, but without pressure, upon the paper, to afford support to the hand and pencil.

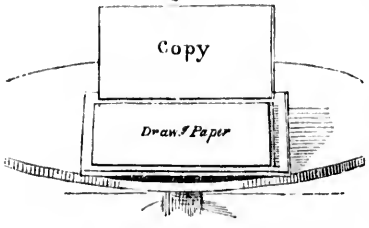
Fig. 18.

LESSON VI.

ON THE PREPARATION NECESSARY BEFORE PROCEEDING TO DRAW.

A LEARNER should be provided with a drawing board, or similar flat surface, the corners of which are right angles, and place it, with the drawing paper upon it, on a table, in a position sloping towards him, as he sits at work. (See Fig. 19). If the sides of the table be straight, the board and paper, likewise, *must* be placed parallel therewith, and be *kept so*, during the whole time a drawing is being made.

Fig. 19.



The drawing copy should be fixed nearly upright upon the drawing board, and also be constantly preserved in a position parallel with the sides of the table,—therefore, parallel with both the board and the drawing paper.

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

It is better to place the drawing board upon a table that has straight sides, than on a round table; but in case only the latter can be employed, the board, paper, and copy, whilst being used, should be invariably placed and maintained perfectly parallel with the shoulders.

The angles at the corners of the drawing paper should be right angles, consequently, its sides and top and bottom boundary lines, should be parallel with each other, and be smooth and straight, to furnish a guide to the eye when a horizontal, or perpendicular line is being drawn.

LESSON VI.

ON DIRECTIONS TO BE OBSERVED WHILST OCCUPIED IN DRAWING.

THE drawing paper should be held firmly by the fingers of the left hand, so as not to shift about during use.

The delineation of an object should be commenced at the upper end of its most important part, and should be proceeded with from the left hand side to the right hand side.

Should there be any doubt as to which is the principal part of an object, time should not be lost in the endeavour to ascertain it; the delineation, therefore, should be commenced without delay from some one point, 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, those which are the largest and of the greatest importance should be delineated before any of the others.

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 of that of an animal, should be commenced at the crown of the head; the body should be produced before the arms and legs; and the features, fingers, and toes, before the configuration of the muscles.

The perfect external form of a clothed figure should be defined before the markings and divisions of the habiliments.

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; following which the small forms may be proceeded with.

The places that the ends of a line should occupy on the drawing paper should be found and denoted by slight marks, and the line to be represented, be lightly, yet correctly, sketched in between the marks, before the perfect delineation be effected, in accordance with the process described in Lessons 1 and 2. When precision of judgment and execution have been attained, the preliminary sketching may be dispensed with in the case of straight lines, but in no other instance.

A horizontal line, and diagonal lines taking the direction indicated in Fig. 20, should be drawn from left to right.

Fig. 20.

A perpendicular line, and diagonal lines which are to run as indicated in Fig. 21, should be drawn from their upper ends, or with the pencil moving from towards the top to the bottom of the paper.

Fig. 21.

A curved line should be produced by a movement of the pencil, from the left-hand end of the line to its right-hand end, if its direction is to be similar to that represented in Fig. 22, and by a movement commencing at its upper end, and proceeding downwards towards the bottom of the paper, if its direction is to accord with that indicated in Fig. 23.

Fig. 22.

Fig. 23.

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 must be aimed at, the learner should, as soon as possible, habituate himself to draw lines from either of their ends, merely observing the foregoing 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 it is preferable that lines should be rendered too thick and dark, than weak-looking and thinner than they should appear. Nevertheless, accuracy, as well as firmness, must be carefully studied, as essential to proficiency in art.

But the pencil must 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 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 must be kept immoveable upon the paper, until such portion be delineated. When the first portion has been produced, the wrist should be moved (slight only, however), so that a further portion may be drawn, and so forth.

Thus, a straight line, less than one inch 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.

When composite lines are to be represented, such as occur in the stems of trees, picturesque buildings, etc., the flat surface of the pencil's point should be used for the thick parts, and the sharp edge around it for the finer parts (as directed in Lesson IV.), by alternating their use as required, but without taking the pencil's point from the paper. An endeavour, likewise, by the exercise of memory, should be made to draw such lines without referring to the copy to ascertain each minute change or irregularity occurring in their 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 thickness and shade of all its parts.

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 by 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.

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, such as the back of one of the ruled sheets, should no other be at hand. On imitating any line contained therein, what is the relative length and position of that line, with respect either to the line, or to the outside edge of the copy, that is the nearest to it, should first be carefully considered; and the attempt then be made on the paper used (which should be of the size of the copy) to delineate that line of a similar length and in a corresponding position. 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), that 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 (as represented in Fig. 24) a slight sketchy line should be drawn (as represented in Fig. 25) to indicate position, general direction, and extent, which can then be filled up with the requisite perfect indentations of line (as shewn in Fig. 26), strict attention being given to the copy to guard against their being drawn either larger or smaller than they should appear, or so as to look stiff and unnatural, instead of easy and graceful

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. Yet as portions of shade in those and the succeeding copies are produced by means of distinct lines, to shew how characteristic shading lines may be depicted, and for the highly serviceable purpose of enabling pupils to acquire, through imitation, 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 copied as given, but without absolute imitation of all the lines composing it, provided a sufficiently close imitation of them be made to give the proper effect of a shade, or 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 right strength; and, in preference to rubbing out lines that are incorrect, when a learner has executed the subjects of a copy badly, he 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 once or twice, unless it has been creditably executed previously.*

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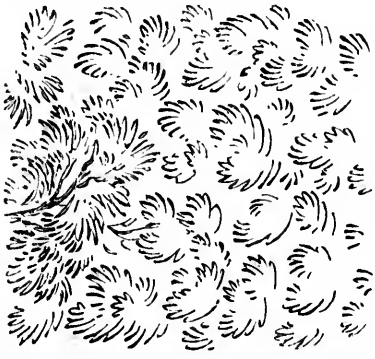

SECTION II.

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 the ensuing lessons and in those of the other sections of this work, are given with the view of attracting attention to Nature, rather than as sufficient rules for the guidance of Art-students under all circumstances; for such rules cannot be afforded, through written instructions; since close observation, of the characteristic aspect of natural objects, alone can impart to us a knowledge of every principle of proceeding in Art it is requisite to adopt to ensure correct and striking representations of them.

Consequently, to become a good Artist, the student must resort *incessantly* to Nature for guidance; as well as, 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 indicating, pictorially, anything more than the mere form of an object. A perfect representation of an object, consequently, can only be effected through the medium of the process called finished drawing, the form of an object being but a portion of the appearance it assumes to the eye; whilst, to render the representation of its appearance complete; the aspect of its material, its colour, 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 shewn by employing the modes of delineation comprised in the operations of the last named branch of delineative Art.

Every characteristic of the appearance of an object can be fully represented by means of a pencil drawing, excepting its colour 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 colour of the parts of an object which are red, yellow, etc., cannot be shewn by aid of the pencil alone, yet, as one effect of colour is *contrast*, the pencil is capable of being used so as to produce that effect.

Thus, should a combination of colours, such as white, yellow, red, blue, dark brown, and black, exist on different parts of any object, a contrast between the parts will be manifest, that may be denoted by shading up the representation of each part, during imitation, to a particular degree of intensity, to indicate its specific colour. Therefore, in 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

that 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 colours on the object, that will convey a clearer notion of its appearance, than if it were depicted without shading lines, or with those only which produce no variety of shading tints.

Or should the surface of an object be rough and exhibit small compartments like that of brick-work, or be smooth and fall into peculiar forms like that of a silk or satin dress, such characteristics may be represented very effectively by a finished pencil drawing, and though not perfectly, yet sufficiently so as to leave no doubt in the mind as to the nature of the material of which the object is composed. Consequently, if thought and ingenuity be exercised, representations of all substances can be made by means of a pencil, which, to a great extent, will enable any one to comprehend what are their leading peculiarities of aspect.

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, through illumination from one of three sources, termed natural, artificial, and secondary. When it emanates from the sun, or moon, it is called natural; proceeding from a lamp, or fire, etc., it is called artificial; and secondary, 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.

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 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 us, 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 shewn by Figs. 27 and 28, the light on the stone in the former appearing stronger than it does on the stone in the latter; through the fact that in the former it is conjoined with, or relieved by, a darker toned mass of shade than it is in the latter.

Fig. 27. Fig. 28.

The intensity of the light on an object, however, is always modified by the colour of the object, and is the greater the more that colour approaches to white. Hence, as every one must have observed, the light to be seen on snow appears infinitely more intense than it does on a blue coat, when the sun is shining on both; and more powerful, under similar circumstances, on a coloured garment than on a black hat.

But a peculiarity, likewise, that light on an object displays, which should be particularly attended to in drawing, is that of *invariable breadth*, or predominance of appearance over all features or markings caused by the natural colour of an object. Consequently, colour even though strongly observeable, never destroys the semblance of light; and when the

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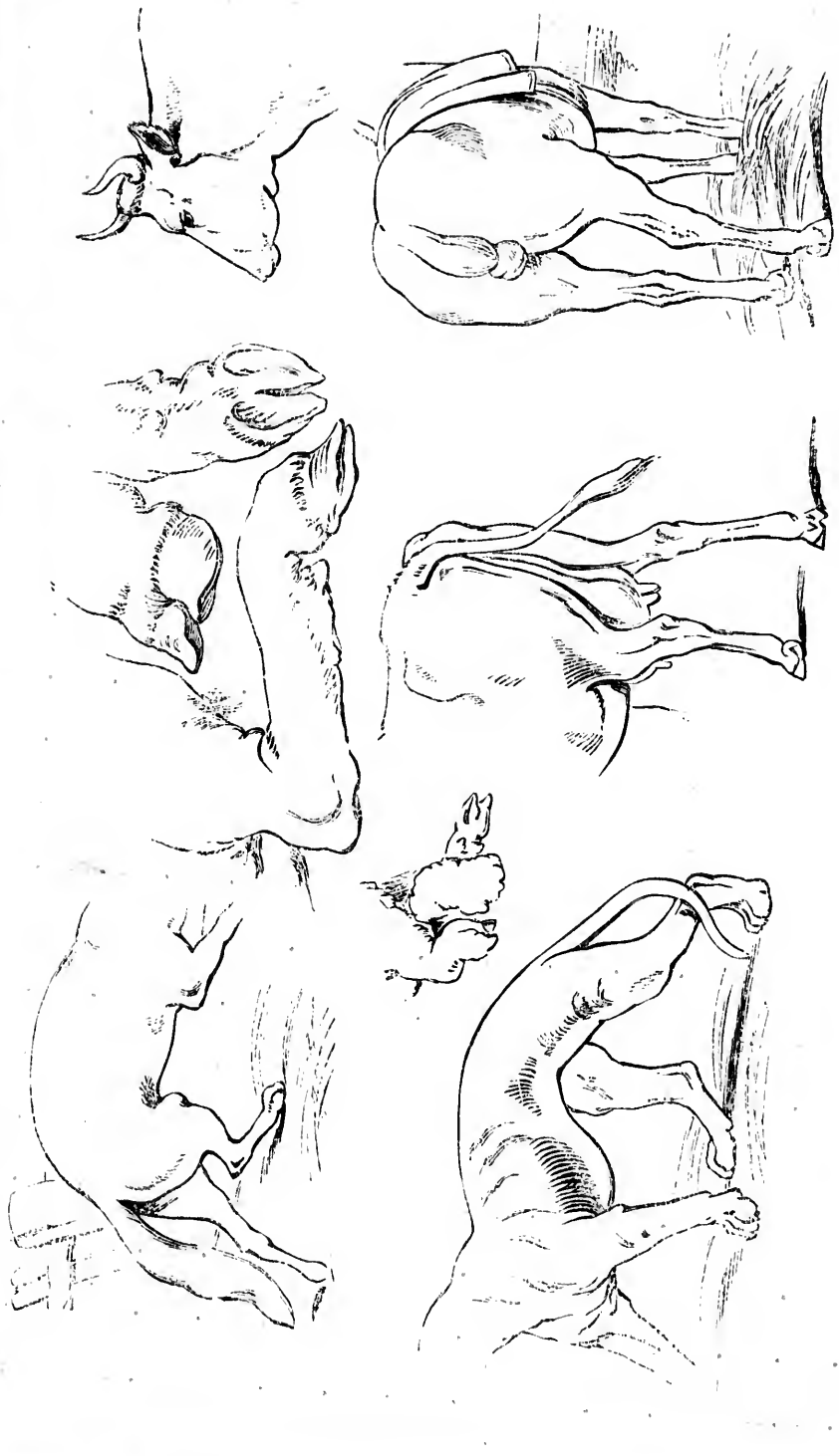

two are to be represented in a drawing, as being on the same surface, the tone or shade of the colour should not be denoted in such a manner—that is by a shading tone so dark —as to diminish the semblance of the naturally predominating effect of the degree of light which it is requisite to depict as illuminating the colour.

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 the former, 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, water, etc., 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 its effects 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, whilst pourtraying actual scenes, 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 shadows, or, what may be termed secondary, and primary shadows. Secondary shadows are the shadows of objects, that is are such as are cast by one object on to another, as the shadow of a house, tree, etc., cast on the ground or on anything else. Their edges are always bordered by light, excepting where they adjoin the objects which cast them; for this reason, such shadows, when represented, should be rather definitely depicted, especially as they invariably receive a distinct form, corresponding with that of the objects throwing them, sometimes so much so as to clearly display the complete outlines of those objects; as, for example, of horses, coaches, trees, and so forth.

All other shadows are primary shadows; and the nearer any portion of either description of shadows 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 all shadows connected with them. Nevertheless, when a shadow is cast towards us, those parts of it which are close to the object throwing it, 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 inverse their general effect, by causing them to appear the more striking and powerful at a distance from us, than 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 colour, manifesting only the slightest perceptible variations of light and shade; a fact, proving that distance destroys the intensity of both illumination and shadow, and shewing us, that without a proper management of light and shade in a drawing, it cannot be made to convey a perfect idea of nearness or remoteness.

Reflection, likewise, materially influences the depth of shade displayed on some shadowed surfaces. A cast shadow is rendered by reflection darker than the primary shadow which always exists on the shadowed side of the object casting it; through the circumstance that the surface, on which it is cast, reflects some of its light on to the shadowed side of the object throwing it, without receiving reflected light from that shadowed side in return. Three things, therefore, become obvious; first, that a cast shadow should be denoted by a darker shading tone, than that used for the representation of the primary shadow existing on the side of the object casting it: secondly, that as more light is visible on a primary shadow, than on the cast shadow which must invariably accompany it, we can perceive any markings existing on the surface covered by the primary shadow more plainly than we can see any of those contained on the surface obscured by the cast shadow; and thirdly, that both kinds of shadows should be drawn in accordance with these facts, when we wish to pourtray the effects of Nature with fidelity, which should be the endeavour of every one who practises 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 colour existing on each part of the surface of an object; the tone of a colour meaning not the actual colour, but its apparent depth of shade, as to whether it be of a light, dark, or of an intermediate degree.

1. Shading lines will produce the effect of shadow, by being drawn light or dark relatively to the depth or darkness of shadow to be represented, provided they are placed in a proper conjunction, and take, in combination, specific forms, according to the requirements of the shadowings to be shewn, (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 object finished in appearance, its various parts must be depicted in relief, or so as to shew distinct 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 an object, as well as express the peculiarities of colour 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 the medium of shading lines by depicting them so that they will imitate the course of line taken by, or forming the different markings constituting those features. Thus, the tiles of a roof, pattern of a dress, the roundness of a ball, the roughness of a tree-stem, etc., may

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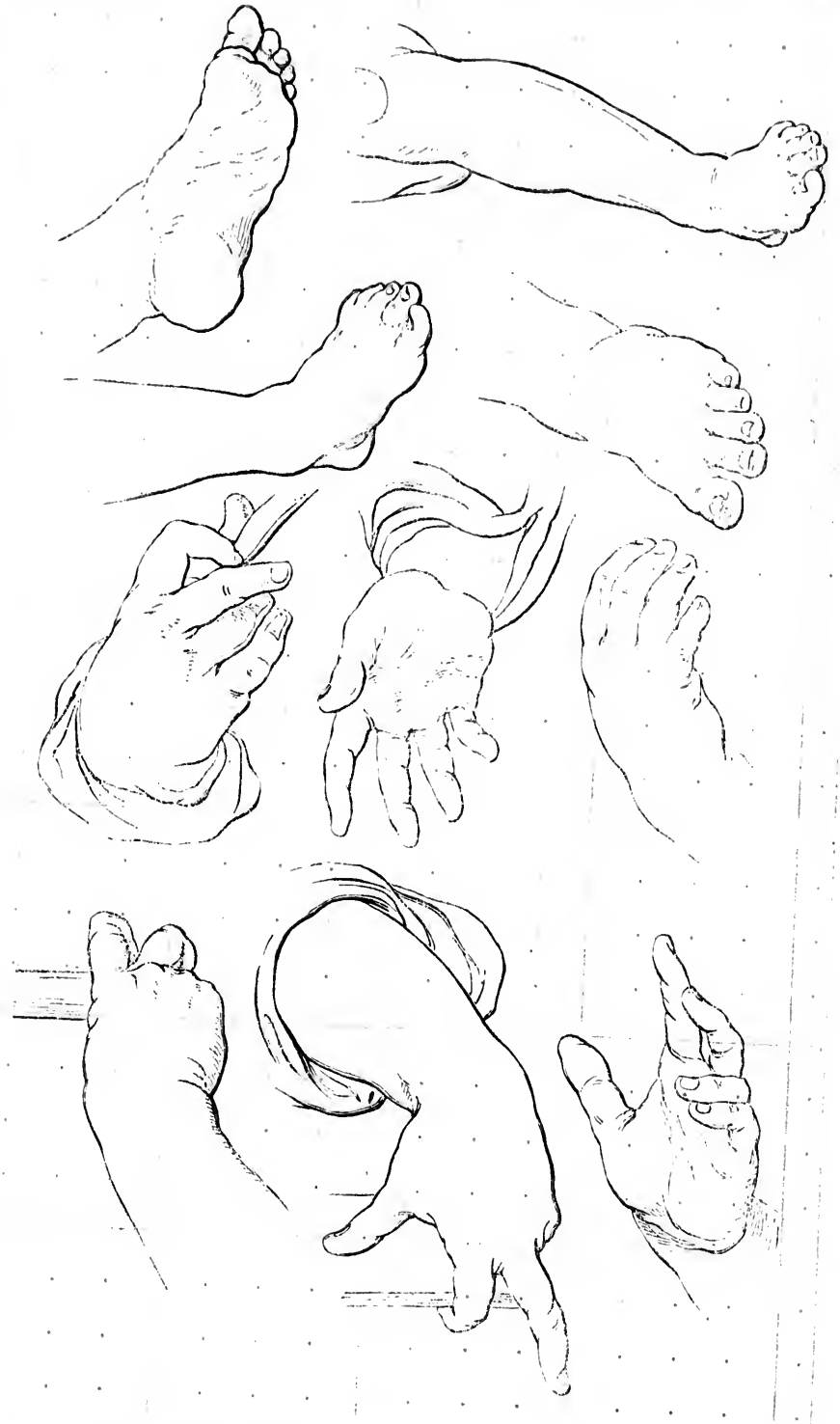

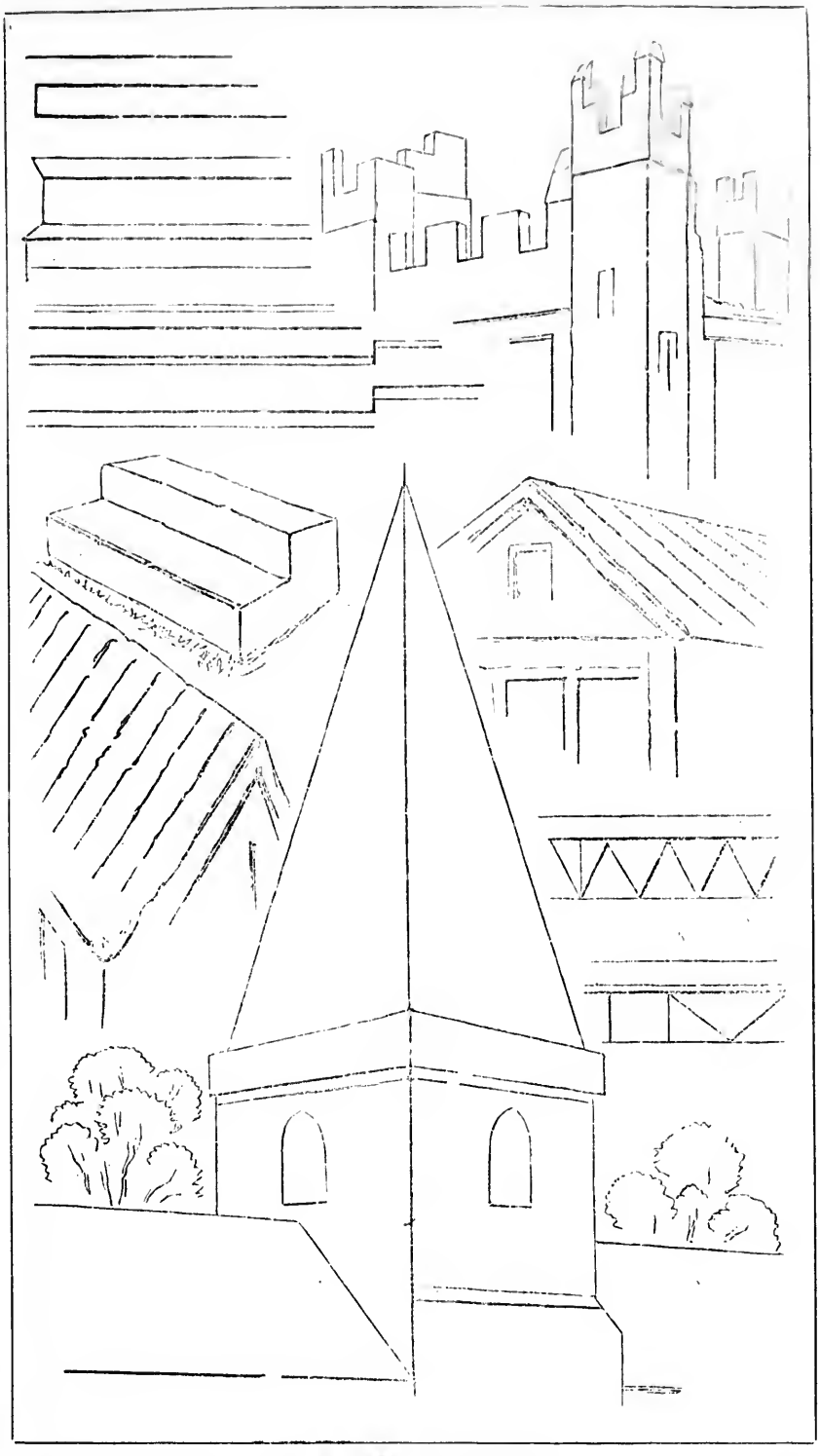

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be designated by the aid of shading lines, if they be drawn so as to represent what appears to be the course of line forming the characteristics to be shown.

4. Shading lines will express the tone of the colour 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 idea 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.

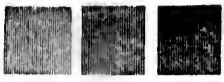

Fig. 33.

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 perpendicular, 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 must 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 Fig. 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 look almost as if the mass of shading 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, when either in shadow, or having a uniform colour 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 side of a house, which recedes from the eye, as in shadow, the shading lines 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 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 whence the cast shadow proceeds; as partly instanced through the cast shadow thrown by the buttress, shewn 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 placed to the object represented 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 look the darker the farther they exist from the object, and should be represented accordingly.

Fig, 38.

On drawing the characteristic features of objects, such as house-tiling, etc., and the local colourings, which render the appearance of an object darker in one place than another, such as weather-stains, etc., the shading lines, used to convey an idea of those and corresponding peculiarities of character and colour, should be of a varied nature, adapted to produce the effect desired. This is shewn, 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 represented in Fig. 38.

As the variations of tone caused by characteristic markings and local colourings, are often observable on the parts of objects having a certain degree of shadow upon them, the mass of shading lines required to represent the depth of that degree of shadow should be produced first, and then the lines requisite to employ to denote the above named variations should be drawn very positively over the depicted shadow and so as to appear quite distinct from it.

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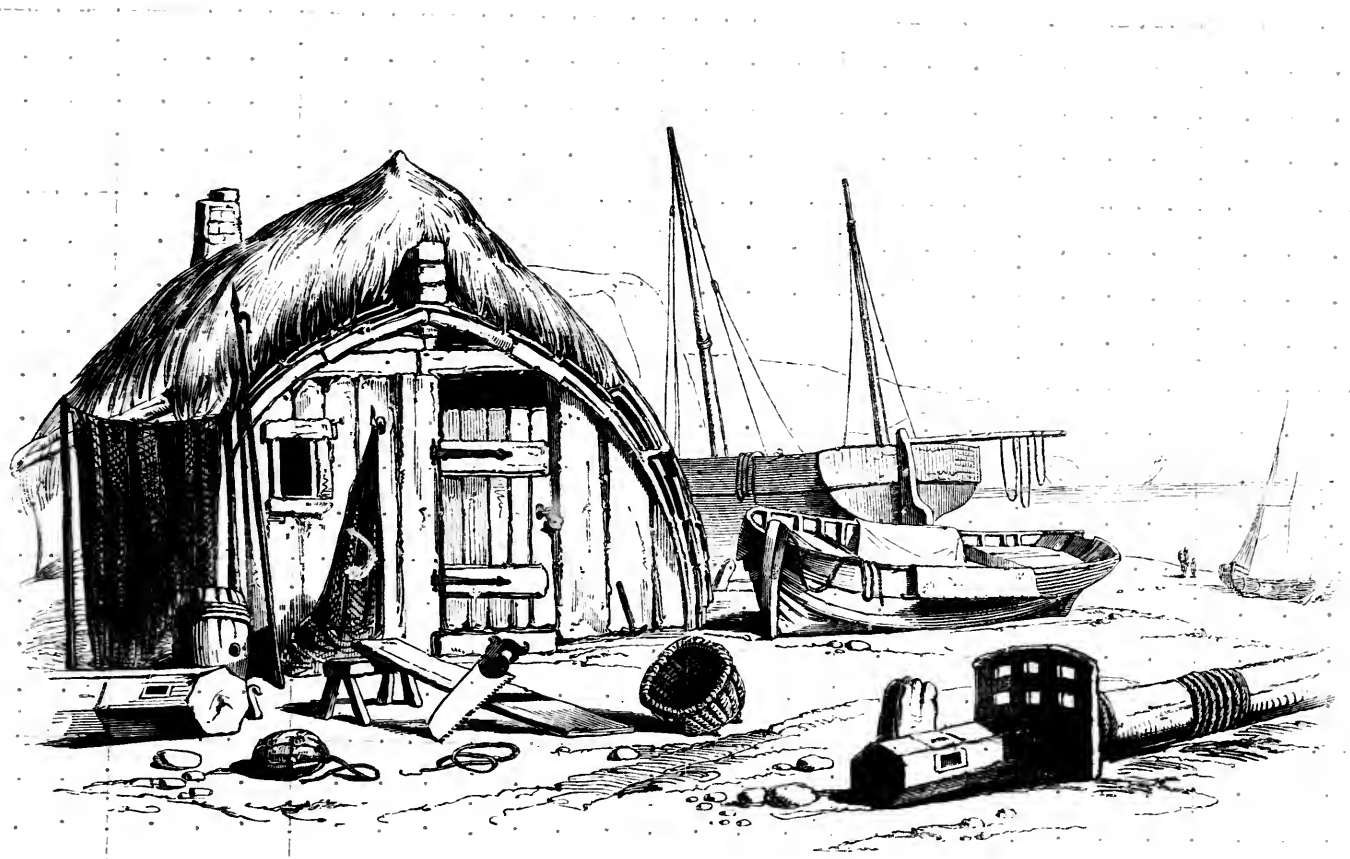
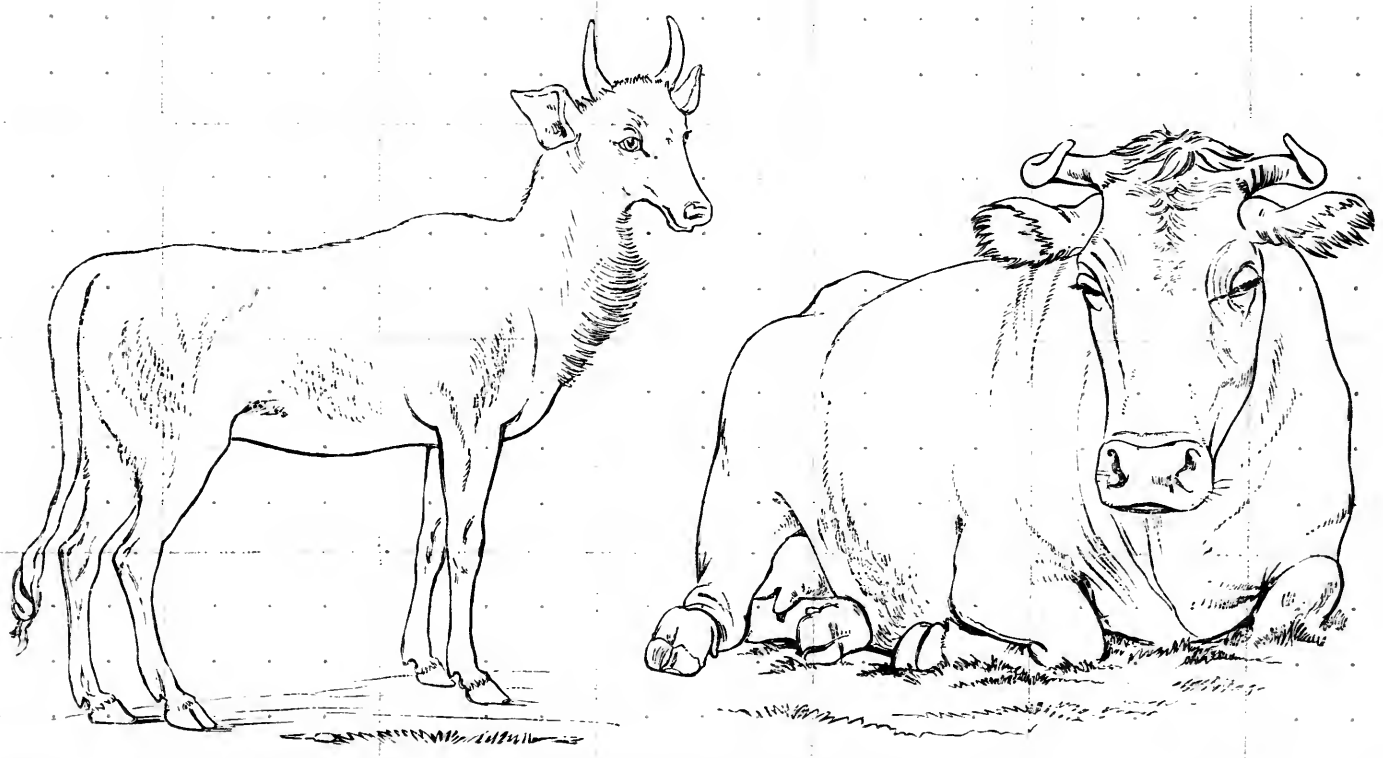




Hence, on depicting anything similar to the side of a house which is in shadow, and the surface of which is rough, broken, stained or colored, through age or other causes, it should be represented by drawing the shadow first, and then running lines across the shadow lines in suitable directions; as shown in Fig. 39, where the mass of lighter shading lines denotes the degree of shadow existing on the shadowed side of a house, and the darker shading lines mingled therewith indicate a rough, broken, stained surface.

Fig. 39.

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

Sometimes it is requisite to make a series of shading lines crossing each other, either to produce smoothness, or uniformly intense depth of tone; as neither

Fig. 40.

A VIEW ON THE RHINE.

the one nor the other can always be perfectly obtained through the medium of merely simple shading lines running in but one direction.

When shading lines, crossing each other, are employed to produce smoothness or uniformly intense depth of tone, they may be drawn in any direction; though 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, which it cannot be when indications of the crossed shading lines used to produce it, manifest themselves strongly.

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 and solid masses of black; though for the production of the latter, it is preferable to rub, as it were, the point of the 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, rather than to attempt to produce it by regular lines.

When the idea of great distance is to be conveyed through the shaded parts of a drawing, a fine pointed H, or H H pencil, is most serviceable for the purpose, but should be used with a suitably delicate degree of pressure.

LESSON X.

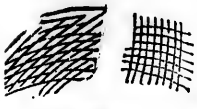
ON THE METHOD OF PRODUCING SHADING LINES, WITH REGARD TO DELINEATIONS OF THE HUMAN FIGURE AND ROUND FORMS IN GENERAL.

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 rendered 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, belonging to the figure, that blend into each other as do the muscles 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 on 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.

As the shading lines used in the representations of all round forms, to impart a pleasing and natural effect to the drawing, should run with the outline of the form, when they can be made to do so, an advantageous practice for the acquirement of a power of producing such lines with certainty, is to draw a number of circular lines in succession, (such

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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.

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

Learners should strive to attain the manner of drawing these lines with perfect freedom, and to attain it should always 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 drawing 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 wrist.

To render the shading perfect that 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.

In drawing 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, that is, the way 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.

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 represented in Fig. 46. Thus, much of the woolly covering of a sheep's skin, and of the hair of a horse, donkey, lion, of many kinds of dogs, &c., should be depicted with a line approaching the straight, to appear natural; 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.

Fig. 45. Fig. 46.

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, a tone may often be necessary in animal drawing, produced after the manner described in the last paragraph but two of the preceding lesson.

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 perpendicular; yet so that their changes of direction do not appear abrupt as in Fig. 51, and that they, therefore, flow gracefully, one series out of another, as represented 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 sometimes rough, and sometimes smooth, &c., 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, and lines that run downwards or in any other direction; attention being paid to depicting the characteristics of Nature, as regards excrescences, indentations, hollow places, and the marks of detached limbs, and branches, which most tree stems exhibit.

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

In representing grass, lines indicating the way it naturally lies about, or shoots up from the ground, should be used for the shading. When

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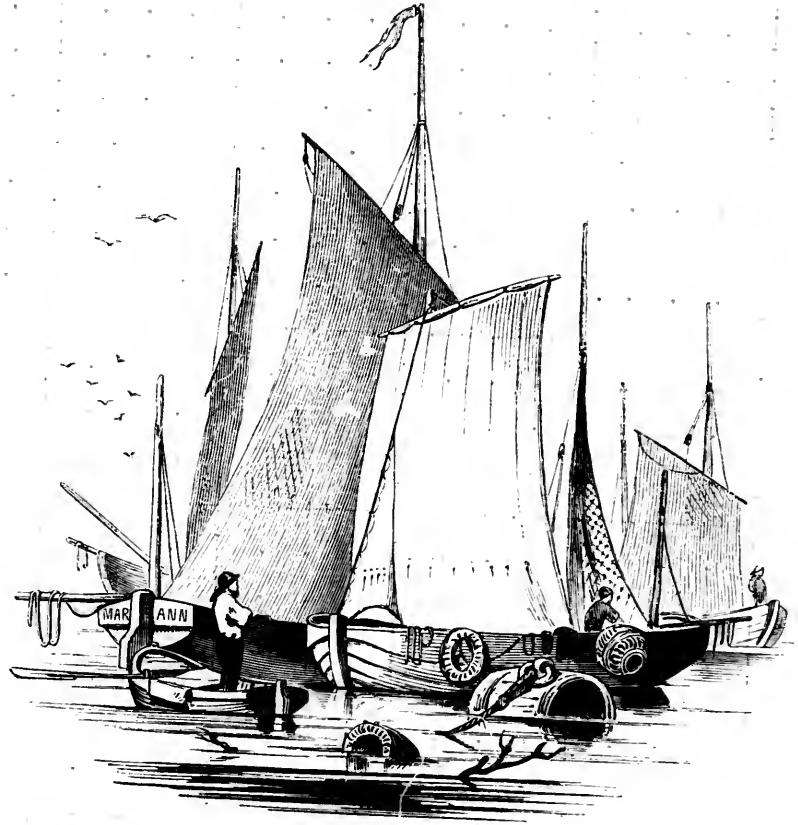

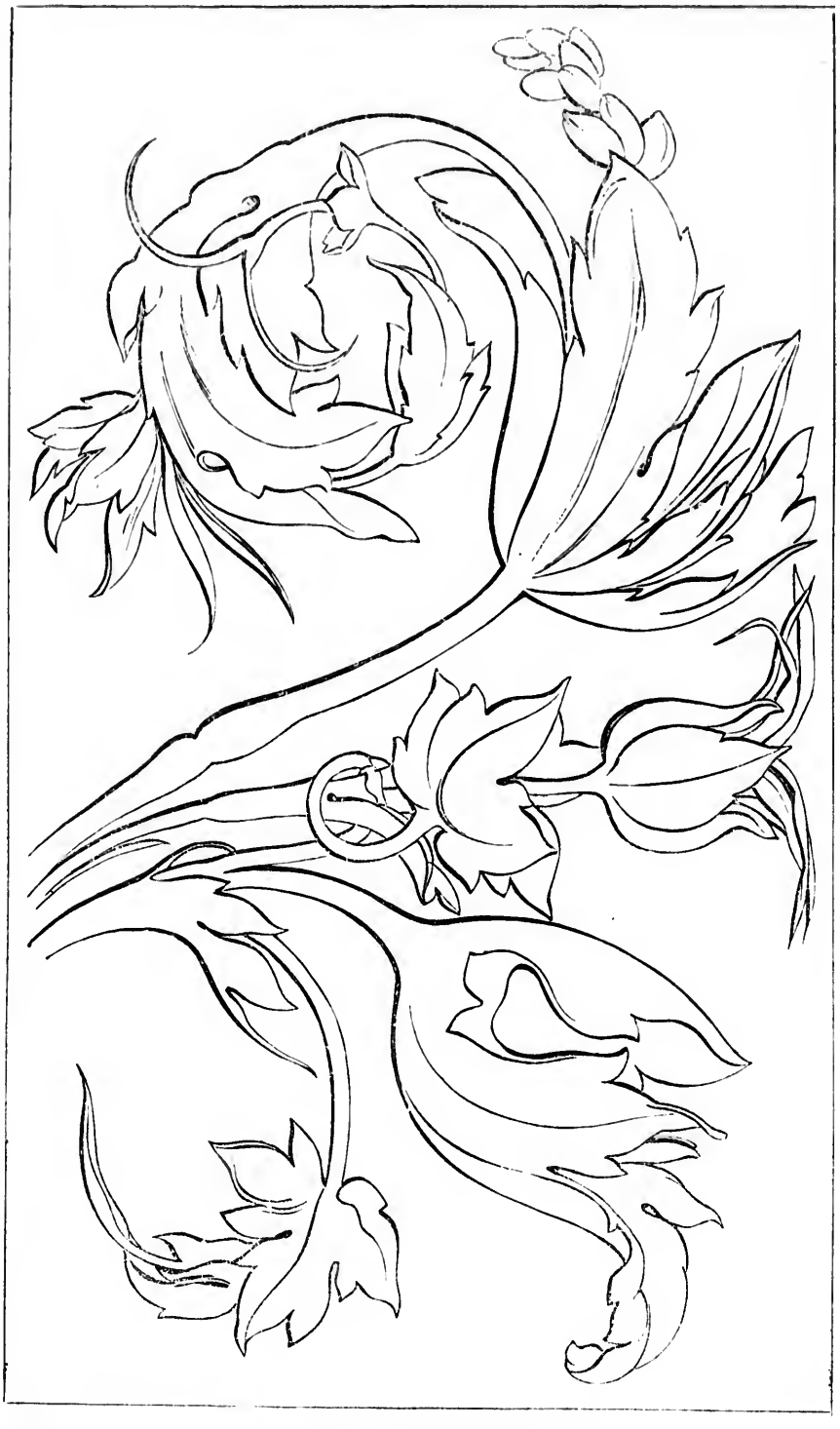

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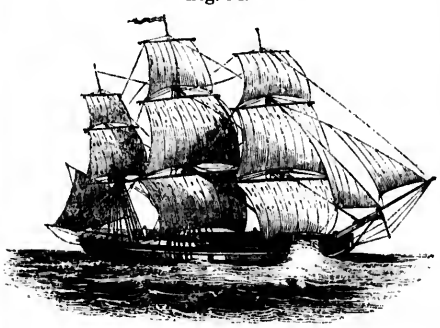
shading is employed in the representation of herbage foliage, it should be managed so as to express the character of the leaves of the specific kind of herbage to be depicted; and yet, at the same time, in such a manner as to convey an idea of that graceful confusion of intertwined vegetation, relieved by the outspringing distinct form of some of the 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 down hill, which it never does perceptibly, excepting in the case of a decided fall, or cascade. As, however running water generally shews 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 that 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 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 background 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 perpendicular lines should be employed, but lines that 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 of a drawing is always a most important feature, improving or injuring its effect, according to the way in which it is shaded. That which is most necessary to attend to in shading it, 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 the fore-ground. The result of due boldness is shown by Fig. 56, in which the shading on the fore-ground is produced by means of stronger lines than those employed for the shading of the other parts of the subject; and which lines cause the remainder of the subject to appear to recede, or to represent objects that are further away from the eye, than are the masses of stone indicated in the fore-ground, or front of the picture.

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 its size as well as distance.

LESSON ON COPIES X. TO XVIII.

The matters most particularly requiring attention in imitating these copies, is to endeavour to obtain a pure and perfect outline, in those cases where the subjects are shaded, before the shading is commenced.

Likewise as in some of the copies (for instance, in copies 10 and 11, etc.) 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 that will enable them to draw outlines with boldness and precision; for the acquirement of the power of delineating delicately marked outlines will result from the attainment of that of vigorous outline drawing; whilst if the habit of producing only feeble outlines be once contracted, it will be very difficult to overcome it, and the consequences will be exceedingly detrimental to the artistic proficiency acquired.

Where the shading lines are given in the copies in a distinct form they are to be imitated as given, distinctness of pencilling being highly advantageous in the early stages of the study of drawing.

Each copy should also be practised, like the copy without guides, on plain paper, after it has been drawn on its proper sheet of ruled paper. By so practising it, progress may be made more rapidly than otherwise.

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 practice 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 regular intervals not longer apart than a few hours.

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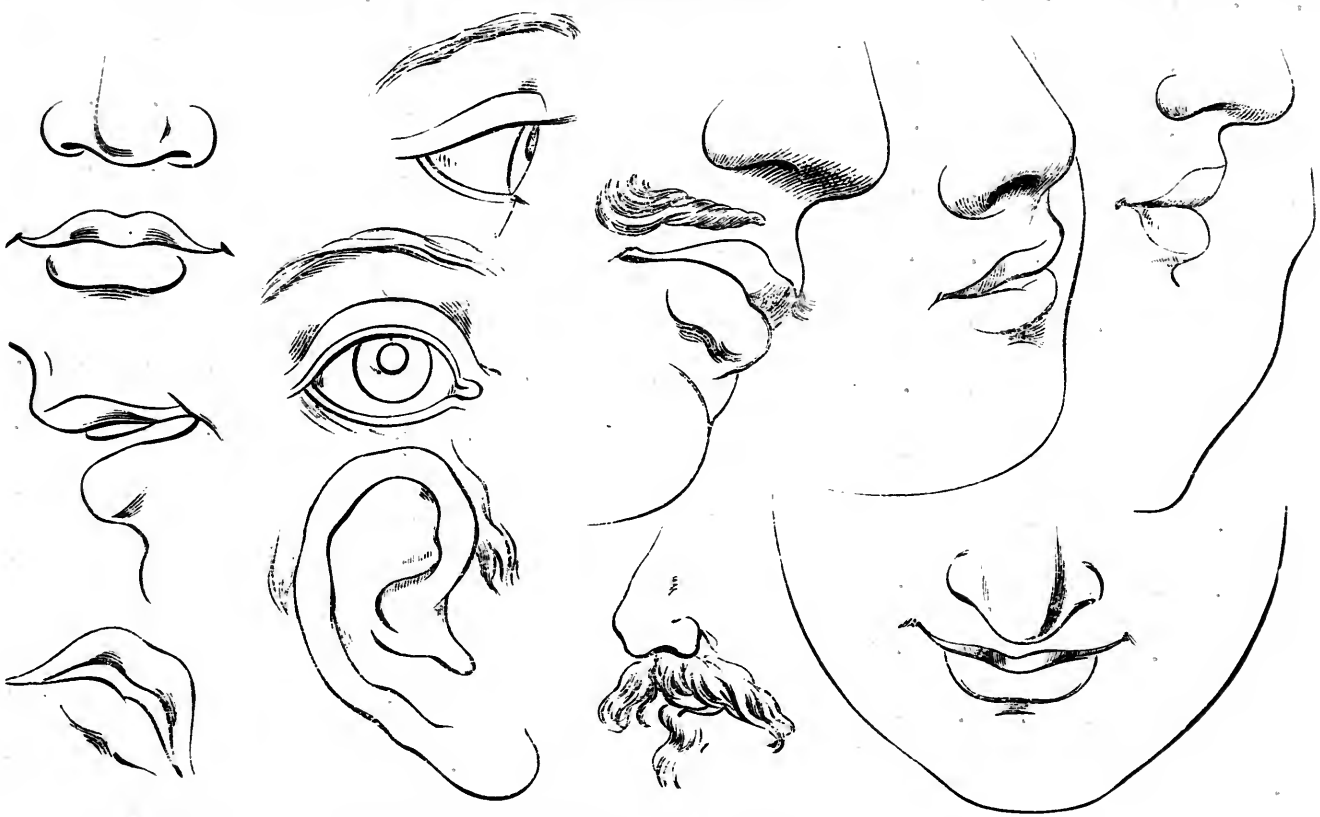

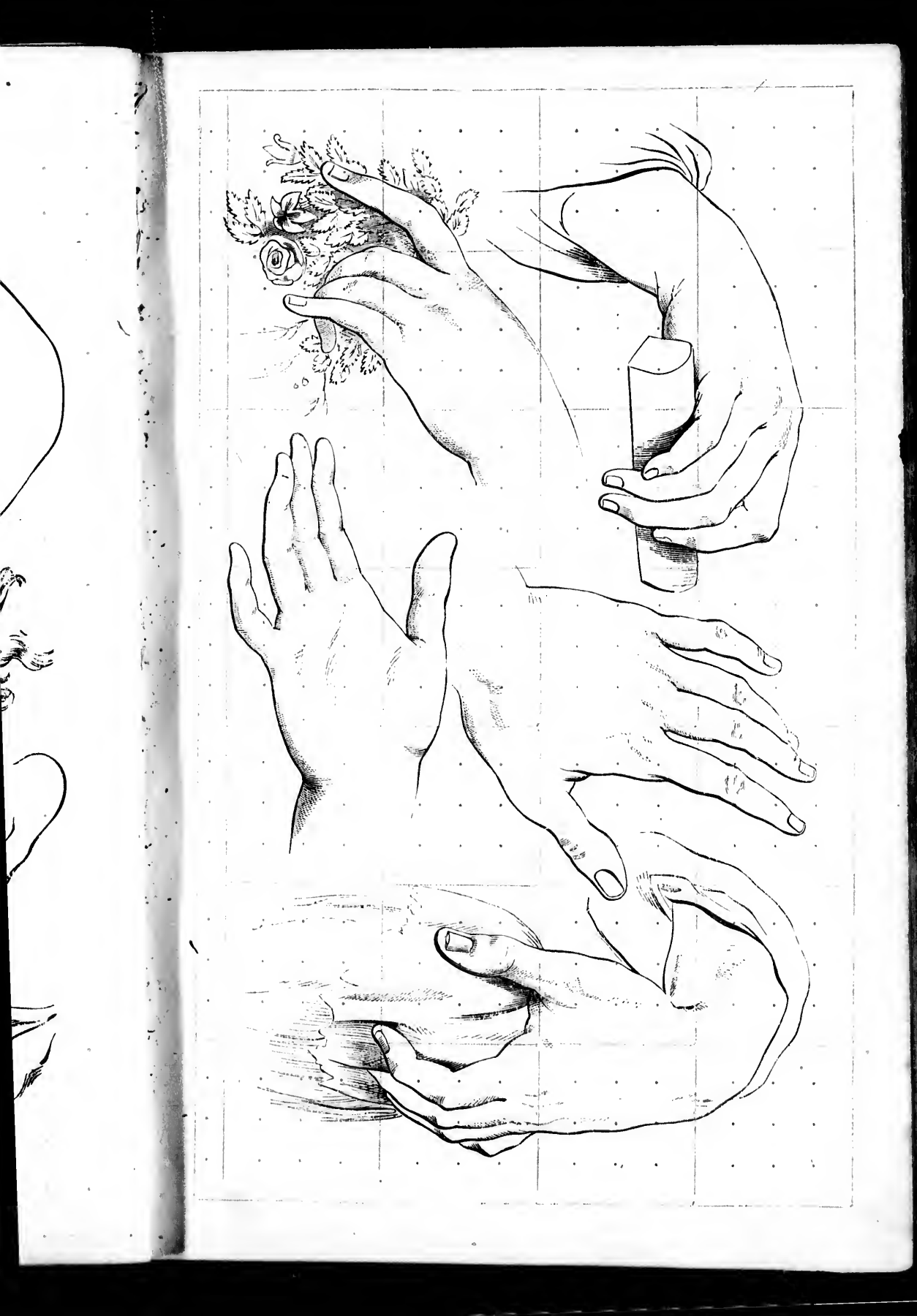

ON FIGURE DRAWING.

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

One reason of this is, that the acquirement of such a power of representation demands 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 of its possessors, the highest appreciation.

Superior observation is required to lead to an intimate knowledge of the different forms that each part of the human frame can assume: discernment, to detect the characteristics of the lines which produce those forms; memory, to preserve the results of observation and discernment; judgment, to discriminate which lines of a form should be selected for delineation, to render its portraiture correct; quickness of perception and execution, to catch and depict those fleeting changes of appearance to which the form of every part of our frame is constantly liable; practical skill, to devise the most appropriate means of depicting what is to be pourtrayed; and industry, because without it nothing perfect can be produced.

Another and more forcible reason why the perfect representation of the human figure is so greatly appreciated, is, because it requires the pourtrayal 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 the countenance, limbs, and whole frame of man, often plainly denote many of the characteristics of his mind, feelings, and habits, in such a manner that they can be unfolded to our gaze by a mere stroke of the pencil or brush, provided that it be made with a masterly skill and strict adherence 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, colour, 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 thereon.

Those 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, shewn in Fig. 58; the line of the nose and forehead, and that of the neck when the head is slightly turned, as shewn 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. 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 changes of direction which the lines of the form of every part of the body so peculiarly manifest.

Fig. 57.

Fig. 58.

Fig. 59.

Proportion is intimately connected with every description of form, it being the harmonious comparative measurement of the lines composing the form of an object, 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 colour 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.

According, in fact, to the proportion of parts observed by an artist in his imitations, and the creations of his fancy, they will possess so much the less or more beauty, therefore, "whosoever 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 any one 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, by perfection of proportion in its form, are those of harmony of parts, dignity, and grace, which combined, invest it with a most essential attribute of the beautiful, namely symmetry. It is obvious, then, that the proportions of the forms of all objects that we imitate from nature, should be strictly adhered to in a drawing, especially as it stands to reason that there must be a justness in them which man cannot improve upon, emanating, as they do, from the hands of Him who fashioneth all things fittingly, whether it be as regards their purposes or mould. Consequently, above all things, is it necessary to be particular with respect to proportion when imitating the human figure, or not only the appearance of symmetry, but likewise of expression, may be destroyed; for through the impulses of the will, internal sensations, and external circumstances, all parts of our frame, in a greater or less degree, are liable either to a relaxation, or contraction, which imparts a particular appearance, or expression, to them, that cannot be correctly depicted, unless the respective and relative proportions belonging to each of them be closely followed, as otherwise an expression must inevitably be pourtrayed that is not true to nature.

Proportion, therefore, 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, and 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 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

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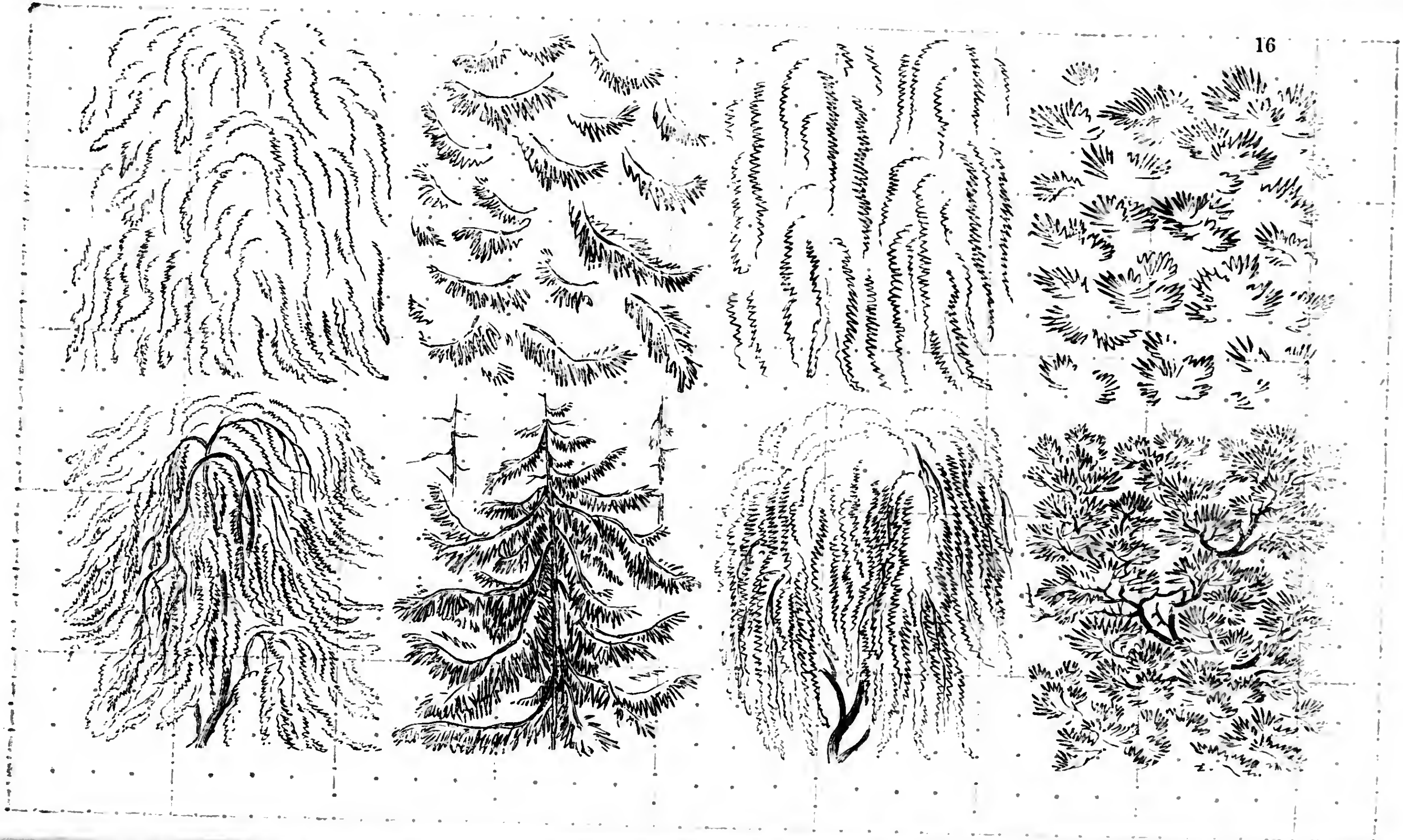


down by one good authority, differs from that advocated by another, is so slight, as to be altogether unimportant, and not to impeach the general correctness of the principles upon which they have been respectively based, as will be perceived through the aid of the following sketch, in which a few instances of difference of opinion are purposely afforded.

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 truly proportioned man should be equal to 8 heads, or eight times the measurement of his head. Thus, with reference to the front of his body, represented in Fig. 60,

From the crown of the head to the bottom of the lower jaw, being considered, firstly, as	1 head.
Then, from the bottom of the lower jaw, to the top of the breast-bone, or sternum, there should be a distance equal to	½ head.
From the top of the sternum to the bottom, a distance equal to	½ head.
From the bottom of the sternum, to the smallest part of the waist, or according to some, from the bottom of the sternum, to about an inch below the smallest part of the waist, a distance equal to	1 head.
From the latter point, in either case, to the centre of a line drawn across the summit of the lower limbs, a distance 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 distance equal to	2 heads.
From the latter point in either case to the commencement of the small of the leg, a distance equal to	1 head.
From the commencement of the small of the leg to immediately above the ankle bone, a distance equal to	½ head.
And from the last-named point to the sole of the foot, a distance equal to	½ head.
	8 heads.

It will be perceived, therefore, from the foregoing, that if a line were drawn across the summit of the lower limbs, it would exactly divide the figure in half. That if two more lines were drawn across the body—one immediately below the sternum, and one from knee to knee, the space between the crown of the head and the first line, that between the first line and the line of the lower limbs, that between the latter line and the knee line, and that between the knee line and the sole of the foot, would in each case represent one fourth of his height, or a space equal to twice the measurement of his head. (See Fig. 60 again.)

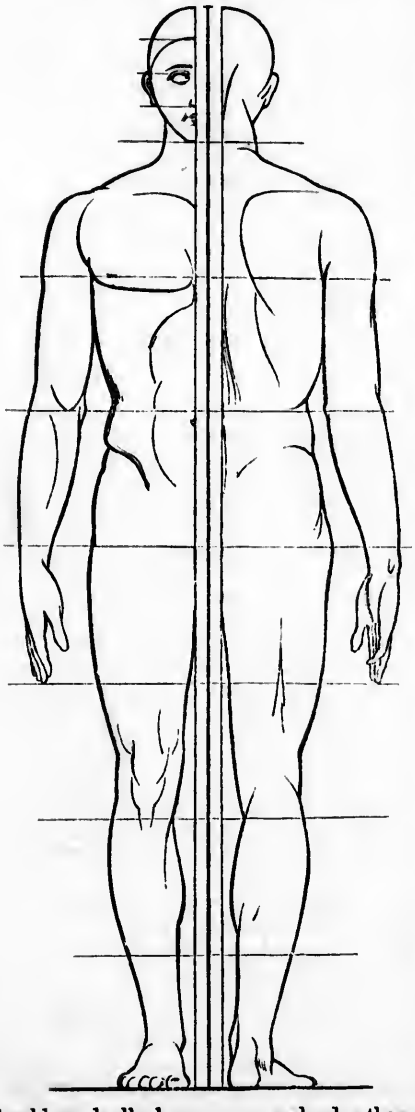
The proportional width of each of the principal parts of the front of the figure, should be as follows,—of the head, just above the ears, equal to rather more than two-thirds of its height; of the neck, from the centre of one side to the centre of the other, equal to half the height of the head; of the part extending from the outside of one to the outside of the other shoulder, equal to just double the height of the head; of the part extending between the junctions of the arms with the body, to one head and a half; of the waist, from the centre of one side of the body to the centre of the other, to one head and a quarter; of the part extending across the summit of the lower limbs, to one head and a half; of the knee, from the centre of one side to the centre of the other, to rather less than a half head; of the commencement of the small of the leg, from the centre of one side to that of the other, to two fifths of a head; directly above the ankle bone, from the centre of one side to that of the other, to a quarter of a head; and of the foot, across the instep, to about two fifths of the height of the head.

These measurements show that the widest part of the frame of a correctly proportioned man is at the shoulders, that the width of the form then becomes (independently of slight intervening variations caused by the muscles,) gradually narrower from the shoulders to the waist, when it again swells out to a breadth, at the summit of the lower limbs, equal to that of the space extending below the shoulders between the junctions of the arms with the body, to decrease once more 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 somewhat 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.

The proportionate length of the arm, from the top of the shoulder to the tip of the longest finger, is equal to the height 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 height 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 a proportional figure, likewise, when they hang down by the side, with the fingers of the hand extended, reach to half way between the bottom of the knees, and the summit of the lower limbs, (See Fig. 60) and when stretched out at a right angle with the body, so as to form a cross therewith, make a line equal in length to the length of the whole figure.

Fig. 60.



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 figure into spaces, each equal to the height of the head, and therefore shews where lines drawn through the figure, for the purpose of marking the boundaries of those divisions, would cross it on either side.

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

A well proportioned figure, as regards woman, should, as in the case of man, have a height equal to eight times that of the head, and when divided out into eight spaces, each space should have demarcations, corresponding with those which denote the bounds of the eight divisions that have been given of man's proportional figure. The space, however, extending from shoulder to shoulder, or the breadth of the figure at the shoulders, should be equal only to one head and a half, instead of to two heads, as in man; the breadth across the waist, also, should be rather less than in man, or equal to one head and an eighth, instead of to one head and a quarter; the breadth across the summit of the lower limbs rather more than in man, or equal to two heads, instead of to one head and a half, whilst the remainder of the figure, from the knees downwards, should gradually become more slender than man's figure becomes from the corresponding point, as well as more round, because the muscles of the frame would assume a less promi-

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nent appearance than those of man's, or flow less abruptly one into another, and thus impart that superior grace and beauty, not only to the limbs, but to every portion of the figure, which characterises it as compared with that of man.

Children have different proportions to 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 their proper proportions, the limbs becoming the while longer and thinner, and the head increasing, though but very slowly in size,—the features enlarging comparatively more than the height and width of the head.

The proportions of a well made child, when about three years of age average, as regards its height, 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 distance equal to three times the height of its head, and from that line to the soles of its feet, a distance equal to twice the height of its head. At about six years of age, its height becomes equal to 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 height is equal to about seven heads. From this advanced period of youth the figure then rapidly attains its correct proportions of eight heads in height.

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

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

Secondly, That the broadest 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 height 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 height; that the nose to the junction of the nostrils, with the face, should occupy the third fourth of its height, whilst the whole of the eyeballs should come within it (see Fig. 60); and that the remainder of the face, from the nostrils, should occupy the last fourth of its height, 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 breadth 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 distances 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 of the same length as the nose, and lie parallel with it, that is, the top of it 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 parts from either ear should each be occupied by an eye; from whence it may be deduced that the space between the two eyes and that between either eye and ear should be equal to that occupied by an eye.

Eightly, That the nostrils should spread together over a space equal to the width of the eye, and the mouth be a trifle wider than the nostrils, that is, the corners should 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, each nostril should occupy one part; and dividing the mouth into four equal parts, the fullest portions of the lips should occupy the middle of the two central parts.

But although learners will here see that there is a standard of proportion with respect to the human figure, yet it is not to be assumed that on that account every human figure

is to be depicted 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 a certain rule of proportion, and that a knowledge of that rule will assist them to delineate objects 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-shortening must now be noticed. The meaning of the word is, the contracted appearance of a space which we know to be larger than it appears. Thus the space occupied by a circle sometimes appears much smaller than it is, through the influence of fore-shortening, as is proved by the fact that in certain aspects the circle looks 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 look contracted. Fore-shortening not only always changes round forms into ovals, but causes oval forms to look more oval than they are, as well as renders every form different in appearance, from what it is in reality. As therefore we can never see anything, if we closely scrutinise it, without nearly every portion of it appearing more or less fore-shortened, it must be evident that fore-shortening modifies 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 figure drawing, and that without they are exercised, the most ridiculous mistakes must be made in indicating forms.

It becomes obvious, likewise, on reflection, that a drawing would seem either to represent a ludicrous deformity, or to be the production of one who was totally ignorant of Art, if in the imitation 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 look, without creating an impression of that which is unnatural, shorter and different from what they are actually.

It would be as absurd, indeed, to depict a man as having three eyes, as to represent his face with two eyes upon it when the position of it to be designated was that in which the artist could only see one eye and a slight indication of the other, but which indication he magnified on his drawing into a whole eye, either through carelessness, want of observation, or want of discernment. And it must be borne in mind that there is often a remarkable singularity about the appearance of a fore-shortened feature, or limb, viz., that the loss of apparent breadth or length of space which causes the fore-shortening effect frequently does not strike us, and we look upon it therefore as being the consequence merely of position, and hence that it does not involve that loss of length or breadth 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 lay against the pane as shewn 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 shewn in Fig. 62. We perceive then that although the absolute length of arm represented, is the same in each instance, that, nevertheless, if we were to use lines of the length employed in Fig. 61, to depict the two different positions of the arms, we should produce a false impression as regards the

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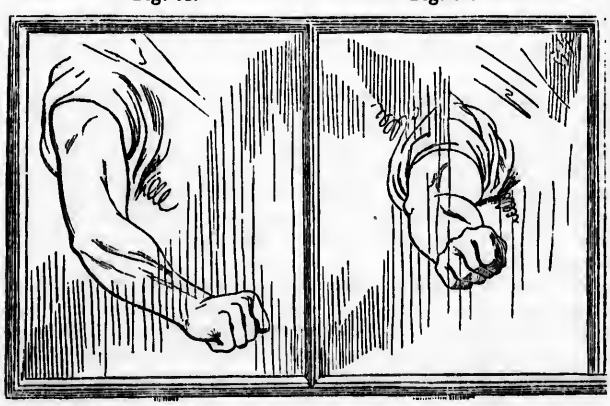

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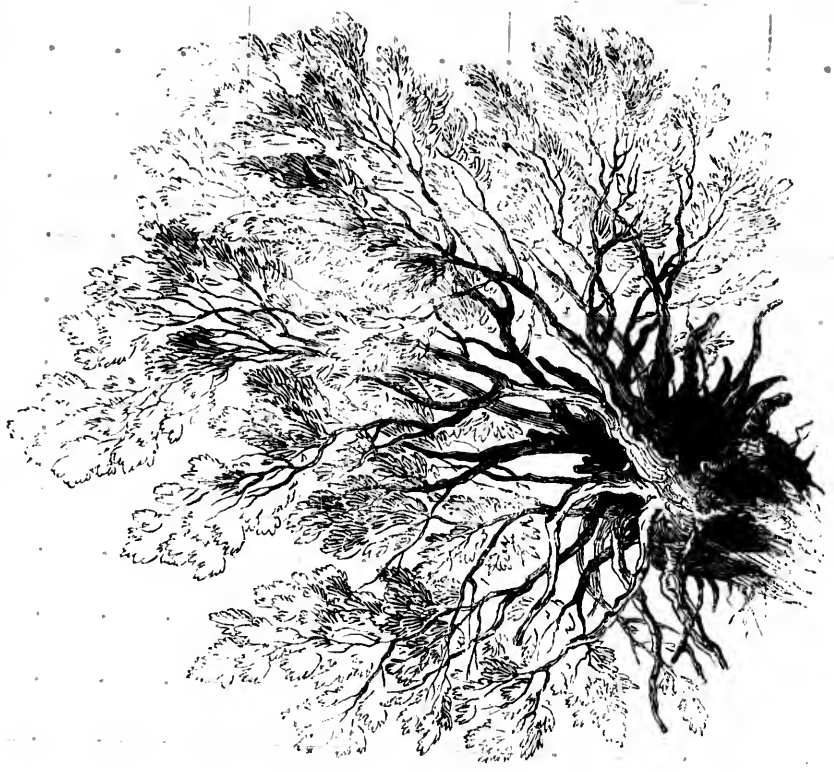

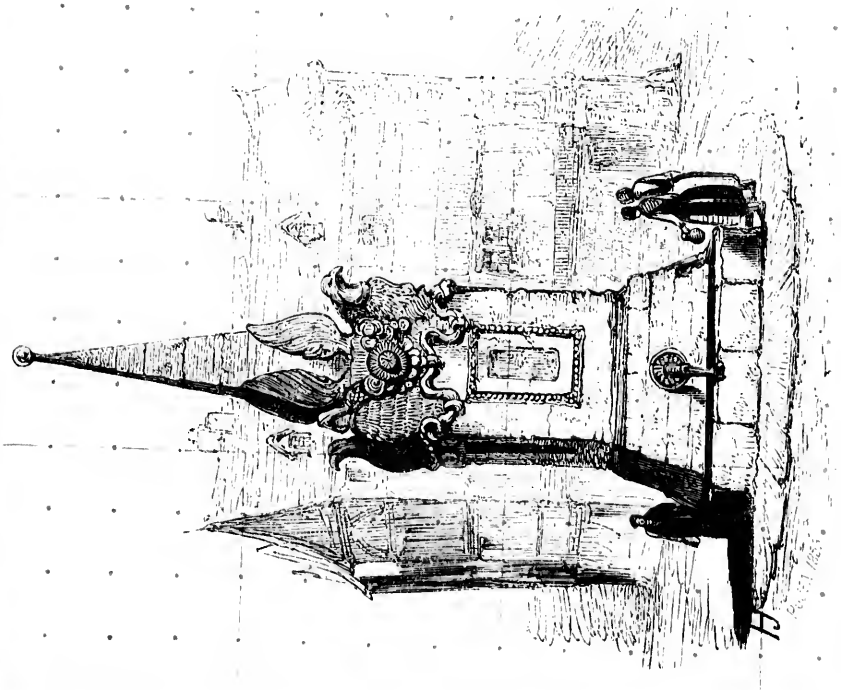

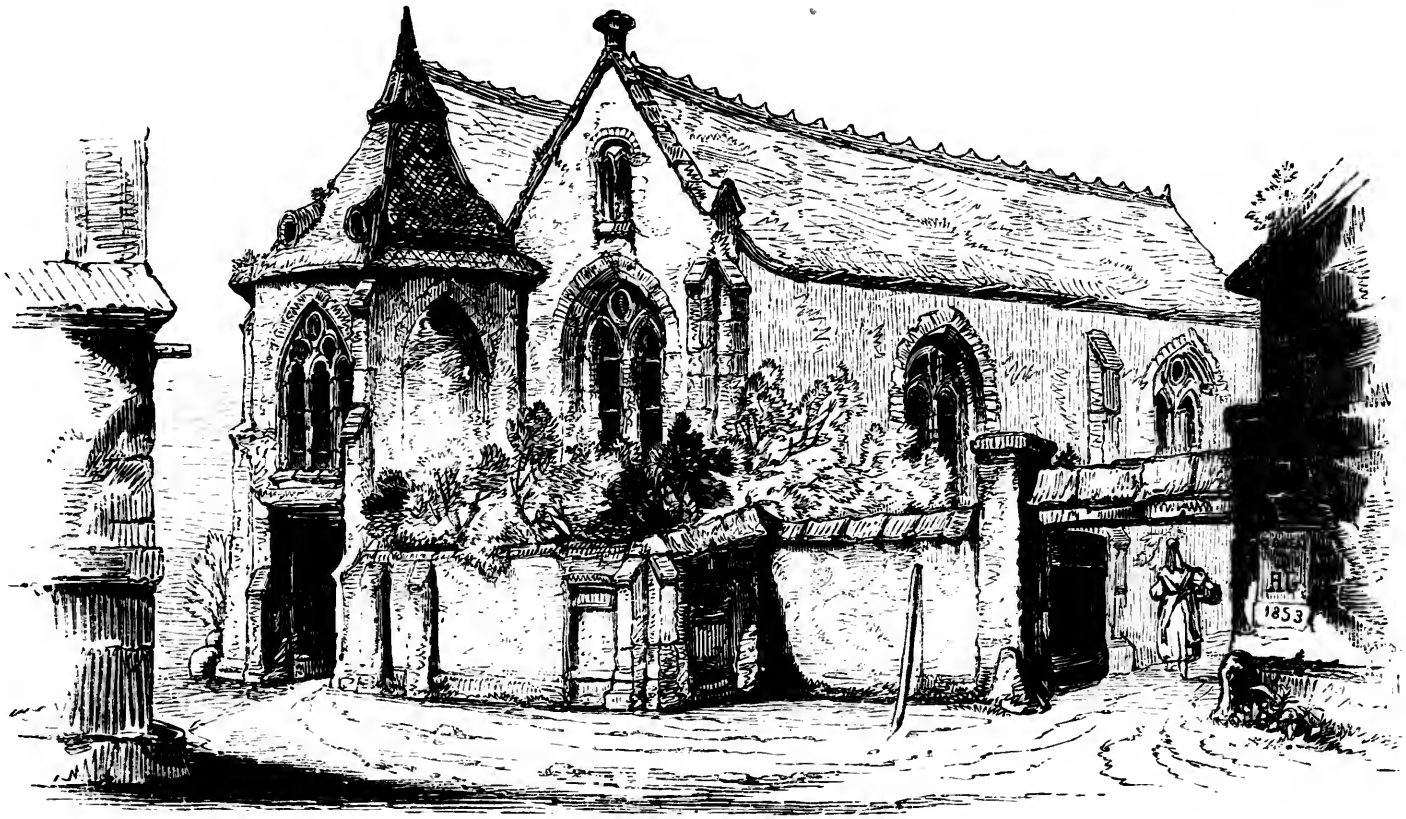
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position of the arm indicated in Fig. 62, or that the portraiture of it would appear somewhat as shewn in Fig. 63; and consequently either convey the idea of a very much longer arm than the plaster cast, or of one in a different position to that shewn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

Fig. 63.

To render the effects of foreshortening relatively to Nature and Art the clearer, some of them are displayed through the medium of Figs. 64, 65, 66, 67. Thus, in comparing the leg (Fig. 64), with the leg (Fig. 65), it becomes manifest, that, whilst similar sized legs are represented in the two examples, nevertheless, *the actual amount of space* a leg, from the knee to the heel, occupies in Nature, when seen in the position represented in Fig. 64, *appears* (in consequence of that position being one shewing a foreshortening of the limb), *definable in a drawing* within a smaller or more contracted space than would be the same actual amount of space occupied by a leg when seen in the position represented in Fig. 65, because it is one not exhibiting a foreshortening from the knee to the heel; and yet, that the portraiture of each limb looks natural and perfectly correct. If a comparison, likewise, is made between the width of space allowed for the under part of the

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

Fig. 67.

foot, in Fig. 64, and that allowed for the upper part of the foot in Fig. 65, it becomes apparent, as the actual space represented would be in Nature about equal, that the foot, in Fig. 65, represents a foreshortened foot as respects its width across at the toes. Again, if the arm, in Fig. 66, is compared with the arm in Fig. 67, from the wrist to the elbow, that in the former obviously correctly represents a foreshortening, or a certain actual amount of space considerably diminished in appearance through peculiarity of position, and hence definable in a drawing within a smaller space than it would be if foreshortening had not to be denoted. The arm, in Fig. 66, from the elbow to the shoulder, the backs of the hands, in Figs. 66, 67, and the fingers in the latter display, also, the effects of

foreshortening, as the student may, and should endeavour, to discover for himself, by comparing the actual amount of space, such parts of the human frame occupy, with that which they seem to occupy when seen in different positions.

Foreshortening, in fact, has been aptly described as much seen in little, and is a perspective appearance, the simple rule by which we may ascertain the extent exhibited at any time of apparent contraction of the space actually occupied by any part of an object—or seeming loss either of length or breadth, through being seen in perspective—enabling us to ascertain the amount of apparent contraction displayed by a foreshortened limb, etc. That is, if we take a pencil or other straight implement, of convenient dimensions, and hold it at the distance of its length from the eye, parallel with the length or breadth of the form seen under a condition of perspective foreshortening, and mark where the extremities of that length or breadth appear to touch the implement used, we shall then immediately discover what is the degree of apparent contraction of space displayed relatively to the form under observation, as compared with the actual space we know it to occupy, and that it would appear to do, if not seen under the conditions named. 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, whilst 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 artist, often speak to us through attitude and expression, no less powerfully and eloquently—indeed sometimes more so—than the pen or tongue; and many a truth, many a history, would have remained for ever only half told were it not for the almost divine skill sculptors and painters have evinced in creating those interpreters of the story of their works.

Expression is intimately connected with form, and therefore indirectly with proportion, it being either the general appearance of the whole form of an object, or the particular appearance of the form of any of its parts. Hence the general appearance called nobleness of mien in a naked savage, is the expression of the whole form, as would be the general appearance of the complete form of anything; whilst the particular appearance of a mouth, eye, or limb, is likewise the expression of form; the word "form" having a double signification in art, and meaning either the perfect contour or shape of anything, or the configuration of a specific portion thereof.

"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."

In representing expression, therefore, it must be perceived how necessary it is; 1stly. To use the degree of care that has been enlarged upon as requisite to be employed previously to depicting form, namely, in observing and discriminating what specific length, direction, and relative position of lines of any form belonging to our frame it is which produces the expression to be pourtrayed; and, having satisfied the mind on that point, 2ndly. To be equally careful in delineating that length, direction, and relative position of lines, or expression cannot possibly be imitated.

Colour is an adjunct of form, and in so being is one also of expression. Pencil-drawing can merely generally indicate colour, by representing what is its tone or degree of shade, as to whether it is dark or otherwise. Nevertheless, it may be executed so as to inform the mind if the skin of a man is of a white or a darker complexion, or if the colour of the skin on any part of his body is by accident varied or not; also, whether the expression, for instance, of his brow is scowling, or that of any particular muscle or limb under peculiar circumstances is that of contortion, etc.; because, when it is so, light and shadow affect the colour of the skin-coating of the muscle, or limb, in a way that may be denoted by means of a pencil. Therefore the pencil drawing operation of shading the human figure is one of great importance, severely tasking the powers of judgment, discernment, and practical skill.

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, consequently, looks different, for example, from the non-elastic bark of

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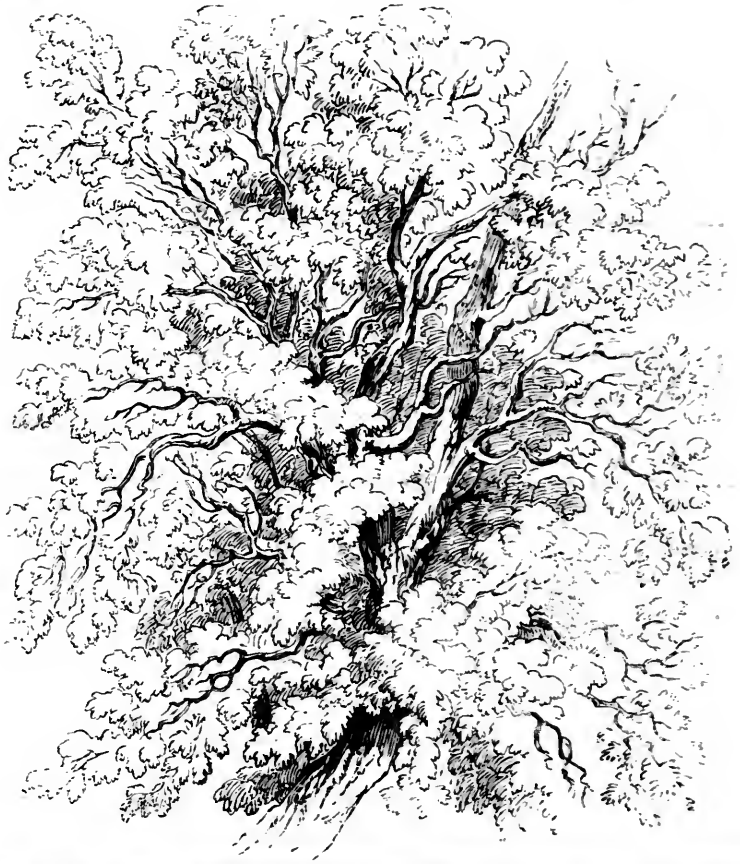


a tree; and, as it can only be represented through the medium of shading, the shading employed, in finished drawing, to represent that substance should be of a description that will denote its peculiar appearance and qualities, as varying from those of other substances.

Other matters connected with figure-drawing, such as Action, Dignity, Grace, Drapery, and Anatomy, need not be entered upon here, as they will be sufficiently noticed in another section, enough, for the purposes of rudimental instruction, having been said in this, on the art of drawing the human figure.

LESSON ON COPIES XX TO XXIX.

ALL the copies being *fac similes* of actual pencilling, the lines upon them should be imitated closely as regards their spirit or meaning; but, for the sake of clearness, some of the 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 true studies contained amongst these copies, the pupil 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 used to represent the forms of horses, cows, sheep, etc., given in copies 23 and 28, should be made distinctive of the characteristic of the appearance of their respective forms. The outline of a horse 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 colour when they should be light, and proper freedom when they should be curved for the purpose of expressing herbage, etc.

Practice, in enlarging and reducing 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 enlarge, he should select a subject belonging to one of the small-squared copies, and delineate it on one of the large-squared sheets of drawing paper, so that what comes within a small square of a copy shall appear within a large square of the drawing paper, as shewn by fig. 68, representing a copy, and Fig. 69 representing drawing paper. He must take care, however, to observe a proportional increase of size when drawing each line; and to see—that what passes on the copy through a particular red dot, passes on the drawing-paper through the corresponding red dot; what passes on the copy half way, and so forth, between two red dots, passes on the drawing-paper half way between corresponding red dots; and what passes on his copy through a red line at a third or fourth of its length from one of its ends, passes on the drawing-paper similarly through the proper red line. To reduce, the pupil should select a subject belonging to one of the large-squared copies, and imitate it on one of the small-squared sheets of drawing-paper, proceeding as described for enlarging.

Fig. 68.

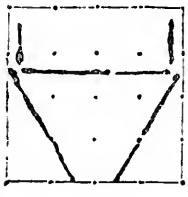
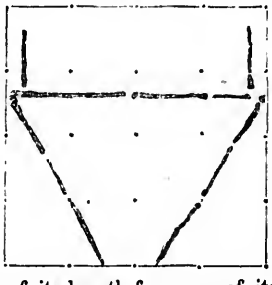


Fig. 69.



To commence this practice, let him, then, enlarge the pony represented in copy 23, and reduce the ash and elm subjects, copy 21.

ON LANDSCAPE DRAWING.

THE charms of a lovely landscape are more or less appreciated by every one, whether Art-educated or not, and there is no doubt that the wondrous variety of attractive scenery embellishing the earth, furnishes man with a most fertile source of pleasure. 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; and, at the same time, by informing their taste as to what constitutes the beautiful in Nature, and thus virtually extending the range of objects gratifying to the mimd.

It being the purpose of this work to aid in widely diffusing such education, and in so doing, promote the general welfare, by affording to all who desire it an opportunity for the acquirement of an attainment that causes great additional enjoyment of existence through awakening an appreciation of the manifold beauties of Nature, as well as furnishes most delightful occupation for the leisure hour, if not for life—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 holds its course from the tendency of almost every one on the slightest considerations 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,

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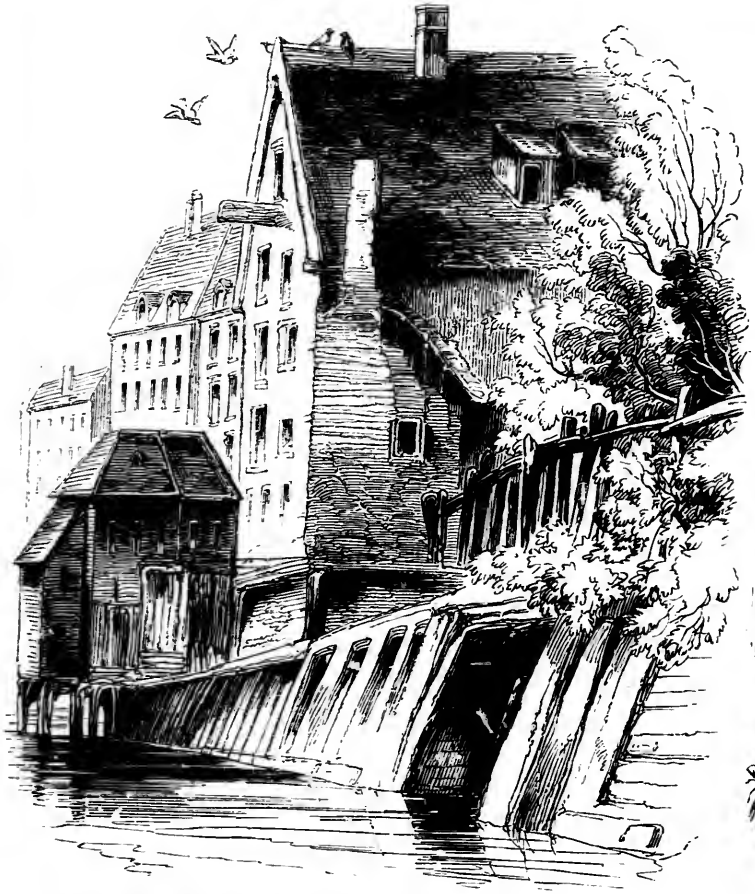

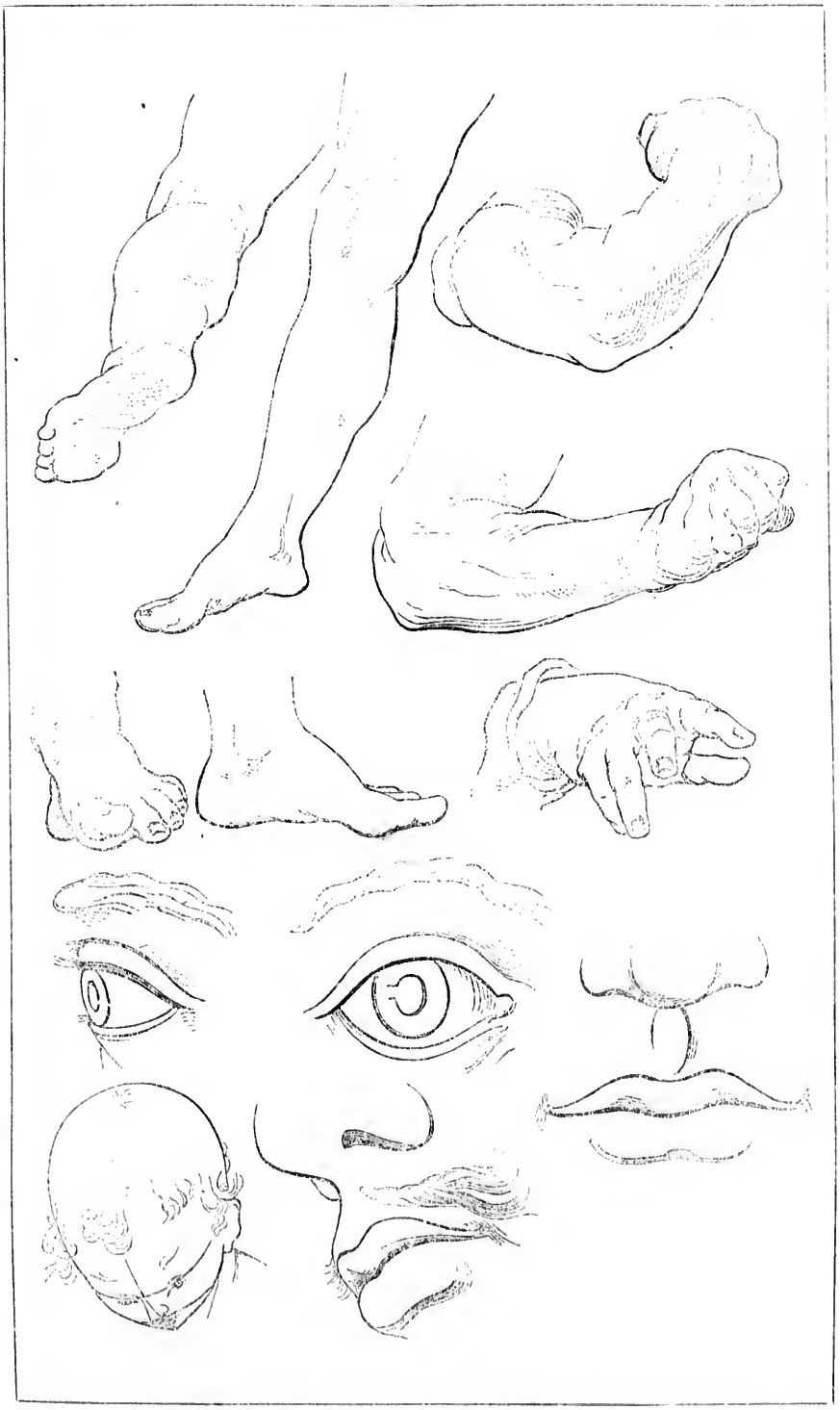

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remain observable on or from our roadways, where over-arching foliage, elegant residences, and enlivening glimpses of the many-object chequered distance might and should abound.

If they would do this, a universal Art-education, creating a universal taste, 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 be built as conveniently as ever, the taste indicated lead, likewise, 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." Its utility, therefore, probably surpasses that of every other branch of Art. It may be said, also, to enable 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 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 faithful 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, in some respects, attractive as one frequently sought on account of its local graces.

The power of practising it with a 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 discover the most peculiar and attractive features of his subjects (presuming he take the latter from Nature) and those, consequently, that if depicted, ensure correct and pleasing resemblance. For every scene and object displays a few leading features, amongst its variety, 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.

In the student's early endeavours, however, to exercise these 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 either to a confusion of appearance, or a deficiency of point or picturesque interest in his drawings. To avoid the one and the other, a safe plan for him to follow is, firstly, to maturely consider

which are the main *distinctively striking* and pleasing features of that which he intends representing, as compared with the features belonging to anything similar, and having selected them to the best of his ability and experience, to confine himself to depicting them only. This done, 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. By adopting, from the commencement of his studies, and invariably pursuing such a course (unless he should be altogether devoid of taste and judgment), he will be sure to obtain at once some considerable degree of success in producing artistic resemblance, and eventually of achieving perfect success.

How completely objects may be represented, even through the imitation simply of their leading characteristics of form, may be seen through the illustrations (Fig. 70) of an Ash tree—

Fig. 70.

Fig. 71.

Fig. 72.

(Fig. 71) of an Elm, and (Fig. 72) of a Birch, each of which appears to represent a different tree from the others, notwithstanding the kinds of touch employed to express the forms and foliages of these trees, are necessarily exceedingly minute, and, therefore, the more difficult to render distinctive, but which it is possible to do, by reason of the fact, that every scene and object has *imitable characteristics* of form, as well as other features which are *peculiar to it*, and thus such as it is principally essential an artist should delineate.

Supposing, then, a learner wished to depict a particular kind of tree, the striking features peculiar to it would be—the general character or appearance and colour 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 it were examined very closely, features of minor importance might 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 might 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 correct, 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 required; 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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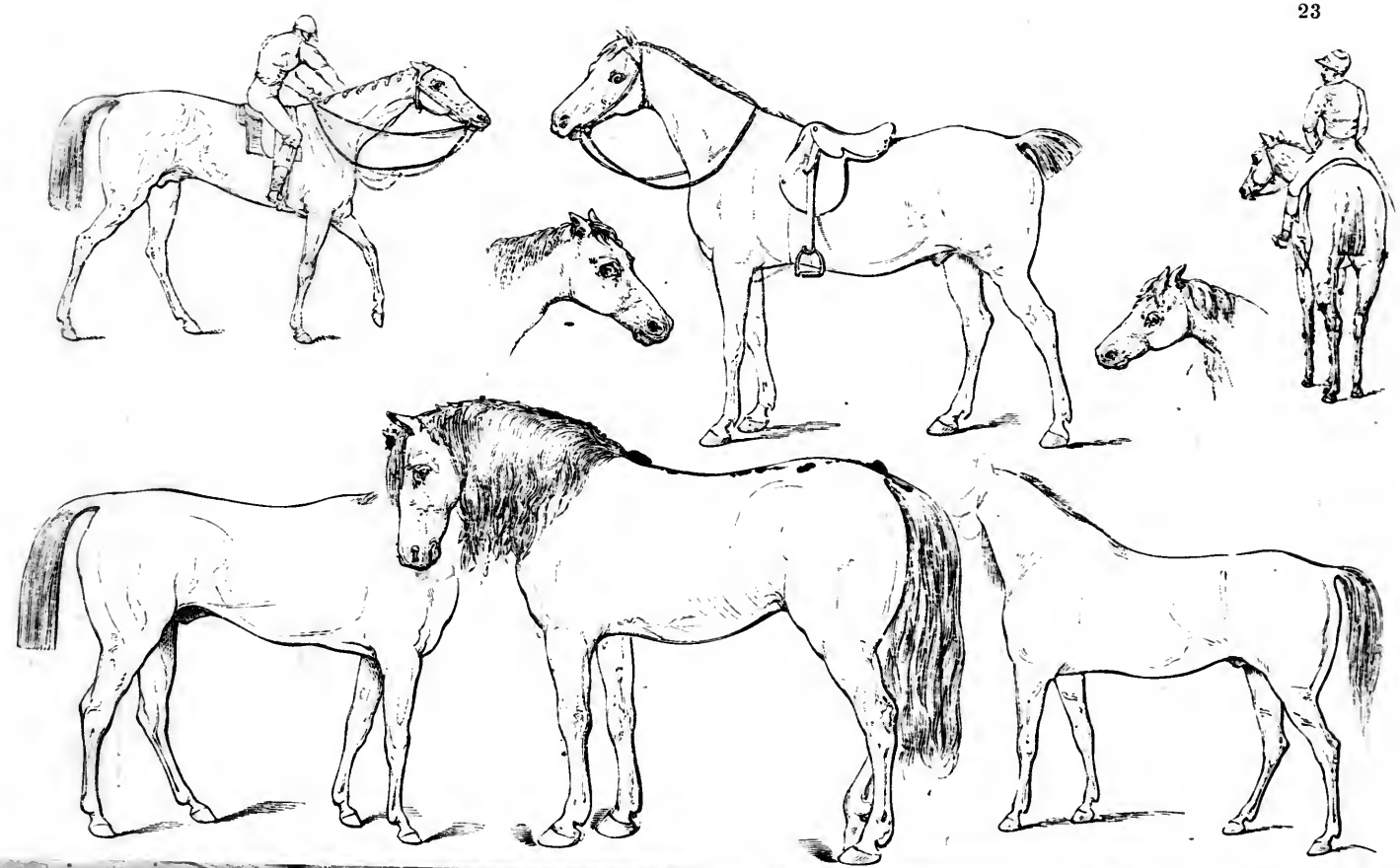
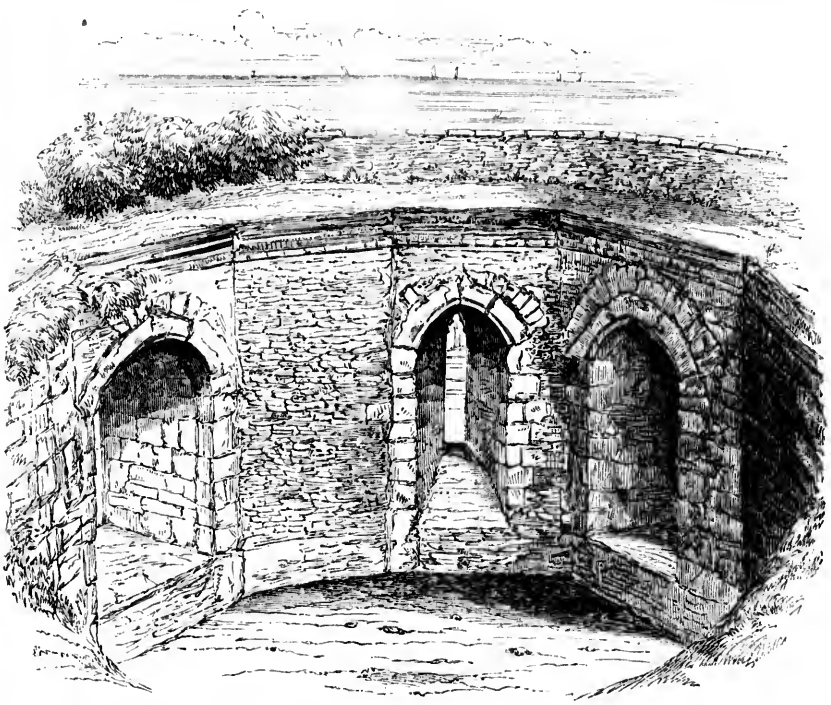


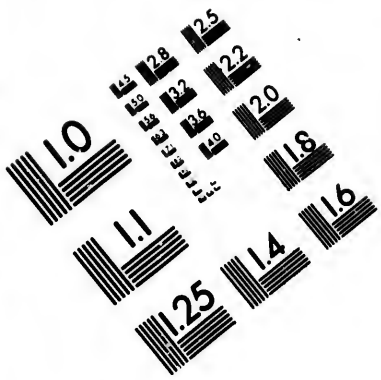
By adopting a method of proceeding similar to that which has just been described, objects and scenes in the majority of cases may be effectively represented through the mere portrayal of their most striking and attractive characteristics of form, etc., so that to represent other features would generally 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 that which, like every good photographic representation, imparts much gratification to the sight, notwithstanding many things therein may present themselves to the eye, which, considered individually, do not create an agreeable impression.

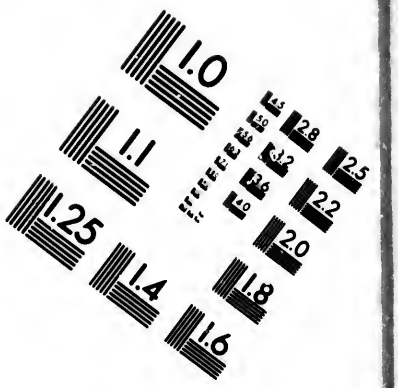
It may be inferred, from the preceding remarks, that an important result arising from the judicious and tasteful selection and management of the most striking features of a

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 must on that which is constantly varying with subjects, 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, colour, 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 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





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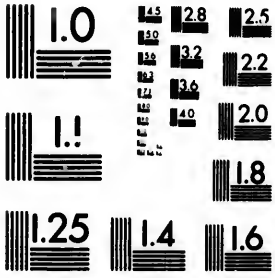

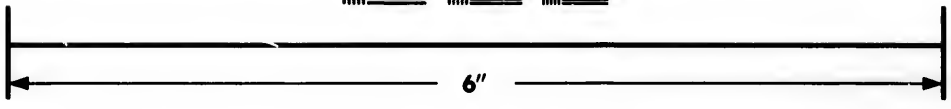

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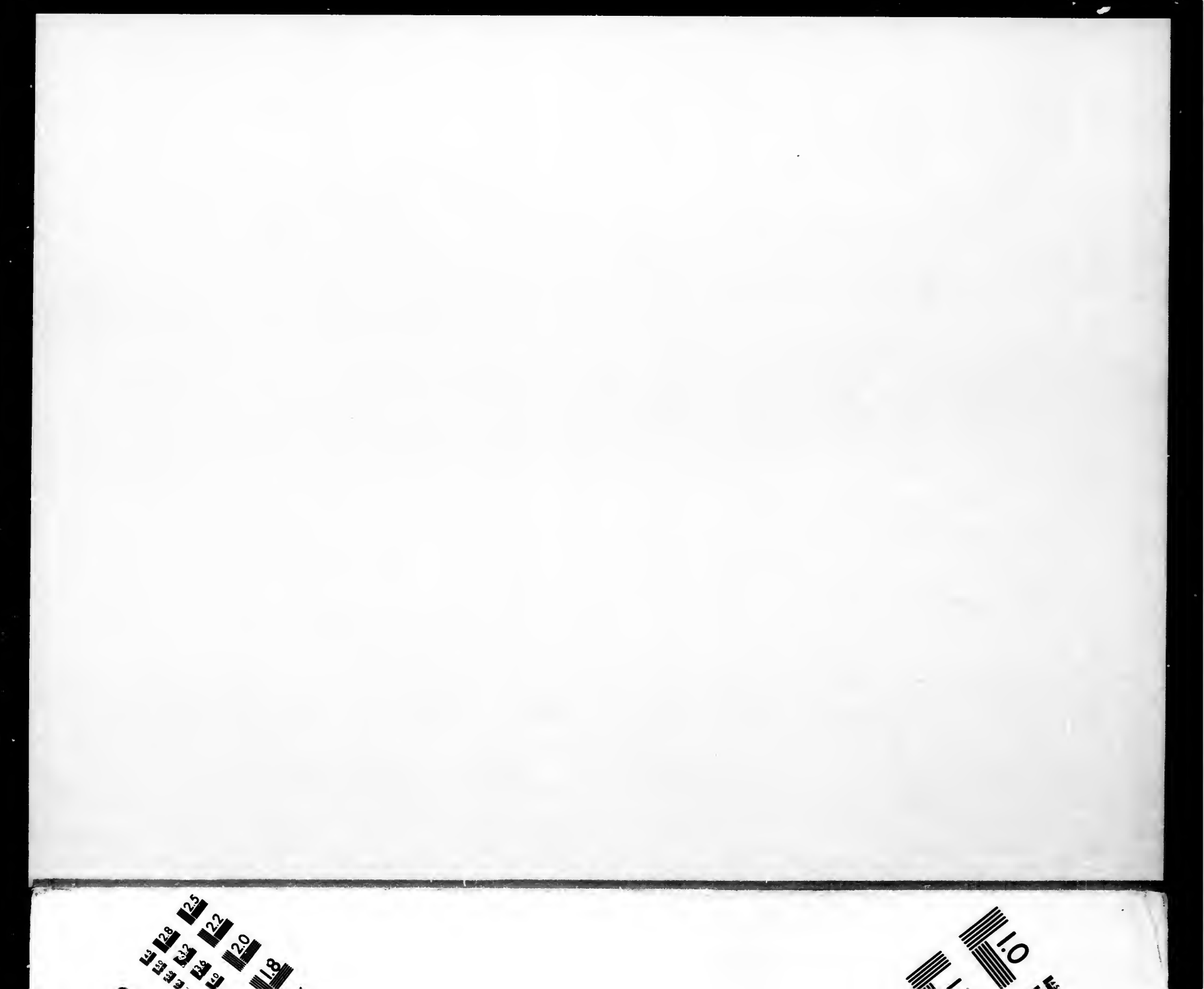

power and retention of memory; it is necessary, therefore, to have continual recourse to her."

The leading elementary rules and principles of effect which can be given, are as shortly ensue. Their application, however, must be governed by attention to appropriateness or that which is consistent with subject; for although a picture may be executed in exact accordance with each of them, yet—as a *good effect* means also a truthful effect—anything introduced into a picture for the purposes of effect, that is not consistent with its subject or the scene it represents, must be inappropriate, and hence prove worse than ineffective, namely, unnatural. But these rules and principles 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 overhanging mass of bushy foliage to be seen 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—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, colour, and tone, the lines of a picture should be varied in length and direction, and the forms, colour, and tone be diversified as much as practicable. Violent contrasts, however, in immediate juxtaposition, 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 regulating intensity of light and shade.

Either a human figure, an animal, cloud, tree, a small form near a large one, or an abrupt and rough form in contiguity with one that is even, 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 subject 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 accessory, 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 should usually 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.

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3. One of the secrets of effect, resulting from composition, being the agreeable 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 colours 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 colours, diminishes the beauty of a picture, it should be obviated; or when they naturally recur considerably in a scene, and should therefore be portrayed, they should be disguised by the employment of suitable devices, in the shape of management of light, shade, reflection, intersection of line, and diverse accessories. For instance, recurrences of perpendicular, horizontal, and diagonal lines in views of buildings, and of diagonal and curved lines in representations of many kinds of scenery, frequently require disguising, for the attainment of good effect, by the intersection of portions of the outlines of accessories. When many figures must be 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 combination or 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 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 old woman's head, the right-hand diagonal line of the roof of the house, 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 presents features creating artificial 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 slightly shown in Fig. 75, a partial representation of the scene given in Fig. 74, but presumptively in a rather different and improved aspect, on account of its being free from the blemish of accidental lines.

Fig. 74.

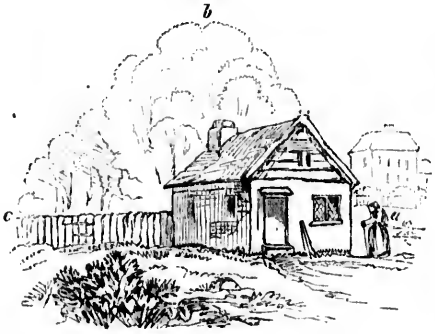
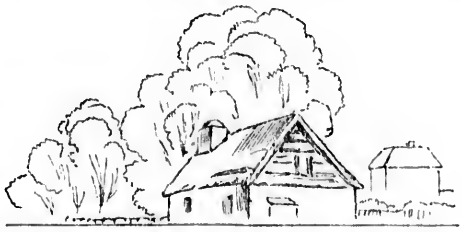


Fig. 75.



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. 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 forms, 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. Therefore, as the imagination will fill up pictorial indications of detail, if they be cleverly managed, it is better that there should be too much, than too little repose in a picture—neither the imagination nor the eye being able, when fatigued, to do justice to that which is presented before them.

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 colour, 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, should consequently be preserved. To thoroughly maintain it, 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 colour, 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. To preserve it, however, it is not necessary to place an equal amount of objects, or of anything else, on each side of a subject, but merely to manage so that one side of it shall display something creating nearly as much interest 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 may be rendered so striking and attractive on one side of a picture which is devoid of marked detail, as to balance the other side, although full of detail or objects.

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 shades; and that which should stand out conspicuously should be illuminated to a degree proportionate to the prominence it should assume. 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 influ-

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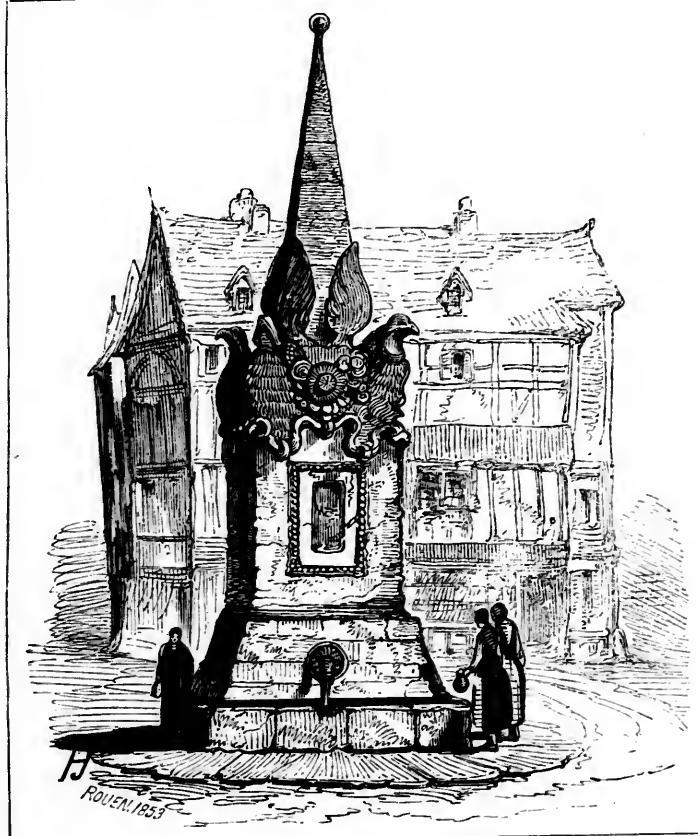

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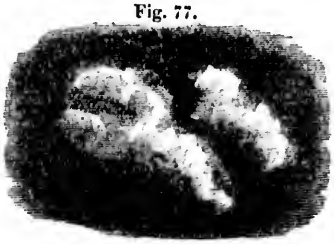
ence of one or the other, an influence on which mainly depends the important elements of effect called airiness, harmony of tone, and breadth.

13. There should be an imperceptible blending together of light and shadow. They should both, also, be made to retire out of the picture at different parts of its sides, or masses of light will look somewhat like spots or holes, as shewn in Fig. 77. The more

Fig. 77.



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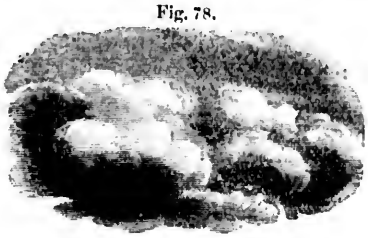


natural and pleasing appearance produced by making light retire, as stated it should, being shewn by Fig. 78. It may be made to do so at any convenient part of the subject, and through the medium of any convenient object, as, in one place by the aid of a tree, in another by that of a figure, cloud, mountain, stone in the foreground, etc.

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 and 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 shadows, 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. It cannot be used, however, advantageously to the general effect of a picture, unless the speck 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 others 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. Yet it should never be totally disconnected from the other lights of a picture; as all 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.

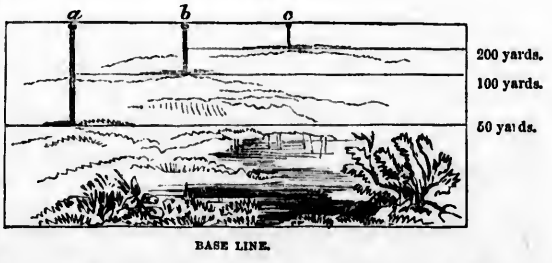
18. No management of light and shade in a picture can look pleasing that does not produce the impression of *breadth*, or cause the two to blend together so as to create a sense of unity and fitting repose. A picture, consequently, without breadth, can no more be perfect, than one that is deficient either 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, irrespective of the others, 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 it (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 colour on the dog serving to keep the tree, and other dark, shaded portions of the subject to which they belong, as much in the background as they should appear.

19. To express space, or 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* (when placed in the back part of a subject) *proportionate* to the increased degree of distance it is intended to assist in conveying the idea of. Thus should it be desirable to correctly represent the distance of 100 yards, for instance, from the foreground of a pictured scene, if a figure be placed of a proper comparative height at a point of the foreground selected to represent a depth of 50 yards into the scene (which point must be chosen according to principles of perspective, which will be explained in the sequel), the place where the feet come of another figure, which is only made half the size of the first figure, but the head of which is depicted even, or on a line, with the head of that figure, will correctly denote a distance of 100 yards from the foreground; or, what is the same thing, represent a depth of 100 yards into the scene from its base line—the base line of a scene being always represented by the bottom boundary edge of a picture. Also, if a third figure, half the size of the second, be placed with its head even with that of the second, and, therefore, with that of the first, a line drawn across the picture, under its feet, would correctly indicate a depth of 200 yards from the foreground, and so forth; see Fig. 79, in which *a*, *b*, *c*, represent three figures standing 200, 100, and 50 yards from the foreground, or those depths into a scene from its base line.

Fig. 79.



Not only distance in yards, but in miles, likewise, may be thus indicated; a figure, as well as everything else, by the laws of perspective, losing half its size in appearance each time its distance from us is doubled. At the same time, if it were requisite to shew the relative heights of certain objects in a picture, at different distances from each other: as a figure represents 5 feet of height, one placed against an object would furnish the means of measuring it. For, supposing a figure were placed against a tree, which was depicted five times as high as the figure, the tree would necessarily be represented of the height of 25 feet.

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

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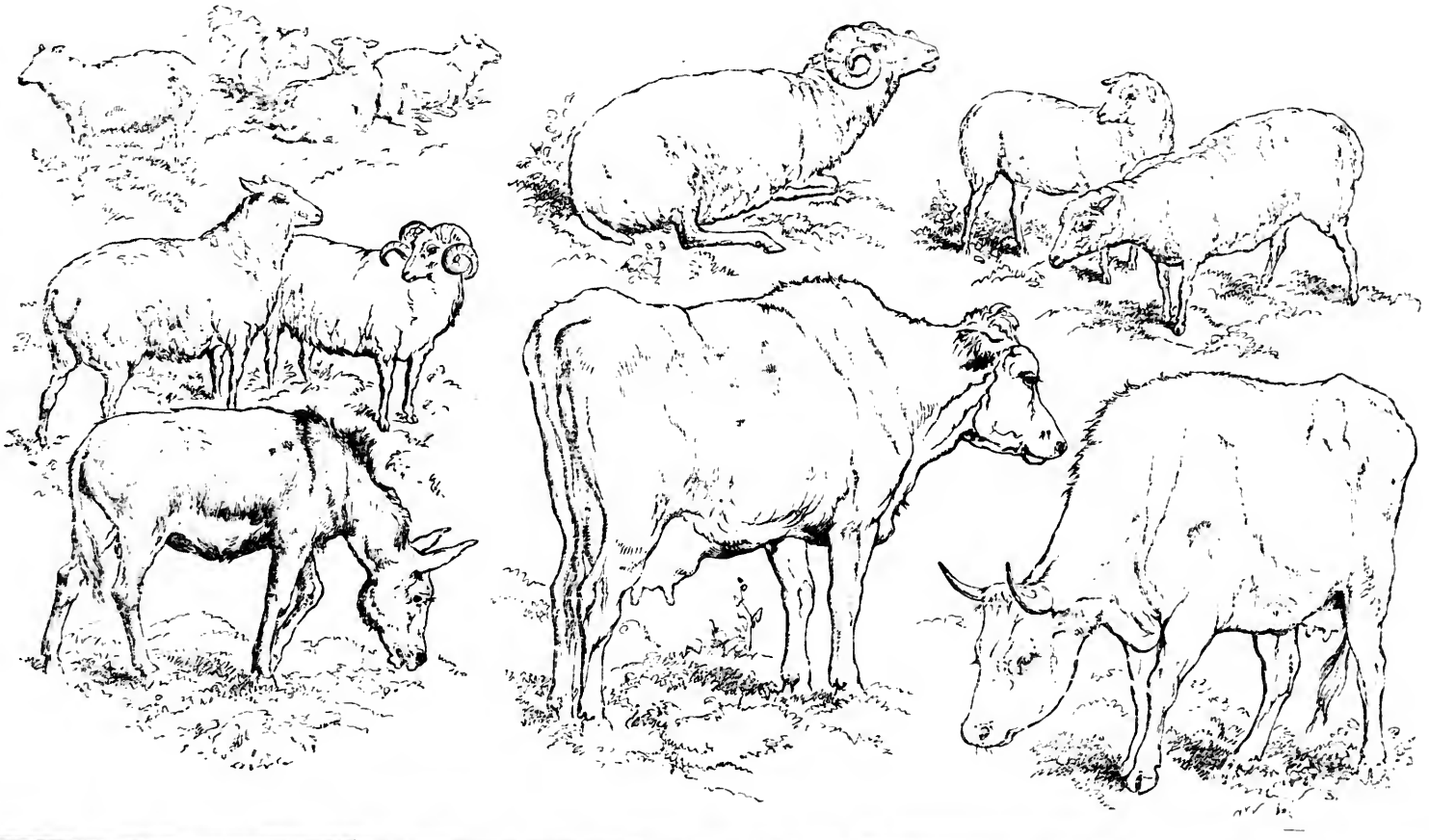

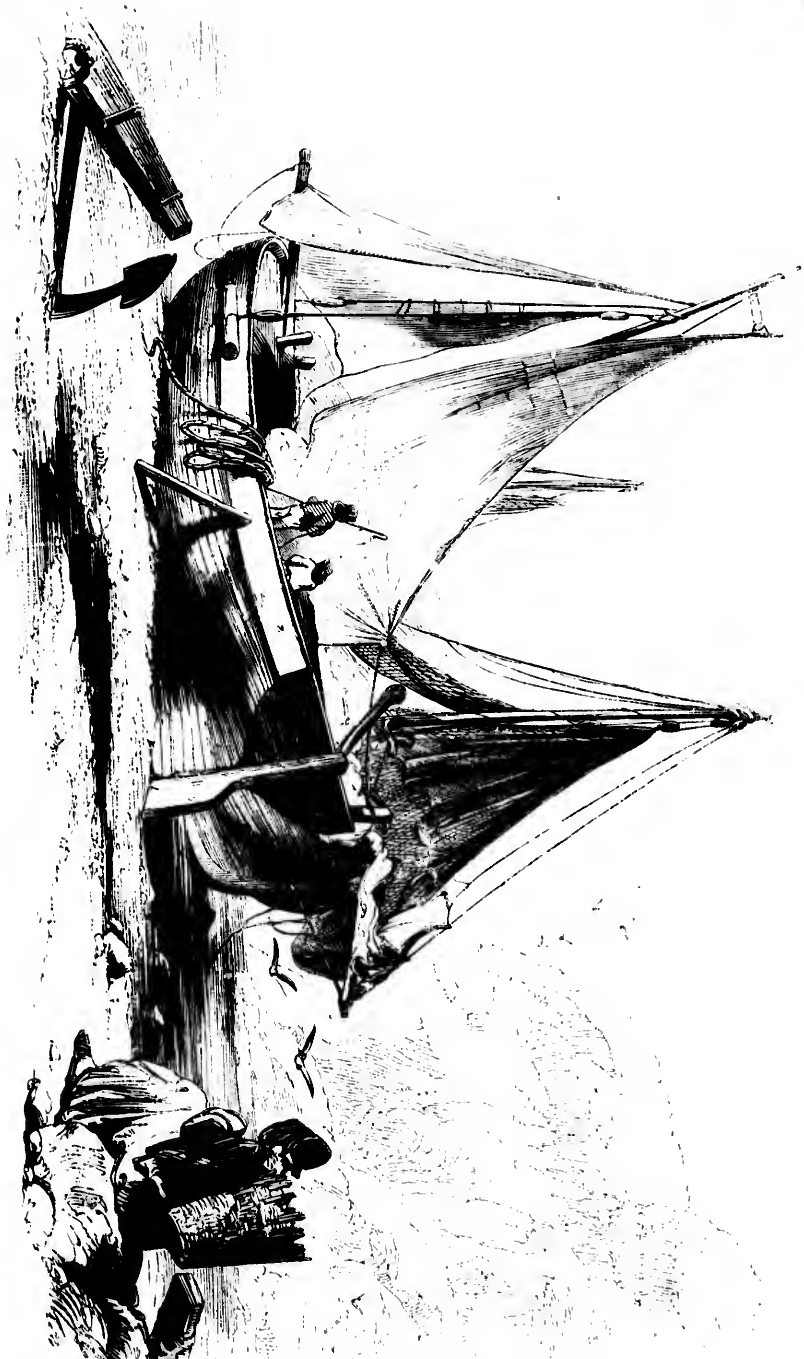

the eye, for Nature is always effective; and the power of truthfully treating a subject, when not sketching her features, is only to be acquired though an intimate acquaintance with her various phases.

Some scenes, however, can be most perfectly represented as witnessed in the broad glare of an all-pervading sunshine—some as seen under the influence of a frequently clouded sky, producing various masses of wide—obscuring shade—and others under that of the peculiarly object-softening light of early morning, or by the sharp defining aid of a clear, fully illuminated atmosphere. This, with the setting sun throwing his rich, mellow beams across the landscape, absolutely gilding objects with his rays, which grow the more resplendent the nearer he sinks below the horizon; that, with 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.

Nevertheless no rule can be furnished to assist the taste and judgment in selecting a description of effect to depict, beyond this, that the effect selected should admit of concentration or unity of aim, and simplicity, and accord with the character of the scene to be pourtrayed, as well as represent its features in the way most gratifying to look upon. When,

Fig. 80.

likewise, a subject should display a 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 shewn 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.

Of light represented by positive white, the introduction, 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, though not left in large proportions, be scattered 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 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. Nature must be constantly resorted to, for the acquirement of a skilful power of management, and, unlike most adjuncts of a landscape, the sky may be studied anywhere: from amidst a dense mass of houses, as in the open country; and 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 exhalations 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 studied from the roof of a house, or a neighbouring 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, colour, etc., 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."

In treating 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 mutual 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; that according to their increased degree of density, opacity, and nearness to the sun, 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 different states of weather; and 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.

As Trees form one of the most usual and attractive features of a landscape, too much time and pains cannot be bestowed on the study of them, especially as their characteristics cannot be caught and depicted without a well practised eye and hand. We look on wooded scenery ordinarily, without becoming aware how much its attractions are heightened by readily overlooked peculiarities, displayed by the diversely-foliaged trees adorning it. The shape of some, bending or erect, the sweep of their branches, the bright or sober hues of the leafy coverings of others; the lights or shadows that play about them all, and throw groups and solitary trees into prominence, or mellow them into the effect of the whole scene—at times producing a thousand glittering specks of

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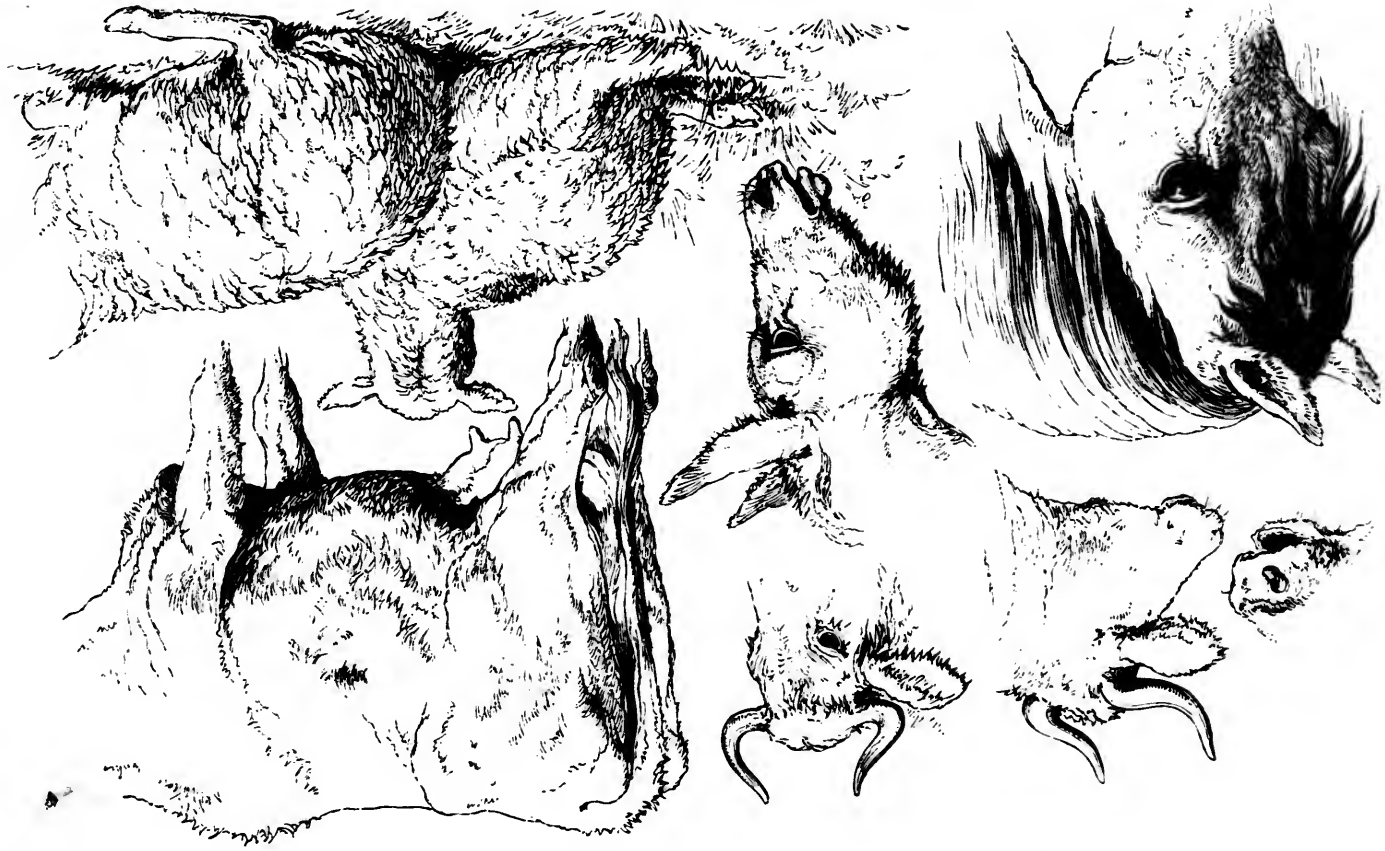


brilliant dye, ranging through the whole scale of color, and causing a scene to appear one of splendid enchantment, or subduing groves into masses of deep shade that cast an air of additional sombreness over a landscape, and complete its effects of unbroken solemnity.

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 in any state of 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 shewn 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, shew 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 their notice, for the sake of giving a definite direction to their studies from Nature.

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; and 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, running upwards without separating very widely from each other until they reach the head of the tree, and with smaller arms branching out from the lower parts in all directions, but from their upper parts in an upward direction, making a full round top, 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 attain the height of 90 feet, and more sometimes, without a lateral branch extending from its stem at any point less than 30 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, like other trees, 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.

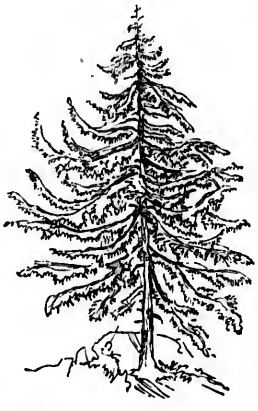
The Beech (Fig. 86) is one of our noblest forest trees. It grows to a great height in sheltered spots, producing a foliage so thick as to form a complete roof, the "shade of the beech" being often alluded to in consequence. Its leaves hang on thin twigs which shoot out from its branches, spreading undulatingly in every direction, so as to render the tree very difficult to depict. Its stem runs rather straightly and perpendicularly, projecting 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 color.

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

Fig. 88.

Fig. 89.

Fig. 90.



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 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 stem 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 beautiful 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 artists should take advantage of, that they may impart more grace of form and 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.

Willows have a foliage which, when depicted, has somewhat the semblance of Ash foliage, excepting in the case of the Weeping Willow (Fig. 87), the foliage of which, and of the poplar, is 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.

Enough having 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; water, distances, foregounds, and landscape accessories, must now 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 reflects form, light, shade and color, and hence 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, 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, 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, being matters that especially should be understood by those who would depict the sea when agitated 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 more indefinite in outline; and the idea of air and space can only be conveyed by a picture when it imparts that of

distance through representing objects which are not 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 that which represents either the middle or the extreme distance of a pictured scene, will not merely destroy the semblance of distance, but seriously injure the appearance of a picture in other respects.

Foregrounds are composed of banks, precipices, pits, large stones, stems of trees, foliage, bushes, herbage, roadways, or other occasional features, irrespective of the prominent objects standing in the foreparts of landscapes and pictures, the latter being generally termed foreground objects. The foreground of a picture should be the boldest and most perfectly drawn part, proportionably to the 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, a fluttering bird on the ground, 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 it 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 introduction of accessories like these is a legitimate liberty an artist may take when portraying a scene, should they not be present therein, but his fancy can imagine them, and his skill is equal to placing them judiciously. Finally, moored vessels, fallen trunks of trees, planks, ladders, brooms, pails, etc., may also be added to the representation 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 acccompaniments to a scene, provided good taste suggests that anything may be added to it with advantage.

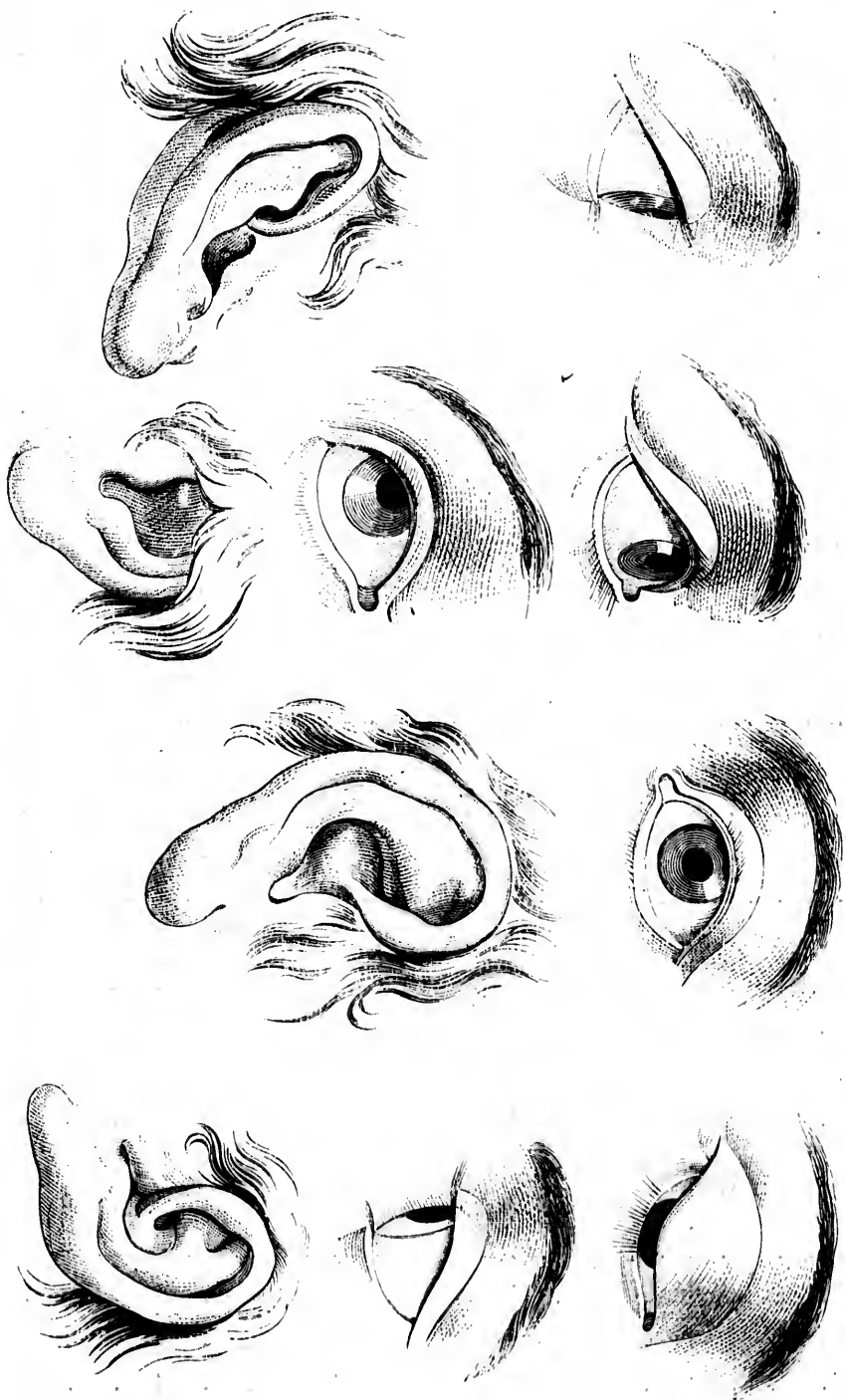
LESSONS ON COPIES 30 TO 34, AND 37 TO 39.

The Oak is shewn in the centre, and the Beech on the left-hand side of Copy 30; the Oak with a foliage that breaks into abrupt masses of zigzag indentations, and the Beech with a foliage which runs in long lines of less irregular, but still rather angular indentations, differences of character which will require care to preserve in copying them.

The limbs, the parts of animals, and the vessels, 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, as their forms are principally defined and rendered distinct through shading. 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 in Copies 34, 37, 38 and 39, the purpose for which they are given as studies being that of affording practice in producing characteristic picturesqueness of outline through copies of classes of objects which are highly useful in other respects.

Copies 35, 36, being in Sepia color, will be referred to in the following section on Water-color Drawing.



On Color Drawing.

The use of color is of such importance to the artist that, without its aid, he cannot depict scenes from Nature with a complete and striking fidelity. Atmosphere—the glow produced by the sun—the beautiful effects replete with variety and contrast of tints, resulting at different times of the day under differing circumstances, 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—the surface appearance of objects, and their true bearing as manifesting itself more by general relief of one object from another through color rather than by 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.

To a certain limit, within which pleasing works may be produced, not very close to Nature it is true, yet not so wide of its aspect as pencil drawings must of necessity be, its practice is by no means difficult. 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. No one, however, need despair of the attainment of great excellence in the perfect practice of color, as of other drawing, provided he neglect no opportunity of advancing himself. Opportunities likewise are numerous beyond usual conception, for they occur, in most cases, whenever we are abroad, wherever we may be. The walk taken for any ordinary purpose may be made the occasion of valuable study to the amusement of the mind as well as the improvement of Art capacity, if the eye be kept in a state of constant watchfulness for beautiful effects, and a few moments are devoted, on beholding them, to their analyzation, and to making slight sketches or notes of their principal features, which may be hastily jotted down in a small book carried about for the purpose. Another process, answering the end, in the absence of sketching materials, of preserving the recollection of effects, being that of continuing to watch them intently for short periods, and then 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 at the earliest leisure, before the remembrance has become feeble of what has been observed, the latter should 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, there being no 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 works in color—as everyone practising Art should do, color drawing being infinitely more useful and interesting than pencil drawing. The study of pencil drawing, nevertheless, is indispensible to every Art student, for the purpose of accustoming himself 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—sketching being a very difficult process by means of any other implement. The efficient use of the pencil having been acquired, the branch of Art now being treated of should be immediately pursued.

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

Drawing in water color, which alone will be treated of in this work, may be practised either with dry cake colors, or moist colors, both having their peculiar advantages—the dry cake colors in affording the greatest purity of tone, and the moist colors in being the easier to work with. Before proceeding to make a good color drawing, it is of the highest importance to ensure the use of sound paper; for if a sheet of paper is not free from defects of surface, a perfect drawing cannot be made upon it. The way to ascertain whether paper is sound 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 it appears to be even all over, without a flaw, or 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, crack, or smoothness or roughness not common to the general surface, it 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 all woolliness of surface, and of such want of substance as will cause color to sink through, and show on both sides of a drawing. Imperfections on paper, usually, either prevent color from flowing freely over the places where they occur, or create unevenness of tint disturbing general effect, by showing as blotches of the shape of the imperfect spots, and which deface otherwise good drawings irremediably. When smooth places occur, color runs over them as it would over grease spots; and when very rough places, the color becomes absorbed by them without flowing onwards as it should; 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 not to create 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. The best 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-surfaced, 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, over its surface, until the whole has lost its stiffness, without becoming in any part in the least degree—either saturated, so that one part will take a longer time to dry than another, and produce a liability thereby of cracks or breaks of surface ensuing when the paper is further handled—or injured by the process of sponging, which of course must be effected with delicacy, otherwise the fibre of the paper will loosen, and come off on the sponge, to the irreparable injury of surface, and unfitting of the paper 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 would most probably fall of itself through its own weight, which, however, it must not be allowed to do, as it would break by so doing.

When prepared as above described, it 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 to be placed in the former, the moveable board belonging to the frame should be taken

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out, the back of the paper (*which should be always indicated by a pencil mark, before the paper is damped*) must 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 it 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 either be pasted on the face of the block, or be turned under and pasted at its back—as convenient, according to the size of each,—and due care be taken to ensure the proper drying of the paper. Only a moderately thick paste, evenly spread in bands about a third of an inch wide, on the place the edges of the drawing paper are to cover, should be used; and whether paper be made ready for a drawing, on a block or in a frame, it should, when dry, present a perfectly *tightened, uncockled, unwrinkled surface*, or it must 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 or laying on of broad masses of color essential to render the effect of a drawing complete and highly finished, the former causing colour to tend to settle in pools, and the latter causing it to make harsh ineffacable lines following the course of the wrinklings.

A sheet 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 must be effected with great *precision, accuracy* and *delicacy*, lest it should become necessary to efface lines for the correction of mistakes, and injury be done to the surface of the paper by rubbing them out, or that the pencil markings of lines should show strongly under the tints of color laid over them. Foreground objects, and such as are to have dark colors 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, the injurious consequences of dirt or grease being such as cannot be obliterated.

Although minutely outlining a subject may appear a somewhat tedious process when the learner is naturally all eagerness to commence working up its effect with color, yet he will find that extreme accuracy and minuteness of drawing in its preparation 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 drawing has been depicted, the color to be laid on it first, should be prepared in a convenient vehicle, such as a saucer, plate, etc., and in a quantity sufficient to cover the whole of the subject, as the first tint to be used, generally, should be laid all over it, excepting where white lights should be left. The first tint having been washed in, successive tints should then be prepared and worked over the drawing in the order which instruction or experience dictate.

The brushes principally required by a learner for water-colour 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: the cost of a large sized swan-quill brush of this material being from five shillings to seven shillings and six-pence; of a goose-quill brush, one shilling; and of a crow-quill brush, six-pence. Intermediate sized brushes might be serviceable to him without being absolutely necessary, and it is advisable 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 tints that have been laid in with harshness or two much strength.

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 the proof by spreading the point on a finger-nail, as the great imperfection, inequality in the length of the hairs of the brush, if it exist, will shew 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 tint, the brush, after it has been filled with just color 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. But should it not prove to be filled with sufficient color, it should be replenished quickly with, as nearly as can be judged, the quantity still required, and be worked from the *yet moist color* of the previous washing; for if the latter be allowed to become dry, edgings destroying evenness of tint will appear where it was discontinued. Should it be too much filled, as, in that case, the wash of color made by it would accumulate into a pool at the lower part of the place it was passed over, making, if not speedily removed, an unsightly blotch, the floating surplus should be absorbed into a clean dry brush before it has time to sink into the paper,—the facts stated showing 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; and many characteristics of appearance may be effectively obtained by using what is called a dry brush, or brush either containing very little thin liquid color, or only color that 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 vigour of effect on those parts of drawings where old buildings, water, tree stems, rocks, roadways, etc., 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 upon a piece of waste paper, until all its hairs have been worked perfectly 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 of 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 tints, caused by the rubbing or scraping processes, may be repaired by *stippling*, with the firm fine point of a crowquill brush, the place where they exist, all over in fine dots of color, such as in combination will produce a power of tint corresponding with that of the masses they are added to, and exactly match the color of those masses—stippling being a process similar to that of pricking a piece of paper all over in dots, by means of a pin.

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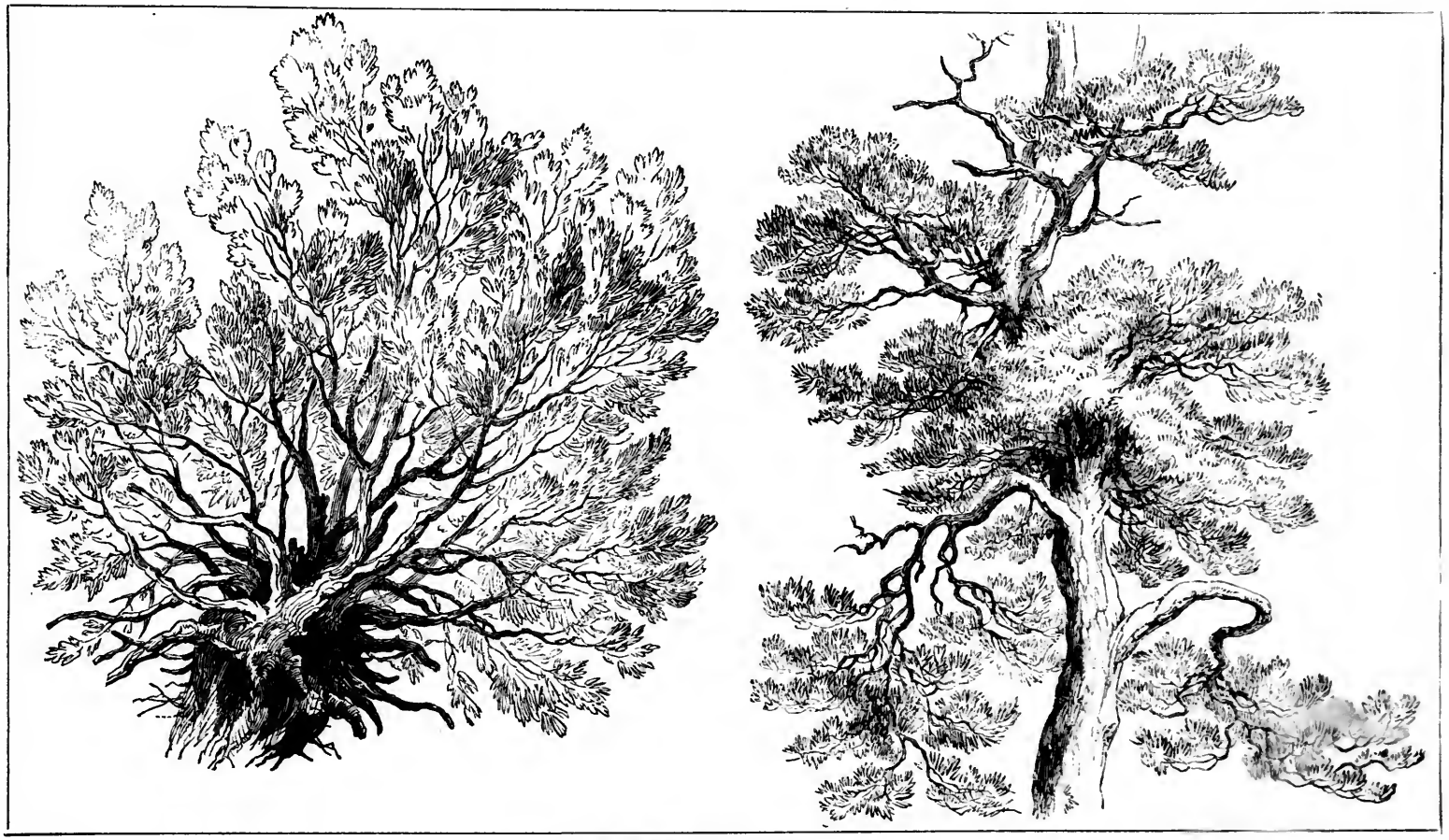

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frequently occurs, of reducing its intensity by washing the tint over with water,—it may be, likewise, rendered even through the aid of stippling; and as very small white places must often be introduced into a drawing by scraping them out from places 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, most whites turning dark very rapidly. For washing out large masses of colour 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 board should be laid flat on the table; whilst when it is being worked upon with color, it should be placed so much aslant that washes of tint, as they are laid on, can flow readily downwards; and every wash of tint worked over another wash to increase the darkness of the mass of tint it forms, generally should be laid on so that its edges blend into the edges of the underlying wash, but without *exactly covering them*; hence when a mass of tint is composed of several washes of tint, each successive wash should cover rather less space than the preceding wash, yet still cause no *abrupt edges to appear*, but merely a perfect *slight* gradation from the edges to the centre of a mass, and which serves to impart luminousness to the mass.

A learner being possessed of a drawing board, cartridge paper—which should not be very smooth—of three or four brushes, 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 the foregoing instructions, 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 the former is to commence practising color drawing through the medium that works most easily, or with *Sepia;* the requisite Sepia color copies to enable him to master the first difficulties he will have to contend with in his study of this branch of Art, now here ensue, with such directions as will assist him to imitate them with effect and advantage; and he should practise them assiduously if he desire to qualify himself quickly for beginning to work profitably with that beautiful variety of color that vies with Nature's exquisite tints.

Copy 35 shows on its right hand side half, four different shades of tint which should be imitated two or three times for the sake of practising laying in even tints of various degrees of intensity. To produce an imitation of the lightest of these tints it will be necessary to put two or three drops of water into a saucer, rub up some color into it thickly from a cake of Sepia, dilute the color detached from the cake with about a tea-spoonful of water, take up some of the mixture into a large brush, try the strength of its tinting power by washing a little on to a piece of waste paper; and should it prove to be of the right shade, proceed then to lay a wash of the mixed tint over a space, on strained drawing paper, of the size of the space covered with the lightest tint in the copy. Should the mixed tint, however, on the waste paper trial, appear to be too light, or too dark, more Sepia, or more water as required, should be combined with it in the saucer, until it has acquired a proper degree of intensity, when it may be used, after that circumstance has been finally proved by washing some of the tint on waste paper. The next darkest mass of tint on the copy should be produced by laying a wash of the last mixed tint on to

a proper space of the drawing paper, mixing up about the same quantity of color as before but of a rather darker tint, and laying a wash of this darker tint over the wash previously made, yet not until that wash has become perfectly dry, and it has also been ascertained by experiments, on waste paper, that a wash of the last mixed tint laid over a wash of the first will not make the tint produced by the two darker or lighter than the copy. The two darker masses of these tints to be copied, should be imitated through processes similar to those just described; a third quantity of color, darker than the two previously made, should be mixed for the third shade of tint, and be laid over a space which has been tinted with Nos. 1 and 2 mixtures; and a fourth quantity, of a very dark color, to be laid over a space which has been successively tinted with Nos. 1, 2 and 3 mixtures; every succeeding tint having been allowed to dry before another has been laid over it, lest the preceding one should wash up, and unevenness of tone in consequence ensue. Each tint should be mixed in a separate small saucer, or in separate compartments of a color slab.

The left-hand side half of Copy 35 furnishes one subject in two forms. In the upper form (which is not to be imitated), the trees over the building are shown produced by laying different shades of tint one over another, without an attempt to blend the edge of each layer into the general mass or to make a gradation, the unsightly unnaturalness of appearance ensuing in consequence being apparent. On the contrary, the under form (which should be copied) shows on the trees gradation of tint by the means of laying several tints one over another, so that the edge of each successive layer of tint combines with that of the underlying tint, without perfectly covering it. To obtain this effect of gradation, and of the whole subject; when a very light tint, such as given on the copy, has been washed over the outline of the whole subject, a darker tint like that covering the roof of the building on the copy should be worked over the outlines of the trees, 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 a still darker tint than the one last used, or corresponding with that given on the left hand side tree of the copy, *after the edgings of the two copied trees have been washed very slightly over with clear water*, should be worked from a little within their outlines, and so, that the tint laid on the trees, will *flow into and mix with* the moisture of the water previously washed over their edgings, towards the outlines, and cause a commencing gradation, whilst the brush is pursuing its way downwards to produce the third shade of tint, that should be laid over the masses of trees being copied. Finally, after the edgings of the right hand side copied tree have been moistened again with water, a dark tint, like that covering the corresponding tree of the copy, should be laid over the copied tree, in the manner last described for tinting the trees, but commencing more within its outline than before,—the dark and light touches requisite to bring the outlines of the drawing up to the effect of the copy should be drawn in with the point of a small brush, and this done, the drawing will be completed, and, if properly managed, a fair imitation of the copy. But the copy does not furnish an example of the proper way of depicting a tree with color, and is merely intended as a convenient medium for affording practice in producing gradation of color.

Gradation of color, however, may be produced by two other modes of proceeding, as well as by the one above given, provided only one color need be employed in working it, viz.: 1st. By using a tint (of the color to be employed) dark enough to produce the darkest part of the gradation to be depicted, laying it on to that part first, and then gradually softening off the moist color laid on, or lightening it by means of taking up water or light color into the brush, so as to carry on the tint 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 tints downwards by altering the position of the board as requisite for the process of so working them, than to wash them in by dragging the finish upwards; and 2ndly, By first using a tint light enough to produce the lightest part of the gradation to be depicted, and next continuing to take up darker and darker tints of color into the brush, as the gradation should be rendered more and more intense or deep of colour—both processes, nevertheless, though useful to practise, being more difficult to master than the one previously explained, and requiring to be performed with great skill and experience to prove effective in their results.

Copy 36 furnishes examples (which should be repeatedly imitated with sepia tints of

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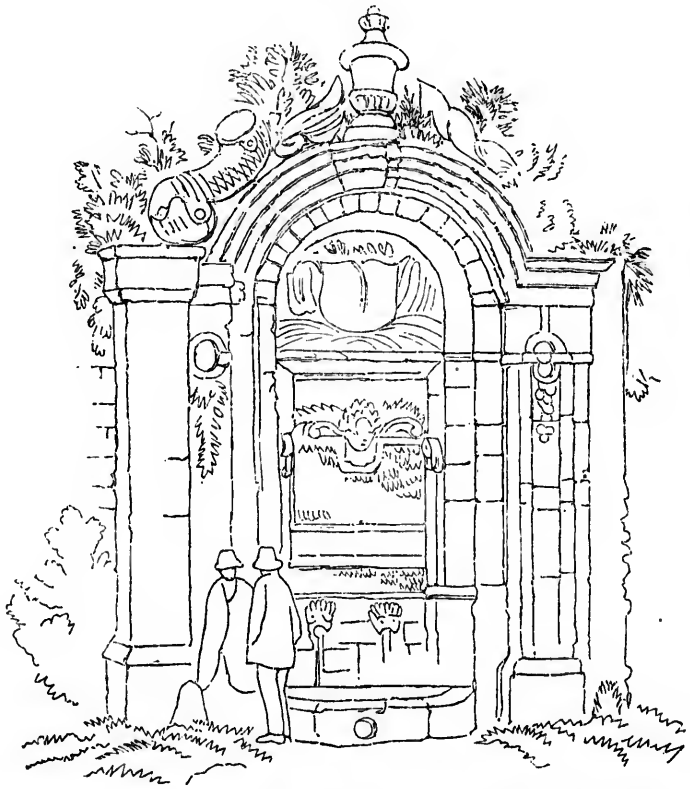
various shades) of several descriptions of brush touches that are adapted to produce characteristic imitations of foliage and herbage. A few of these touches, distinguishable by their brokenness of appearance, and contained on the upper left-hand corner of the copy, should be imitated with a so-called 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.

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

Fig. 91.



depict them 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

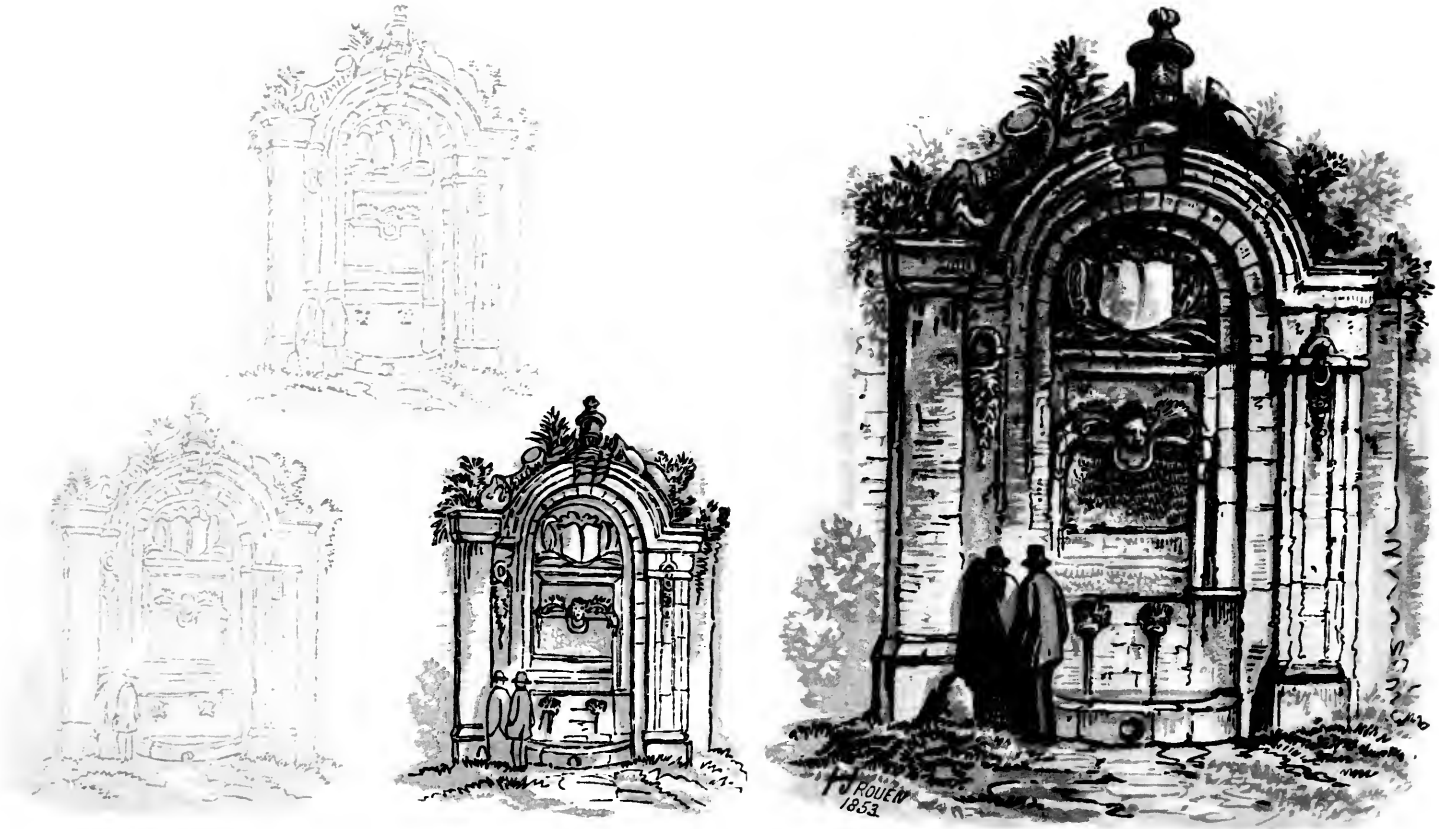
tint, and some distinctly or shewing breaks ; and the side of the point of a large brush, the hairs of which have been wrought to a point on waste paper, should be employed to make the touches according as required. One only, however, of these subjects should be undertaken at a time; and the characteristics of each should be depicted in the order of their depth of shade, commencing with the lighest 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 the first wash is dry, a second darker tint should be laid over the same portions of the drawing as the first tint was 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 those 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 color should be laid on with the brush. After the outline has been depicted, a sepia color 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 the parts of the subject corresponding with 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 it, 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 of 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 color that vary from the lightest to the darkest tints of sepia.

To produce the Sepia-color Mill-subject copy, on depicting it, it should be treated like the subject of the last copy; that is, all its forms which should be defined for the guidance of the brush should be outlined very decidedly but finely, or so that their outlines



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will not show through the tint to be laid over them; and successive washings of tint, deepening in shade one after another, should be passed over the drawing when the preceding one has become dry, whilst each should be laid on those parts of the drawing which should not appear of a lighter shade than itself. But the parts of the drawing which should present specific characteristic touch markings (requisite to show stone, or brick work, roof tiling, foliage imitations, or peculiarities of surface of any kind) that should be darker than the lightest shade of tint to be used for the drawing, should be washed over with the tint only that is lighter than they should be; otherwise when those touches are made they will appear too dark, for the shade of tint lying under specific markings *deepens their colour*; and, consequently, where such markings are to occur in a colour drawing, no tint washes should be worked over those localities that will affect the shade of the tint by which they are to be produced, so as in any way to cause the markings made by that tint to appear darker than they should be. Each specific marking, also, that is to be made of a certain depth of colour, should be put in when the wash of tint is being used, which in depth assimilates with the strength of the markings, and immediately after all the places on the drawing which are to be covered with an even mass of the same tint have been worked over.

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 shew that, although the outline of a color-drawing, if drawn in at first with a strong line, would not disappear as it should under the washes of color laid over it; yet that, on finishing a drawing, vigorous dark touches frequently should be added either to portions, or, as in this case, to the whole of the outline of a 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.

There are effects, however, in some of these copies accidentally incidental to the means by which they have been executed, that should not be imitated: namely, 1. That of occasional imperfection of outlines and greater weakness in some of their parts than there should be; and 2. That of 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 due strength of outline and tintings, in parts which would be defective if depicted without such strength; and, likewise, by imitating each of these sepia color copies carefully two or three times, according to all the directions that have been given respecting them, the use of the brush may be sufficiently mastered by learners to enable them to proceed to the practice of the superior branch of color-drawing, requiring the employment of the whole range of colors.

But as the object of this work is limited to that of elementary instruction, or is to set learners on a pleasant and easily-pursued pathway towards the domains of Art in the highest acceptation of the term, it does not come within its aim to treat of the means of producing perfect specimens of diversely colored drawings, or to endeavour to render learners perfect artists. To become such they must seek Nature as their teacher, the instant they can make good outlines, and use their pencil and brush with freedom and precision, for all the different purposes of shading and characteristic touch imitations.

Yet, although they should begin thus early to work after Nature's schoolings—and their taste and discernment, it may be presumed on doing so, have become so matured through previous exercise and cultivation, as to enable them to proceed in their studies with a certainty of ultimately acquiring a great degree of proficiency in the practice of Art by their own unaided efforts—still it is advisable they should seek the assistance of proper works treating of Art in its more advanced stages than this does, should they wish to arrive quickly at the absolute proficiency they are capable of attaining.

On Perspective.

In consequence of the existence of various systems of perspective science, which in several important respects mutually differ in their teachings, and do not lead to the production of faithful imitations of Nature, the science, hitherto, has been justly considered, by the many, an exceedingly obscure, bewildering, and unattractive study. Through these pages, however, the author trusts it will be found the reverse, as he believes he presents therein a new system comparatively simple, easy to be understood and applied, and, above all, adequate to ensure the production of results uniformly analogous to those of Nature, since it is founded on those principles alone which the study of Nature has proved to be correct in every way.

The general word "Perspective" has an extended signification. It applies to certain natural effects specifically termed Aerial Perspective, and Lineal Perspective; the former arising from the influence of what may be considered the perspective law of Nature acting upon the atmosphere through distance; the latter from the same cause acting on the surfaces of objects, and also through distance: 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. Aerial perspective, then, relatively to Nature, is the gradual diminution of the intensity and distinctness of color, light and shadow, *from* the eye *towards* the horizon or towards that circular line which is discernible where the sky seems to meet the earth; and it renders the aspect, for instance, of the extremely distant portions of a landscape sometimes perfectly grey; that of very distant color, light, shadow and form, invariably indistinct; and that of everything softer and more agreeable to the eye than it would appear but for its influence.

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.

With reference to lineal perspective, previously to entering upon an exposition of the principles and rules of this system of its science, it is advisable to devote some space to an explanation of what lineal perspective is in Nature, what it results from and what are its exact effects; because when once these matters are clearly understood, the purpose of the science and the necessity of delineating everything intended to

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be an imitation of *Nature*, in strict conformity with its principles, will become obvious, and the acquirement of a power of making drawings of objects in correct perspective be greatly facilitated.

Linear perspective in Nature is the apparent loss of size, or contraction of dimensions, which surfaces of every kind exhibit the more, the further they exist from us; and it is the result of a law that consequently causes every object to appear smaller and nearer to us than it is to an extent depending upon its distance from us. 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. 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."

But the objects of perspective confine themselves to the range of vision. And the range of vision is the compass of space clearly visible to us when the eye is fixed on a point of sight; for as the perspective of a scene depends upon our presuming, on viewing one, that its horizon is as distant from us as it would be possible for the eye to see under any circumstances, and that the glance of the eye is kept fixed exactly opposite to one point of the scene's horizon, a point termed for this reason, "the point of sight;" and since when the eye is fixed on a thus situated point, it has, in a certain portion of the space facing it, the actual compass of space that can be clearly visible at once, it has in this compass that which indicates the full bounds of the range of vision.

Supposing that at the commencement of the range of vision, a transparent surface of paper, called a perspective plane, were to stand, and any object visible through it were to recede evenly from the eye, linear perspective then is a result that 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 transparent paper, or perspective plane, just as if it were a representation depicted thereon, or, 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 outlines of all objects, existing within the range of vision, to change their actual bearings in appearance relatively to each other and to us; because it not merely, as has been stated, makes objects appear nearer to us than they are, but at the same time necessarily makes their appearance nearer to each other and to us in appearance than they are; this perspective displacement of the parts of things being an inevitable concomitant of the perspective contraction to which every thing visible is subjected.

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

From the same cause, a circle appears to change into an oval, as may be proved by hanging up a hoop, standing at arms length thereon, 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 receiving 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 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*, Fig. 92, producing this perspective effect exactly as the hoop has turned half way round.

This apparent change of relative bearings, however, is more evident in the case of a tunnel than of any other object, as may be observed in the pictorial heading to this Section, in which it is noticeable that a

be an imitation of Nature, in strict conformity with its principles, will become obvious, and the acquirement of a power of making drawings of objects in correct perspective be greatly facilitated.

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Supposing that at the commencement of the range of vision, a transparent surface of paper, called a perspective plane, were to stand, and any object visible through it were to recede evenly from the eye, lineal perspective then is a result that 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 transparent paper, or perspective plane, just as if it were a representation depicted thereon; or, 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 outlines of all objects, existing within the range of vision, to change their actual bearings in appearance relatively to each other and to us; because it not merely, as has been stated, makes objects appear nearer to us than they are, but at the same time necessarily renders their *parts* nearer to each other and to us in appearance than they are; this perspective displacement of the parts of things being an inevitable concomitant of the perspective contraction to which everything visible is subjected.

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

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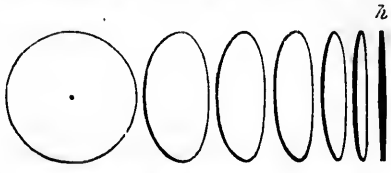


This apparent change of relative bearings, however, is more evident in the case of a tunnel than of any other object, as may be observed in the pictorial heading to this Section, in which it is noticeable that a

tunnel seemingly tapers off, or narrows, so as to appear as if it would come to a fine point if it were much longer than there represented, or extended to a certain *greater distance;* and that its further aperture appears like a small hole as compared with its nearer one, notwithstanding, ordinarily, no one part of a tunnel is wider than another, and that the apertures at each end are equally large.

Photography, also, supplies abundant proofs of the invariable tendency of all objects to appear gradually to taper off towards their further ends, according as their parts lie more and more *back* from the eye. See Fig. 93, and observe in the same figure, that the reason of this effect of narrowing, is because, (through the apparent change of relative bearings above alluded to) lines which are below the eye seem to run upwards towards the horizon, (*h. h.*) and lines above the eye to run downwards towards the horizon; that is, as regards every line one end of which lies *further back* from the eye than the other, and both ends of which lie at an equal height from the ground. Any such line, however, that has both its ends at the same height from the ground as the eye is situated, appears to *cover* the horizon line as though forming part of it; so that if such a line were to run across a scene from one side to the other of it, that line would apparently form the horizon line of the scene. See line, *a*; additional explanation of these matters, likewise, are afforded further on in the remarks on vanishing points.

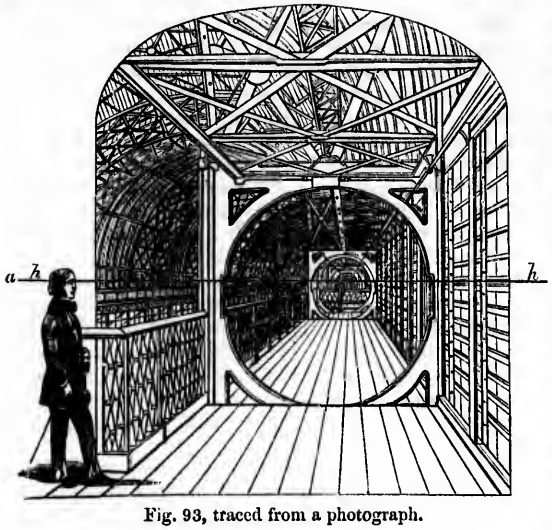
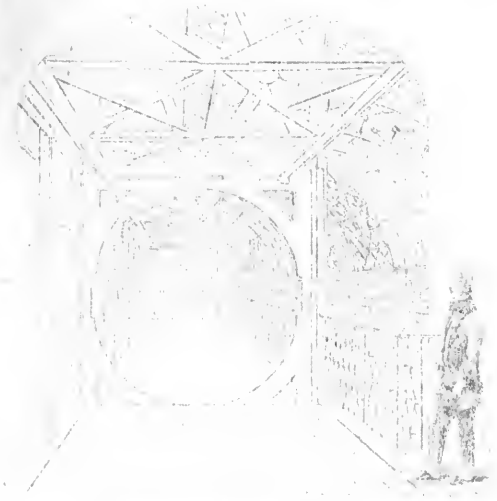


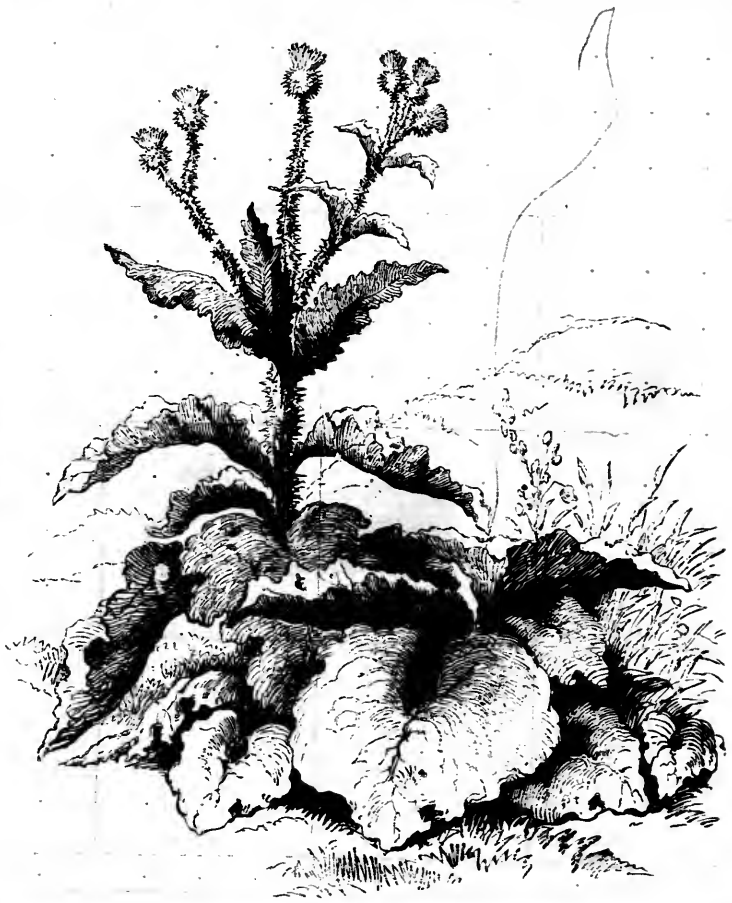
Fig. 93, traced from a photograph.

The general effects, then, of lineal perspective, or that the perspective law of Nature produces, it has been shown are such as to cause everything within the range of vision to seem to be in a state of contraction. A state making everything, whatever may be its distance from us, appear smaller than it is; nearer to us and to other things than it is; as well as usually of a different shape in some of its parts than it is; and as if its visible surfaces were lying on an imaginary transparent surface, called a perspective plane.

We may consider this law to be in fact a benign provision to increase the utility and our enjoyment of the faculty of sight, the powers of which, as respects the advantages we derive from them and constituted as the visual organ is, would be comparatively limited but for such a provision. For owing to its influence on the dimensions of things, in rendering them apparently excessively smaller than they are, near portions of space and near objects do not prevent more distant ones from coming within vision range so much as they would do but for it; whilst the eye is enabled thereby, without change of position, to see an enormously larger amount of actual space, or to a far greater distance, as well as a far greater quantity and variety of objects that it could otherwise. And as, besides producing these effects, it also causes the visible surfaces of all objects within the range of vision to appear as if lying upon the surface of a perspective plane intervening between them and the eye—*as a sheet of glass might intervene*— it mainly enables us, for the purpose of representation, to select from a fixed point of view a portion of a far extending scene, consisting of a large mass of the earth's surface and of objects which together present a nearly incalculable amount of surface to our gaze, and to delineate the whole distinctly on a flat drawing plane of almost the smallest comparative dimensions.

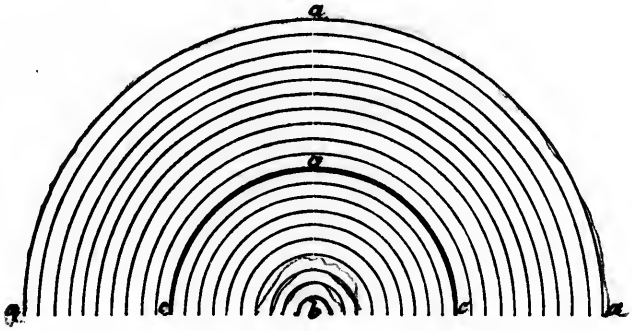
The exact character and consequences of perspective contraction, however, can be most easily comprehended by imagining; 1. A scene composed of the greatest extent of level





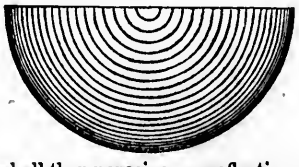
country, or by supposing the most extensive portion of the earth's surface that can lie before us, to be observable with a number of circular lines upon it existing parallel with and enclosed by its horizon, and extending from each side of the point of sight to the limits of the scene; as represented by *b*, for our position, by *a a a*, for the horizon, by the central *a*, for the point of sight, etc., Fig. 94. 2. *That* the nearest circular line

Fig. 94.



to us, is distant 10 ft.; the second, 20 ft.; the third, 40 ft.; the fourth, 80 ft.; the fifth, 160 ft. and so on; or that in a straight direction from our position to the point of sight (from *b* to centre *a*, Fig. 94), each line has existing between it and the line succeeding it, a doubly greater depth of space than exists between it and the line preceding it; 3. Then, *that*, the depth of space between us and the first line appears less than it is; that the depth between the first line and the second, or of the second space, appears less than the apparent depth of the first space; that the apparent depth of the third space, *is one half less* than that of the second space; and that the apparent depth of every one of the succeeding spaces is one-half less than that of the space immediately preceding each of them, notwithstanding the former is actually twice as deep as the latter, and that the latter appears, besides, enormously contracted! 4. *That*, through continuous proportionate perspective contraction of each space as it exists further from the eye, rendering the successive depths of the spaces narrower and narrower, eventually there is no longer any depth of space apparent between the last circular line and the horizon, or that the last space, though actually much the largest and deepest of all becomes invisible, and appears like the thinest possible line merging completely into the horizon circular line, and virtually forms the horizon.—Fig. 95, shewing in some degree the perspective effects described, as regards the apparent narrowing of spaces (though not their proportional contraction) and the consequent obliteration of the depth of the last space, or, of the space itself.

Fig. 95.



Having carried the imagination through this process, we shall then perceive, on reflection, that if the scene imagined were a real one (and the effects in Nature produced through perspective contraction correspond in all respects with those such a scene would present to the eye) the following consequences would manifest themselves.

1st. Each circular line comprised in the scene would appear to have lost as many feet of its distance from us as the whole space between it and our position would appear to have lost of its depth; and as many feet of its distance from the lines preceding it as the whole space between it and them would appear to have lost of its depth, as well as appear, therefore, proportionally nearer to us, and to each line preceding it, than it is.

2nd. That as all the spaces enclosed between the horizon and our position would appear so much contracted as described, the depth of the whole space between us and the horizon point of sight necessarily would appear enormously less than its actual depth; and hence the horizon circular line would appear proportionally nearer to us and to each circular line it encloses than it is; or, as if it had lost distance from us, and length of

circumference—just as the circular line *a a a*, representing the horizon with regard to *b* representing our position, Fig. 94, if it were to advance into the position *c c c* towards *b*, contracting in dimensions the while, would lose distance from *b*, and length of circumference by the movement. The actual effect of perspective contraction upon the real depth of the whole of the space existing between the point of sight, central *a* Fig. 94, and our position *b*; or, upon that of the full amount of space that can come within the portion of the range of vision which exists between us and the point of sight; being such as to cause that depth to have an apparent extent no greater than can be measured by the 5 feet of perpendicular height which alone is presumed, in perspective science, to exist between our eyes and the ground, as represented by Fig. 96: and the effect upon the horizon and the point of sight, therefore, being the well known one of causing them, invariably, to appear on a *level with the eye* when elevated 5 feet or more above the ordinary level of the earth; or, to have an apparent level, the height of which *above the level* of the *apparent lower extreme* of the range of vision, is but 5 feet. Fig. 97 representing what is meant by this level; for, as the level of the apparent lower extreme of the range of vision cannot be below the ground station point *a* Fig. 97, of a man 5 feet high standing upright, and presuming that we stand upon the ground and as the man is represented in this diagram as standing, that is, looking along an imaginary line in the direction of the horizon—these circumstances being taken in consideration, the level of the horizon and of the point of sight would appear to us to be the same as that of the line running from the eye, and thus not higher above the level of our ground station point *a*, than is the line running from the eye,—or, more than 5 feet above the level of the apparent lower extreme of the range of vision, *that* level and the level of the ground station point of any one standing with the eye elevated 5 feet above the ground, being identical.

Fig. 96.

Fig. 97.

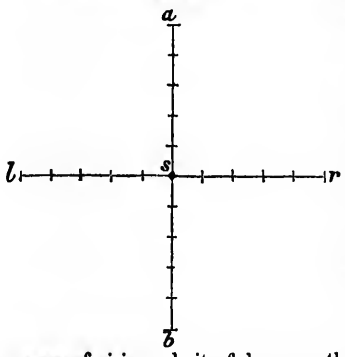
3rd. That as the apparent magnitude of everything diminishes in the same proportion as its distance from us increases, the magnitude of *every visible portion of the earth's surface* occupied by the scene between us and the horizon, as well as of every visible portion of *all the objects connected* therewith, *would appear* less than it actually is, in proportion to the distance of each from us; and consequently all the visible features of the objects enclosed within the horizon of the imagined scene, represented by *a a a* fig. 94, would appear contracted as well as the horizon and remain visible to us within its perspective position suppositively represented by *c c c*, fig. 94, but appearing so much smaller than they are, and perspectively displaced or nearer to each other and to us than they are, as to seem to lie pictured as it were on the surface of a perspective plane, previously described as standing at the commencement of the range of vision.

More correctly to speak, however, a perspective plane must be *considered to be* a tranparent surface, as of glass, which, wherever we may be in an erect posture, with the eye five feet or more above the ordinary level of the earth, stands at one invariable distance from us with its centre opposite the eye; and *to extend* to what must be deemed to be the *apparent greatest limits* of the range of vision perpendicularly below and above, and horizontally to the right and left of the point of sight. That the distance *is always* 10 *feet*, at which we should suppose the plane to stand from us, will now be demonstrated, with other matters of equal importance to the establishment of the true principles on which a system of perspective science should be based, calculated to lead to the faithful imitation of the effects of the perspective law of Nature.

For, bearing in mind that the point of sight, besides being a point on the horizon opposite the eye, must necessarily be the centre of the range of vision; likewise, that the extent of the apparent greatest limit of the range of vision *below* the point of sight can merely be 5 feet, because the apparent level of the point of sight is but five feet above the level of the apparent lower extreme of the range of vision; and, that the extent of the apparent greatest limit of the range *above*, and to the *right* and *left* of the point of sight, also, can merely be 5 feet, or the same as the extent below the point, because,

as the point of sight is the centre of the range, there must be the same extent of range all around it; hence, that the range has an apparent extent perpendicularly from below to above the point of sight *s* (Fig. 98), that is, from its lower extreme, represented by *b* below, to its higher extreme, represented by *a* above, of but 10 feet—and an extent horizontally from its left hand extreme *l*, to its right hand extreme *r*, likewise of 10 feet—*the number of feet* in each direction that denotes what must be deemed to be the apparent greatest limits of the range perpendicularly and horizontally, and to which limits, as before stated, a perspective plane must be considered to extend: for, these things being borne in mind, as consequently a perspective plane suppositively must extend perpendicularly to *s*, 5 feet below, and to *a*, 5 feet above the point of sight *s*; and horizontally to *l*, 5 feet to the left, and to *r*, 5 feet to the right of the point, that is altogether 10 feet each way, or have a height forming a perpendicular line, and a width forming a horizontal line, each 10 feet in length, which lines must be as fully visible to us as the circumstances affecting our powers of vision admit of, because they form the apparent height and width of the range of vision, and have their centres opposite the eye; hence, also, they must be held *to be at the distance of* 10 *feet from us*, because it has been determined as a general law of optics that a perpendicular or a horizontal line to be as fully visible *as possible* or as above described, must exist at a distance from us equal to its length, and with its centre opposite the eye.

Fig. 98.



And not only do the lines forming the height and width of a perspective plane, and therefore does the plane itself presumptively exist at a distance from us of 10 feet, but, as every part of these lines, were they real ones, would be 10 feet from us, if from their extremities other lines were brought to the eye those lines would make an angle of 60 degrees with the eye, or one corresponding, as it should, with the assumed angle of vision. Nor can effects intimately agreeing with those of the perspective law be produced by art, —that is, shewing the apparent size of an object diminishing in the same proportion as its distance from the eye is increased, or, as being one half less when represented as standing at any particular distance from the eye, than it would be when represented at only half that distance, unless we assume that it exists pictured, as it were, on a perspective plane distant 10 feet from us, and frame our perspective plans for drawings in accordance with that assumption, commencing them either actually or virtually, at a horizontal line, denoting the 10 feet distant base line of a perspective plane. Although there can be no objection to certain deviations in a drawing from the perspective effects of Nature, when it is desirable, as it is sometimes, to depict an object as standing nearer to us than 10 feet; and objects thus represented may be brought into a perspective very analogous to that of Nature by the employment of special means, as shown elsewhere.

A perspective plane, then, being an imaginary transparent surface, as of glass, 10 feet high and 10 feet wide, or that consistently with perspective effects, may be considered 10 feet square, suppositively standing 10 feet from us with its centre directly opposite the eye, when the level of the latter is 5 feet or more above the ordinary level of the earth,—if a sheet of glass, 10 feet square, as denoted by Fig. 99, were placed 10 feet from us, with its centre directly opposite the eye, to represent a perspective plane, and we were to witness through it a scene, comprising the earth's horizon line and a series of horizontal lines apparently underlying it therefrom along the earth's surface to the base line of the glass, or, as it were, from *h h* to *b b*, and each of which lines, whatever is its actual length, appears to extend exactly from one side of the glass to the other, or from *l* to *r*, we should perceive as follows:—

Fig. 99.

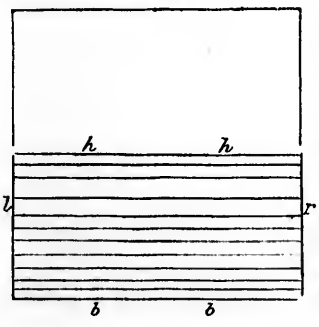
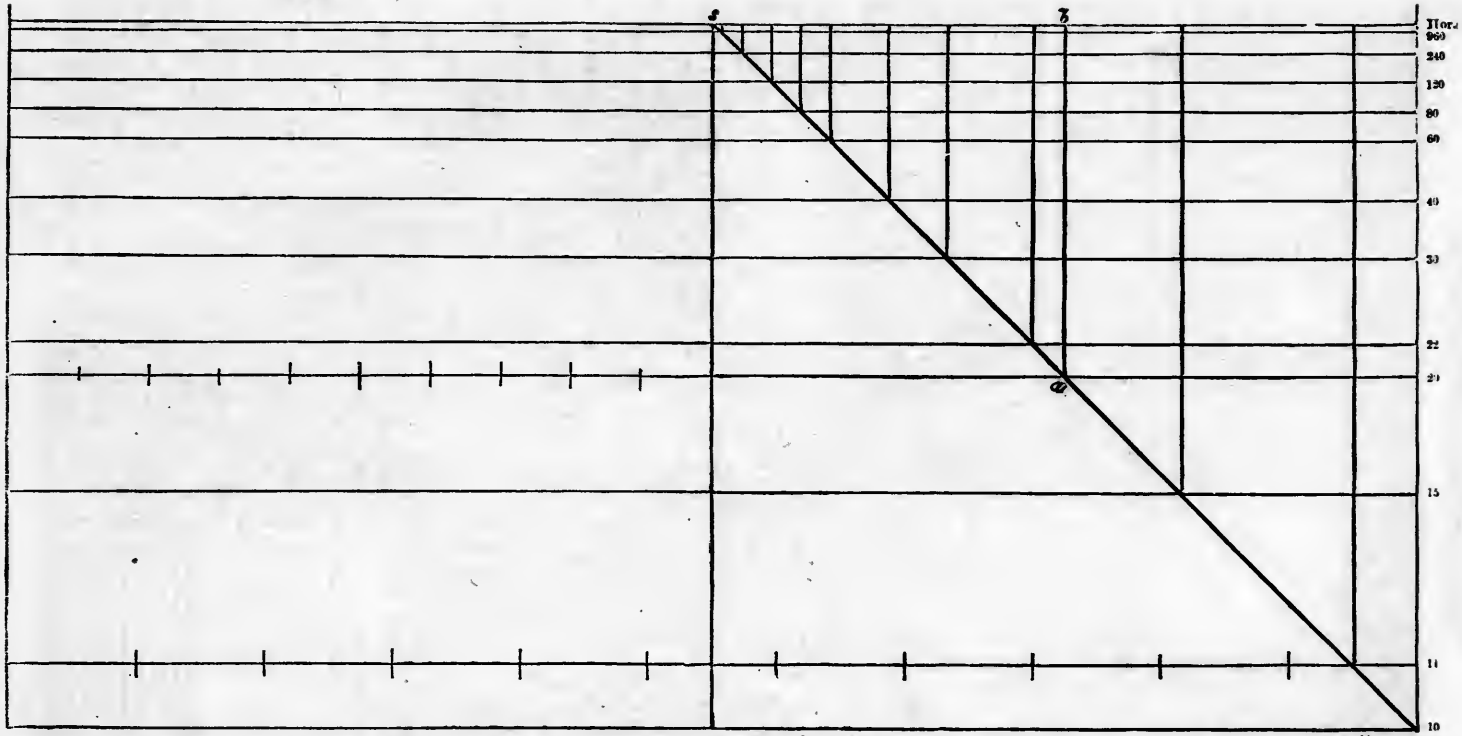
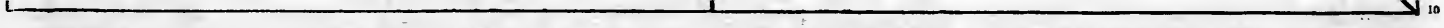


Fig. 100.



This diagram represents, on a very small scale, a perspective plane, from the horizon (hor.) downwards, or the lower half of a plane. The lines parallel with the horizon line denote "widths of range." The figures at the end of each width of range denote that it is, according to those figures, represented as being so many feet long, and *as many* feet from us: thus, for instance, 20, means 20 feet long, and 20 feet distant from us, and so on. Each perpendicular line, running downwards from *the level* of the horizon to a width of range, represents a man's perspective height of 5 feet perpendicular, or 5 feet between the level of the width of range, the perpendicular touches, and that of the horizon; and denotes, also, the length of line that correctly represents 5 feet of that width of range. Whilst each width of range measures as many times one fifth part, or one foot of the 5 feet perpendicular standing upon it, as is equal to its stated length of either 10, 11, or of any other number of feet.



This diagram represents, on a very small scale, a perspective plane, from the horizon (hor.) downwards, or the lower half of a plane. The lines parallel with the horizon line denote "widths of range." The figures at the end of each width of range denote that it is, according to those figures, represented as being so many feet long, and *as many* feet from us: thus, for instance, 20, means 20 feet long, and 20 feet distant from us, and so on. Each perpendicular line, running downwards from *the level* of the horizon to a width of range, represents a man's perspective height of 5 feet perpendicular, or 5 feet between the level of the width of range, the perpendicular touches, and that of the horizon; and denotes, also, the length of line that correctly represents 5 feet of that width of range. Whilst each width of range measures as many times one fifth part, or one foot of the 5 feet perpendicular standing upon it, as is equal to its stated length of either 10, 11, or of any other number of feet.

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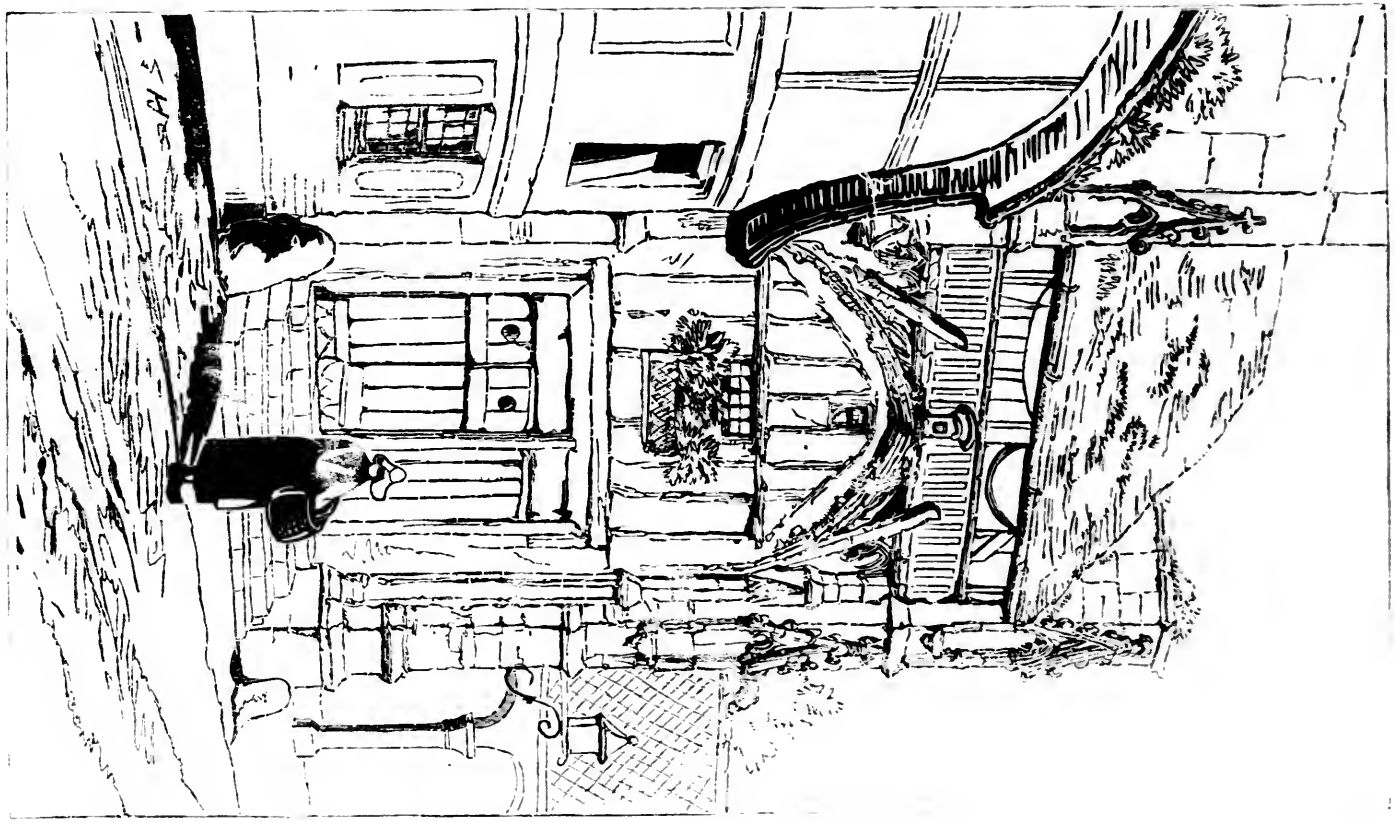


1. That, as the glass represents a perspective plane, and the latter, if real, would display, as seemingly pictured on its surface, the actual amount of space that can come within the range of vision from above to below, and from the left to the right of the point of sight; that hence the representative glass would positively do so, or display a *natural picture*, having natural limits, that is, apparently not extending beyond the edges of the glass; and, therefore, that the amount of space beyond 10 feet from us, that can come within the range of vision forms a natural picture no larger than the apparent dimensions of a sheet of glass 10 feet square, which is placed 10 feet from us, with its centre opposite the eye.

2. That, as the level of the centre of the glass would be the same as that of the eye, and since the horizon would completely surround us, also on a level with the eye; that hence the horizon would run across through the centre of the perspective plane represented by the glass and of the natural picture displayed by it, and half way between their top and base lines, or parallel with and 5 feet from both.

3. That, as the point of sight would be a point directly opposite the eye on the horizon of the scene; and as the centre of the glass, of the perspective plane it represents, of the natural picture and of the horizon it displays, would be opposite the eye, hence the point of sight would appear identical in position with that centre, and must therefore always be the centre of a perspective plane, of a natural picture, and of the horizon.

4. That, as the horizon of a natural picture (although it, as well as every line that extends like it, and parallel with it, from one side to the other of the range of vision, is actually a circular line, equi-distant in all its parts from the eye, yet) necessarily forms through perspective a straight horizontal line extending, with its centre opposite the eye to the greatest width of the range of vision—therefore to the width of a perspective plane—and thus must be as fully visible to us as possible or as far from us as its length; whilst as, also, its apparent length must correspond with that of the 10 feet width of the glass representing the perspective plane; hence, whatever may be the actual length of this horizon line, its apparent length can be but, what may be said to be in general terms, 10 feet.

5. That, as all horizontal lines of a natural picture, which exist with their centres opposite the eye, and each of which extends to the width of some part or other of the range of vision, and thus to that of a perspective plane, must be as fully visible as possible, or each as far from us as its length; and since the apparent length of each cannot be greater than that of the base and horizon lines of a natural picture; hence all these lines—which may be fittingly termed WIDTHS OF RANGE—consequently, *always appear to be of an equal length!*

Thus the various widths of range shown on the partial delineation of a perspective plane fig. 100, as representing the horizon or greatest actual width and other actual widths, and which are perspectively represented in the diagram each as being as far from the eye as its length, are all of an equal length. And it may be proved they are represented as stated; firstly, by comparing the proportion of line denoting 5 feet perpendicular, given on the diagram between the centre of the represented 10 feet width of range properly forming the base line of the delineation of a plane, and the point of sight *s*, with the proportion of line denoting 5 feet perpendicular from *a* to *b*, existing on the diagram between the represented 20 feet width of range and the horizon—the latter perpendicular being as it should be, but one half the size of the former: and secondly, by measuring the represented 20 feet width of range with the length of line *a b*, standing thereupon denoting 5 feet perpendicular. For, as the level of the horizon would appear, to a man, standing at a distance from us on any width of range, to be even with his eye or 5 feet above the level of the width of range upon which he stands, there is always 5 feet perpendicular between a width of range and the apparent level of the horizon: and, as the proportion of line denoting 5 feet of a perpendicular line, necessarily denotes also 5 feet of the horizontal line on which the perpendicular stands, a properly represented 20 feet width of range necessarily would measure four times the length of line indicating 5 feet of any perpendicular standing on it—as it will be found on trial with compasses the 20 feet width of range represented in this diagram exactly measures. Whilst, likewise, every other width of range represented, if similarly tested, will prove to measure as many times the length of the 5 feet perpendicular standing thereupon between it and the horizon, as it should do—or, as *many times one fifth*, or foot, of that perpendicular as are equal in number to the number of feet comprising the width of range on which it stands.—Each 5 feet perpendicular, also, showing a length, as compared with that displayed by any other 5 feet perpendicular represented as standing nearer than it to the eye, diminished in proportion

to its represented greater distance of the two from the eye: the length of the 5 feet perpendicular standing on the 40 feet width of range, being one half less than that on the 20 feet width; that of the 5 feet perpendicular on the 120 feet width of range, one half less than that on the 60 feet width; and the latter again being one half less than the 5 feet perpendicular which stands on the 30 feet width of range.

To recapitulate—we should perceive through placing a glass so as to represent a perspective plane, these consequences.

1. That the actual amount of space which can come clearly within the range of vision, or that comes within what is considered to be *the range*, presents itself to the eye in the form of what may be termed a *natural picture* no larger than the apparent dimensions of a sheet of glass 10 feet square existing at 10 feet from us.

2. That the earth's horizon appears to run directly through the centre of the natural picture parallel with its top and base lines, or half way between each; and that the point of sight is the central point of the picture and of its horizon.

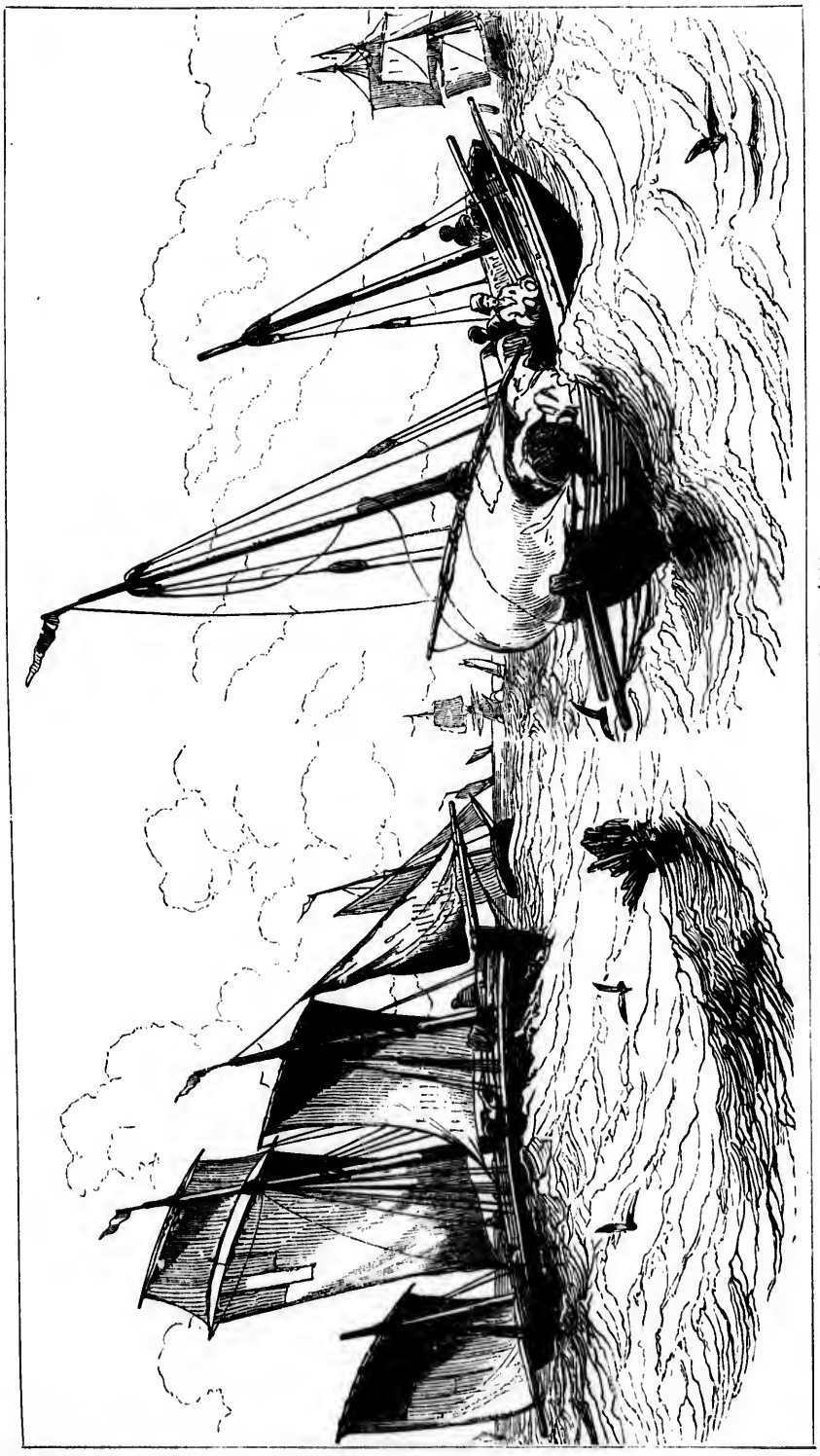
3. Also, as regards the horizon and base lines of the natural picture, as well as all other horizontal lines, extending right across it; it would be seen, that although they would be of an equal length, yet that each, according to its position, must represent the width of some one part or other of the range of vision, or represent an imaginary horizontal line existing as far from us as its length—whether it were, as it might be, many miles in length or only a few feet; and, therefore, that the apparent lengths are equal (or not greater than that of the 10 feet width of the natural picture), of all horizontal lines which exist as far from us as their length, and with their centres opposite the eye, or, in other words, of all widths of range.

4. That, as regards any one, observable through the glass, and standing at any distance from us, it would be perceived that there appears to be between the level of the imaginary horizontal line forming the width of range on which he stands and the level of the horizon, a height of 5 feet; and that as the top of the head of a man so standing is considered in perspective, to be 5 feet from the ground, or presumptively on a level with the horizon, that, therefore, there is 5 feet from the top of his head downwards to any width of range on which we may see him standing, whether he be on a 100 feet, a 1000 feet, or any other width of range. The reason why the height of a man in perspective is considered to be 5 feet, being because if it be always esteemed so, we have only to place a man of a right perspective height in any part of a drawing, and we can then conveniently shew how much length of line indicates 5 feet perpendicularly or horizontally in that portion of the drawing. Thus, for instance, if we want to indicate the real height of a building in a certain part—by placing a man against it, perspectively 5 feet high, according to the width of range he stands upon—that is, to his distance from us—if the building be drawn of its right height, we enable any one, by a comparison of the depicted height of the building with that of the man, to judge of how much difference of height there is between them, and hence of the true height of the building, provided the man and the building be placed on the same width of range. But, whether we place one on the same width of range or not, that we place another object, as a man in perspective has a fixed height, through that circumstance one placed in a drawing always assists the judgment in estimating the relative heights of the other objects contained on the drawing.

5. That the length of line which appears to be equal to the 5 feet height of a man, is equal to 5 feet of the width of range on which he stands; and, that as many feet as there are in that width of range, so many times it will measure in length one fifth of his apparent height.

6. That the length of line that appears equal to one foot, or to any fixed number of feet, of a perpendicular or horizontal line standing at any certain distance from us beyond 20 feet, appears to diminish one half when its distance from us is doubled.

7. And, lastly, that as perspective has reference to a natural picture of a certain form and dimension previously indicated, and gives to the picture that form and dimension by the way it acts upon the earth's horizon and all objects visible to us within the range of vision—consequently whatever may be the subject of a drawing, it should be depicted actually or virtually as if belonging to a natural picture, and in an imitative perspective corresponding with that of the natural picture to which it actually or assumedly belongs. That is, as a natural picture is square, etc., the perspective plan of the drawing should be; 1st, square; 2nd, the horizon should run right across through the centre of the plan parallel with



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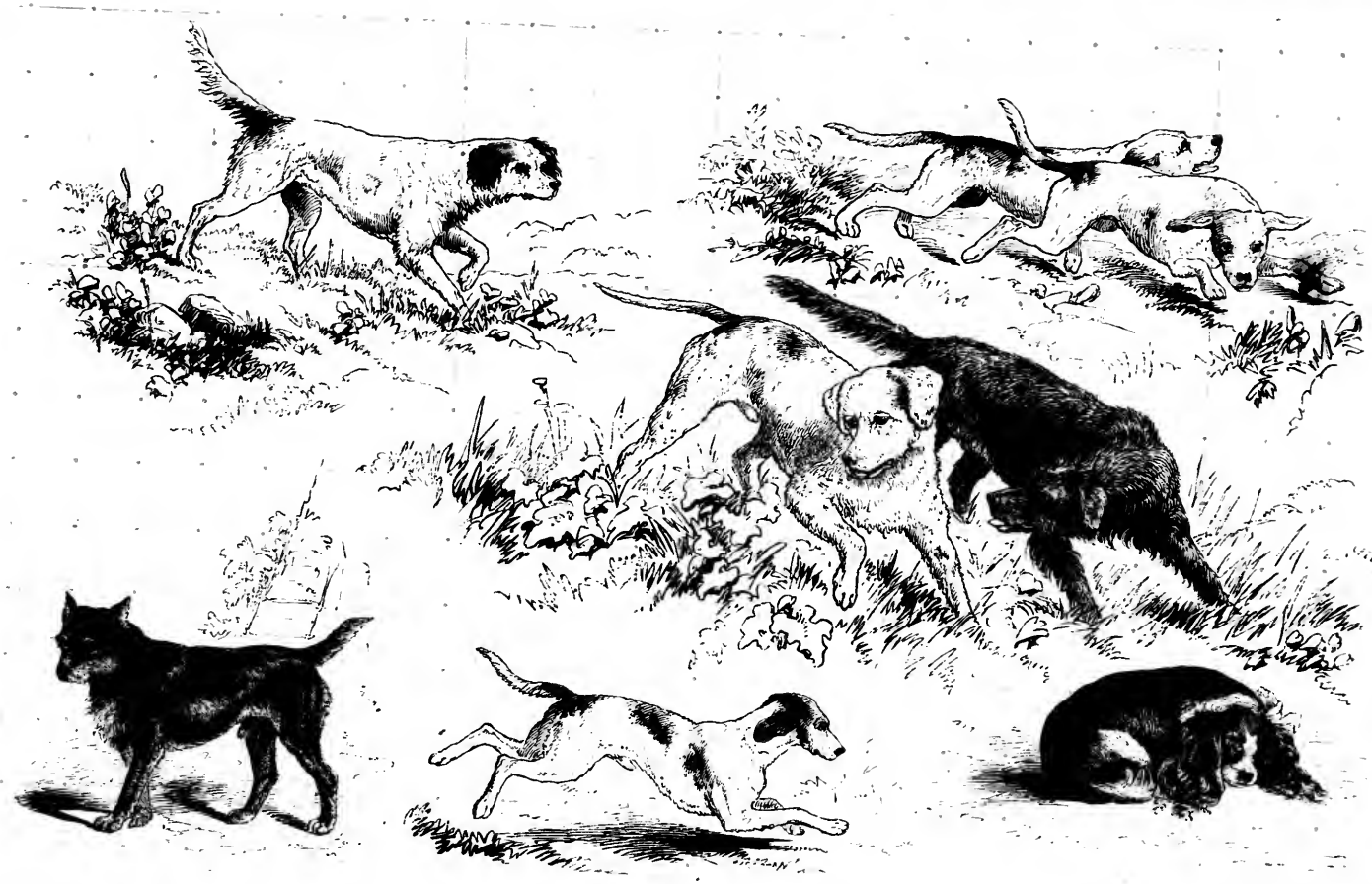

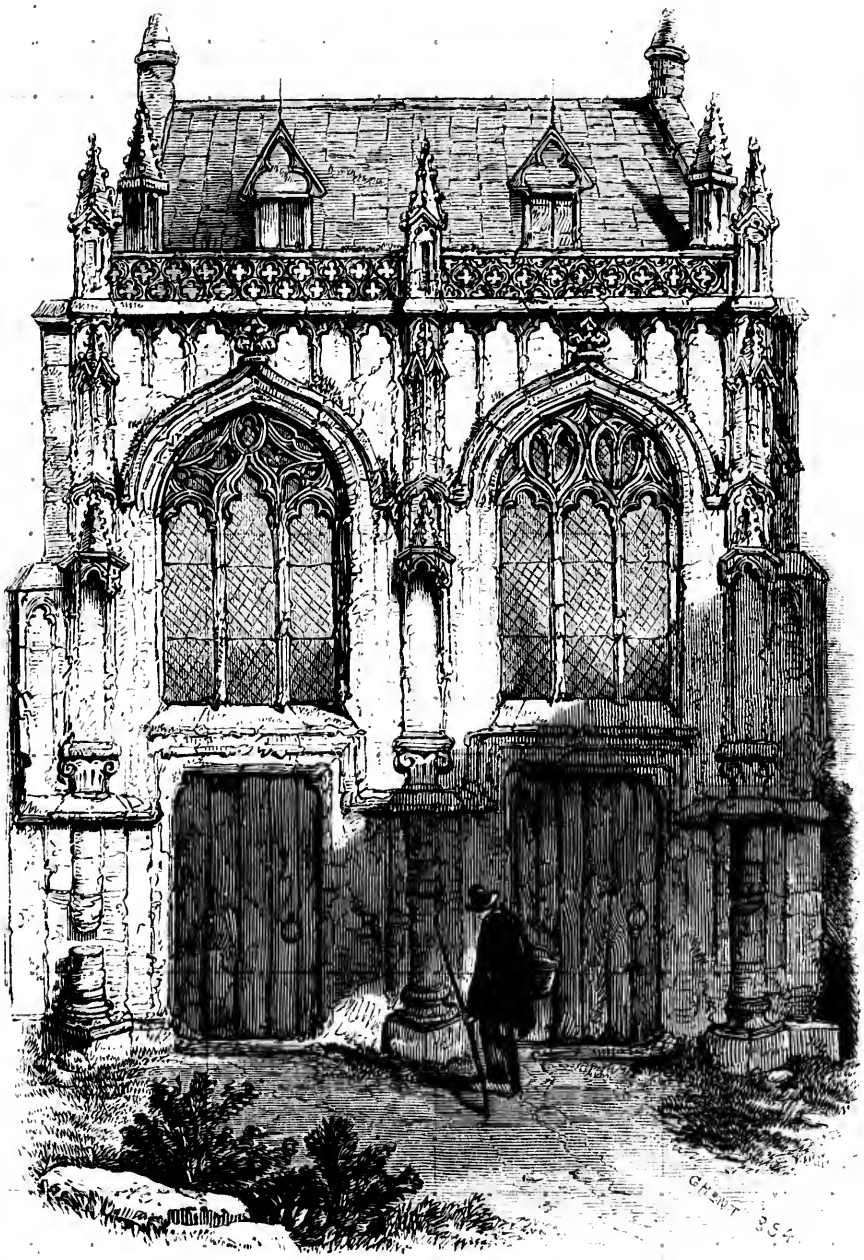
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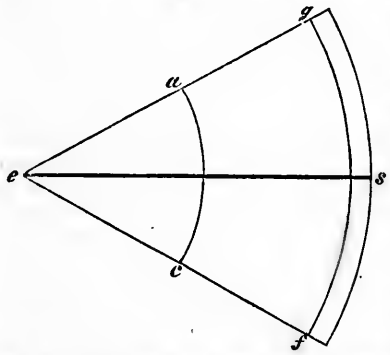
its top and base lines, and the point of sight should be the central point of the plan, drawing, and horizon; 3rd, the base line of the plan should represent a line 10 feet long and 10 feet distant from us; and 4thly, all widths of range represented on the plan should be of the same length as the horizon and base lines of the plan, and each be so placed as correctly to denote a distance from us equal to its length. Whilst objects, put into perspective on the plan, should bear such a relative proportion to each other as that the length of line indicating a foot's space on a perpendicular, or horizontal line, belonging to one object to be shewn as standing at any certain distance from us, should be double the length of line indicating a foot's space of the similar lines of another object to be represented as standing from us at double the distance of the first named object.

Not that it follows, however, that, because a perspective plan should, as a matter of principle and methodical proceeding, be made square, the drawing made upon it ought necessarily to be so as well; for, if we prefer to make the drawing less wide than high, or the reverse, we can do so consistently with correct perspective by commencing it at a base line denoting a width of range longer and more remote than 10 feet, or than the proper base line of a perspective plan indicates, all of which will be more fully explained in another part of this treatise.

But for the purpose of enabling students of perspective to obtain a clearer conception of what is meant by the range of vision than they may be able to gather from the foregoing references that have been made to it, its characteristics may be further described as follows.

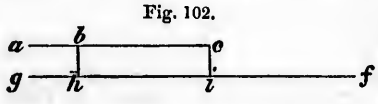
Supposing, then, when the eye is kept immoveably fixed on an horizon-point of sight, that it *were* to throw forward a line extending to the point of sight, or as from *e* to *s*, Fig. 101, and therewith a series of other lines, each as long as the first named, but inclining away from it at an angle of 30 degrees—that is, a series of lines surrounding the first and forming around it a conical shaped funnel, a central section of which is indicated in Fig. 101—these things being imagined, the range of vision is the power of the eye, when it is fixed in one position, as for instance on a point of sight, to see clearly an extent of space presumptively having a boundary running from a point in the eye as from *e*, to above and below the eye and to the right and left of it, as such a funnel would run. Whilst, though the actual length of the width of space extending between each two opposite points of this funnel-shaped boundary, that exist the one at the same distance from the eye as the other, must necessarily form a line the length of which is equal to the length of that distance—or where the distance, for example, is 20 feet, the width of space must form a line 20 feet in length—nevertheless no such two points can have a greater apparent width of space or length of line between them than any other two have,—because when, as in this case, length of line actually increases to the same extent as length of distance from the eye increases, the line's length always perspectively contracts just as much as it actually increases, or if it actually increases one foot it perspectively diminishes one foot, and so on. Therefore, if a line, the length of which is equal to the length of a width of the boundary close to the eye, were to travel away from the eye towards the point of sight and continuously between two directly opposite points of the boundary; and, at the same time, were to increase its length as much as either its distance from the eye, or the width of the boundary, would continue increasing in length during its progress, it nevertheless could not obtain by so doing a greater apparent dimension than it had at first.

Fig. 101.



Hence the apparent length of the width of actual space represented by the line *g f*, Fig. 101. is not greater than the apparent length of the lesser width of actual space represented by the line *a c*. For if we presume, that the width of space *a c* (see Fig. 102) loses perspectively through its distance from the eye, as much of its

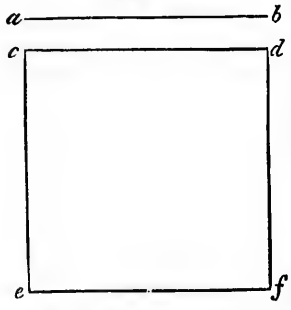
Fig. 102.



actual length as may be denoted by the length of line from *b* to *c*, or that it has only an apparent length that may be denoted by the length of line from *a* to *b*; *then* the width of space *g f*, must not merely lose perspectively a portion of its actual length equal to the length of line *b c*, or as from *h* to *i*, but also all of its additional length, or as from *i* to *f*—and thus, this width of space can have but an apparent length that may be denoted by the length of line from *g* to *h*—or a length not greater than that indicated by the line running from *a* to *b*, and denoting the apparent length of the width of actual space represented by *a c*.

Consequently one uniform length of line, as previously intimated, will represent correctly the apparent width of every part of the funnel-shaped boundary of the range of vision, or in other words, of the range of vision; and as, whatsoever may be the actual width of any particular part of the range, the actual height of that part must have the same dimensions as its width, the length of line that represents the apparent width of every part of the range, must equally correctly represent the apparent height of every part of it; so that, supposing the length of line from *a* to *b*, Fig. 103, to denote this one uniform length of line representing the apparent width and height of every part of the range, it must, then likewise, represent *the apparent length* of the greatest and least, and of all intermediate widths of the range above the eye (as indicated by the line *c d*, Fig. 103), and of the same below the eye (as indicated by *e f*);—as well as the apparent length of the greatest and least and of all intermediate heights of the range to the left of the eye (as indicated by *c e*), and of the same to the right of the eye (as indicated by *d f*);—or the apparent length of each of a set of lines, every one of which is as distant from us as it is long as well as the remotest line, relatively to what must be its position under such circumstances, that can be visible to us, without removing the eye from the point of sight of the range of vision to which the line belongs. These matters, it will be seen on reflection, proving that the *apparent boundary* of the range of vision must be considered to have the form of a square, as *c d*, *e f*, and, combined with the others stated as above with respect to the range, being important facts, a knowledge of which enables us to ascertain the true principles on which to base the science of perspective, and to impart correctness, precision and facility of proceeding, devoid of all that is obscure and arbitrary, to every operation of practical perspective, especially as regards:—the length of line that should be adopted to represent the horizon in a picture,—the height at which we should place the horizon line above the base line of a picture,—and above all as regards the position on the horizon line in which we should place the representation of an imaginary point of primary use in practical perspective, and yet to be further noticed, that may be fittingly termed the *determinative point*, since it denotes a point in Nature which may be looked upon as being one that presumptively determines or controls all natural lineal perspective effects.

Fig. 103.



To return to the general consideration of the effects of the perspective law of Nature, although through its influence, the horizon always appears to have a level of 5 feet above the apparent lower limit of the range of vision, there are circumstances, which now require notice, under which the horizon must be considered to have a different apparent level without having it actually. These circumstances occur when we take what is called, a "Bird's-eye-View" of a scene, or when we view one with the eye elevated more than 5 feet above the ordinary level of the earth's surface. For, when we begin to ascend above this ordinary level, the horizon appears to ascend to the same extent as we ascend; consequently (as thus the eye and horizon always appear to be on a level with each other) when we are on an eminence with the eye elevated 100 feet above the ordinary level of the earth's surface, the apparent level of the horizon must be presumed to be 100 feet above the ordinary level of the earth's surface—or above the level of the sea, the level of the former being estimated to be the same as that of the latter—whilst it must then also be considered to be 100 feet above the apparent lower limit of the range of vision.

As the mode of proceeding, therefore, which has been described for making a drawing in perspective, refers only to drawings which are to represent scenes viewed from an ordinary level, a different mode must be adopted for making drawings of Bird's-eye-Views, as given in the ensuing instructions for making perspective drawings.

Two other effects of the law inevitably resulting from the perspective contraction and displacement of lines it causes, and the description of which will conclude this summary of the consequences of the law, have reference to what are termed perspective vanishing points, and to the determinative point.

Vanishing points are imaginary points to which lines perspectively converge that do not lie parallel either in a horizontal, perpendicular, or oblique direction with a perspective plane. For this law causes every line that lies at an angle with the perspective plane to diverge perspectively out of its true course, and apparently converge towards a vanishing point, or point situated where the line, if it were to extend to beyond the utmost distance the eye can see, would perspectively terminate, or become invisible and vanish from observation. Therefore, if anything, 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 an evenly slanting direction and in such a manner, that if it were to proceed to a distance beyond that of the horizon 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 lines that are neither perpendicular nor horizontal, and that lie *in a direction towards* the horizon, parallel with the ordinary level of the earth's surface; so that if a visible line divided into spaces, each, for instance, one inch long, were to extend to the distance, from us, of the horizon and lie in a position either above or below the eye, parallel with the ordinary level of the earth, the nearest inch of the line would appear to slant out of its true direction or to converge towards a particular perspective point of the horizon, and each succeeding inch would do so likewise in a direct line with the first inch, therefore towards the same part of the horizon as the first inch would converge towards; whilst the further extremity of the last inch would appear to touch that part—or the whole line would tend apparently towards a certain vanishing point situated on a certain part of the horizon.

The reason of this arises from the circumstance, that the perspective law causes the apparent level of a point to approximate to the apparent level of the horizon, in proportion to the nearness of the point to the horizon; consequently, the nearer one point of any line (or as in the case of the line just alluded to, the nearer one point of each inch of it) exists to the horizon than any other point exists to it, the more the apparent level of the former approximates to that of the horizon, than does the apparent level of the latter. The character of the approximation ensuing with reference to all the points of a line, being such as, by necessity, invariably brings each point of it on to an imaginary line, differing in direction from the line to which the point actually belongs, and presumptively extending to a particular part of the horizon. Hence, when a line lies above the eye in a direction towards the horizon, and parallel with the ordinary level of the earth's surface, it appears to converge downwards out of its true course or direction, and towards a particular part of the horizon, as indicated in fig. 104; and when a line lies below the eye, but otherwise as just stated, it appears to slant upwards out of its true course, and directly towards a particular part of the horizon, as indicated in fig. 105; the part of the horizon (or vanishing point there) towards which a line will apparently converge depending upon the actual direction of the line.

Fig. 104.

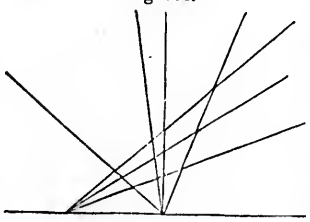
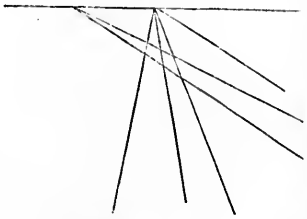


Fig. 105.



All lines, within the range of vision, lying parallel with any line existing at a right angle with the horizon, appear to converge towards the point of sight, represented by *s* fig. 100. Therefore, all lines, within the range of vision, converge towards the point of sight that lie parallel with what may be termed *the eyes line of direction*, or with the imaginary direct line extending between the eye and the point of sight (indicated by the line *e. s.* fig. 101), and that may be presumed to be partially represented by the line run-

ning downwards from *s*, in fig. 100, to the centre of the base line of the figure, and dividing into two equal parts the lower half of the perspective plan shewn by that figure.

Thus, if the central line *s* fig. 100, be supposed to represent "the eyes line of direction," and each line parallel with it of the same figure, as *a b*, be supposed to denote one of a set of parallel lines actually lying on the earth's surface (and each must then also indicate one existing at a right-angle with the horizon) each of them, in such case, if put into perspective on the perspective plan, this diagram represents, would alike converge towards *s* or the point of sight of the plan. The line forming the right-hand side of the plan (and one that in the present case indicates a line parallel with the eyes line of direction) having its true perspective convergence towards the point of sight, denoted by the diagonal line running from its lower extreme to *s*, or converging from that extreme towards the point of sight that *s* represents.

Every set of lines lying parallel with a line existing at any other angle than a right angle with the horizon, perspectively converges towards such a vanishing point as would be the perspective position on the horizon of the further extremity of any one line of the set, were that line to extend to the distance, from us, of the horizon.

Every set of parallel lines, lying otherwise than as indicated in the last two paragraphs, has a vanishing point above or below the horizon, according to the actual position of the lines forming the set, or such a vanishing point as would be the perspective position of the further extremity of any one line of the set, were that line to extend to the utmost distance the eye can see.

In consequence of the perspective effect which causes apparent convergence of lines out of their true direction towards vanishing points, 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—a fact which should be borne in mind because it shews 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.

Therefore, on a perspective plan, to place a right angle with one or both of its lines running in a direction inclining towards the horizon line of the plan, and then to extend one or both lines of the angle to that horizon line, according as one or both have been placed on the plan inclining towards the horizon,—to do this—as students are instructed to do in some systems of perspective for the purpose of obtaining the perspective representation of a right angle and the vanishing point of one or of each of its lines—is a most erroneous method of procedure, producing doubly false perspective, a false apparent angle and false vanishing points for lines lying parallel with the lines of the right angle and that are to be put into perspective along with that angle. For each line of an angle must have for its vanishing point that point on the horizon that all lines parallel with it must have for their vanishing point; or, assuming each to belong to a separate set of parallel lines, each must perspectively converge out of its true direction towards such a vanishing point "as would be the perspective position on the horizon of the further extremity of any one line of the set to which it belongs, were that line to extend to the distance, from us, of the horizon."

With respect to lines within the range of vision that lie parallel either in a perpendicular, horizontal, or oblique direction with the imaginary perspective plane, or surface of glass, that has been described as always standing, presumptively, in a position between us and our horizon point of sight and parallel with the 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

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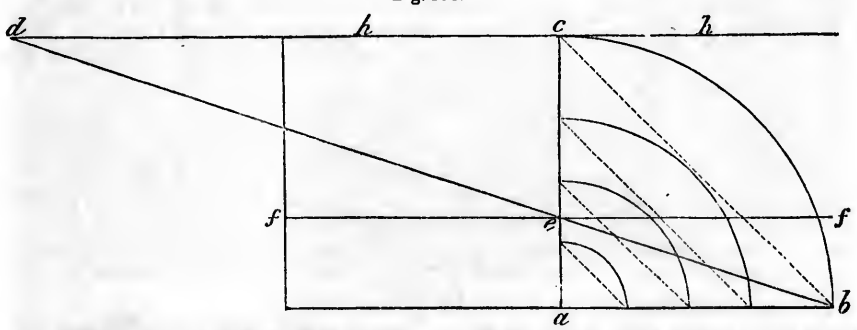
more and more of it, equally to the right and left of us, out, as it were, of the range of vision: for if, whilst advancing, we turn our eye sufficiently to allow of our glancing along the whole of the line, a continuously increasing apparent convergence of the line out of its true direction will become 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 a diagonal 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 become diagonal, or run 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 perpendicular 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 perpendicular 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 that we represent in a picture ought to belong to but one range of vision (that is, come completely within its boundary) to be represented correctly, or 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 present a perspective that could not possibly be visible to us.

The determinative point is an imaginary point, which may be considered to be one existing on a part of the horizon extending beyond the range of vision, and to be situate thereon at a distance, from the point of sight, equal in length to the whole extent of horizon that comes within the range of vision,—and that may be regarded, likewise, as one that determines, either directly, or indirectly the degree of perspective contraction all lines in Nature exhibit.

For supposing that, visibly to us, a horizontal line (as *a b* Fig. 106), which, for instance, is 5 feet long, and lies on the earth's surface at a distance of 10 feet from us, with one of its ends—as *a*—exactly beneath "the eyes line of direction," could from its other end—as

Fig. 106.



from *b*—suddenly change its horizontal direction in such a way that, that end *b*, should recede to the distance of 15 feet from us—as to *c*—that is recede back 5 feet from its original position, or as far as the length of the line to which it belongs admits of its receding, and thus that the whole line *a b* were to assume the direction and position represented by *a c*, these consequences then would ensue.

1stly. During the time that the line was changing its direction, and that its parts, by the continuous movement of the line, were becoming, as they would become, namely, more and more distant from us, the apparent length of the whole line would continue (through the perspectively contracting influence, of increasing distance, on apparent magnitude) to become shorter, until it became as short as it could become by arriving at the position of a line—as *a c*—existing at a right angle with the horizon represented by *h h*.

2ndly. The receding end *b*, of the line *a b*, would describe a curve as *b c*, or "virtually" would be situated on a curved line during its progress to the remotest position (as to *c*)

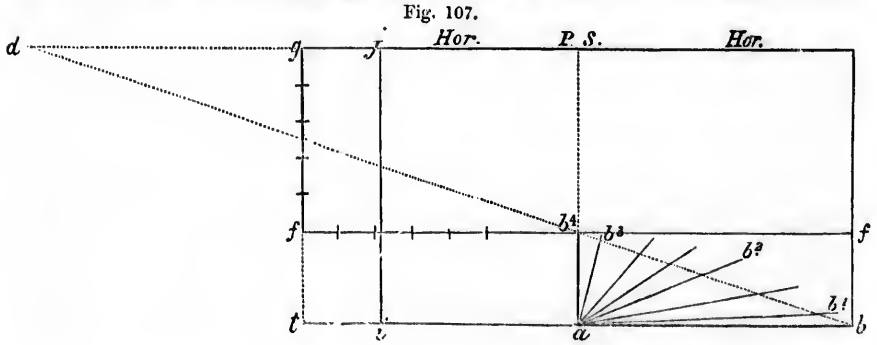
that it could proceed to; also, if the whole line *a b* were one divided into separate portions, the receding ends of its portions, likewise, would describe each its curve, as indicated by the curved lines running between *a b* and *a c*, or each "virtually" would be situated on a curved line, which may be termed its *line of recession.*

3rdly. These curved lines (since each of them, as in the case of the actually curved form of the horizontal line, may be presumed to be a straight line, similar to either of the dotted straight lines running between *a b* and *a e c*) would, virtually, form a set of lines existing on the ordinary level of the earth's surface parallel one with another, and consequently having presumptively a common vanishing point connected with a certain part of the horizon, or as at *d*—whilst the continually increasing degree of perspective contraction, the line *a b* would exhibit during the time it was changing its direction, would entirely depend upon this fact.

4thly. Hence, as results shew that this vanishing point has a position identical with that of the point described above as the determinative point, the last named point, as *d*, must be considered to be one determining, or controlling, the degree of perspective contraction that all lines exhibit which lie on the ordinary level of the earth's surface, within the range of vision, and incline from us to the left of our position. For all such lines are circumstanced as it has been stated the line *a b* would be when inclining from us; that is, their remoter or receding points virtually lie on *lines of recession,* actually parallel one with another, but perspectively converging together towards a determinative point existing to the left of the point of sight. There being also a determinative point existing to the right of the point of sight, and that determines the degree of perspective contraction that all lines exhibit which lie on the ordinary level of the earth's surface, within the range of vision, and incline from us on the right of our position; though, in practical perspective, the use of the representative point of either one of these points, enables us to ascertain what is the apparent length of a line when lying in one position, relatively to its apparent length when lying in another—or, what is the proportional degree of perspective contraction resulting from increase of distance—whether it be with regard to a line inclining from us on the right hand, or of one inclining from us on the left hand of our position.

5thly. So that if we wish to ascertain with respect, for instance, to such a line as that represented by the line *a b* Fig. 106 (see, however, Fig. 107), what would be its apparent length when inclining from us as much as possible, as compared with its apparent length when seen in the horizontal position indicated in the diagram, we can do so to a nicety by means of the determinative point, as thus. After the horizontal position has been properly represented on a perspective plan and in due connection with the horizon, etc. of the plan; by then running a line from the receding point of the horizontal line, as from *b*, Fig. 107, towards the determinative point of the plan, or as from *b* towards *d*—a determinative line in fact—where this line, as at b^4, crosses the eyes' line of direction (indicated by the dotted line proceeding up to *P S* the point of sight) will, in this example, denote the further end of *a b*'s perspective line of recession, and consequently the perspective position of the receding end *b*, of the line *a b* on its inclining from us as much as possible —whilst the line *a* b^4 will denote the apparent length required. The line *a* b^1 shewing, as ascertained through the determinative point, the degree of apparent length, that the line *a b* would have on inclining slightly from us, as compared with the degree it would

Fig. 107.



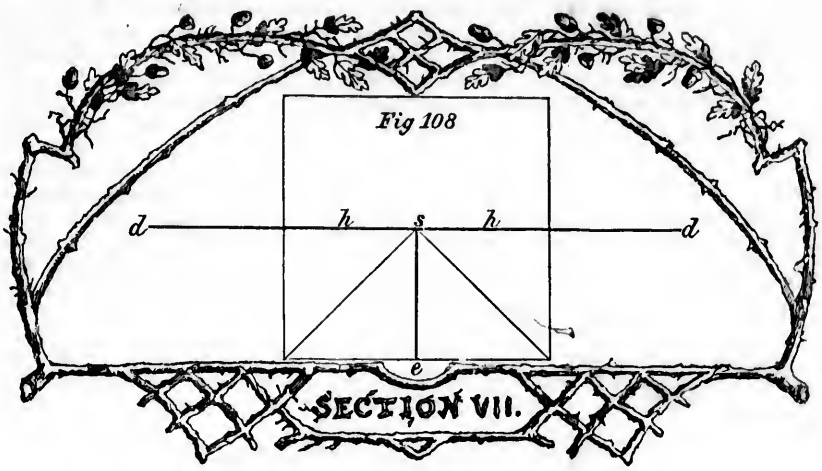
have on remaining in a horizontal position at a fixed distance from us of 10 feet; and the former apparent length being less than the latter; because the whole of the line $a\,b$, excepting its stationary point a, on so inclining must *become more distant* from us than it would be if it were to remain in its original position, and must therefore appear then relatively to the extent of its increased distance, more contracted or shorter than it would on not so inclining. The line $a\,b^2$ shewing the degree of apparent length the line $a\,b$ would have on inclining more than before indicated; and being shorter than $a\,b^1$, because the whole of the line $a\,b$, excepting its stationary point a, on inclining more than before, must become more distant, and hence appear more contracted, or to have a lesser apparent length than before. The line $a\,b^3$ shewing the degree of apparent length the line $a\,b$ would have on inclining from us *almost* as much as its length of 5 feet admits of, and therefore necessarily being, not only shorter than $a\,b^2$, but almost as short a line as, considering the original position, etc., of $a\,b$, can represent its apparent length. The line $a\,b^4$ shewing the degree of apparent length the line $a\,b$ would have on inclining from us *as much* as its length admits of, as compared with the apparent length it would have on remaining in a horizontal position at the fixed distance of 10 feet from us; the former apparent length being not merely very much less than the latter but also as short as it is possible for it to be under the circumstances of the case; because the whole of the line $a\,b$, excepting its stationary point a, on inclining from us as much as its length of 5 feet admits of its doing, must, at the same time, lie as distant from us as it could lie and, consequently, display the greatest degree of perspective contraction (that is, the least apparent length) that it could exhibit, unless it were to become altogether more distant from us than 10 feet.

The point b^4, be it also remarked, correctly denoting a point 15 feet from us, because it represents the perspective position of a point, existing on the ordinary level of the earth's surface, 5 feet more distant from us than another point, as a, existing on the same level, and whose distance from us is 10 feet: a line drawn through that point, b^4, therefore denoting "a width of range" 15 feet long and 15 feet distant from us, provided it be drawn like the line $f\,f$, that is, evenly parallel with the line $t\,b$, on which $a\,b$ is situated, and which line $t\,b$ correctly represents a width of range 10 feet long and 10 feet distant from us. The line $f\,g$, denoting a perpendicular line 15 feet distant from us and 5 feet high, because it stands on a line representing a width of range 15 feet distant from us, and runs up therefrom to a line representing a level 5 feet above that of this width of range (that is, representing the apparent level of the horizon, and which must always be considered to be 5 feet above the apparent level of a width of range), or that runs up from f to g on the line $h\,h$; *as well as* because it is only one-third as long as the width of range it stands upon, and that the portion (one-fifth part) of it that represents one foot, *is equal in length* to the portion (one-fifteenth part) of that width of range that represents one foot—the portion it should be exactly equal to, since the length of line that represents one foot of a perpendicular should represent one foot of the horizontal line on which it stands: whilst, lastly, it may be further noticed with advantage, that the line $f\,g$, denoting 5 feet perpendicular, standing at the distance of 15 feet from us, is but two-thirds as long as $i\,j$, denoting 5 feet perpendicular, standing at the distance of 10 feet from us, as we may assume the latter to denote, since it runs up to a line indicating a height of 5 feet or the apparent level of the horizon, from a line representing a width of range 10 feet distant from us; nor should $f\,g$ be longer as compared with $i\,j$, because the distance from us, at which it, $i\,j$, is represented as standing, is one-third greater than that at which the other is represented as standing,—and apparent magnitude (i. e. length of line), always diminishes in the same proportion as distance from us increases, or for instance, when, as in this case, distance increases in the proportion of one-third, apparent length diminishes in the proportion of one-third.

6thly. The bearing of the various facts that have been stated with regard to the determinative point, therefore warrants the assertion accompanying the statement of them, namely, that the determinative point of a range of vision determines the perspective contraction exhibited by all lines lying on the ordinary level of the earth's surface within that range of vision. As, then, that which controls *their* perspective appearance must also control that of all other lines existing within the same range of vision, the determinative point must likewise, as in substance at first remarked with reference to it, be regarded as one that presumptively controls the degree of perspective contraction that every line in Nature exhibits—that is, either directly or indirectly and relatively to one range of vision.

And, now, as the characteristics of the determinative point have been fully discussed, and it has been demonstrated that the aid of that which represents it in practical perspective is of primary utility, it only remains, in conclusion of the foregoing summary of the whole of the effects of the Perspective law of Nature, to state, that they have been amplified to this extent for the purpose of shewing that, as regards all the principles on which a correct system of perspective science should be founded, sufficient reasons for their adoption can be afforded in every way consistent with the phenomena of the law; and, also, to shew that, therefore, it is on considerations derived from a knowledge of the operations of this law, that we should base the Science of Perspective, and not as is usually asserted, on such as can be derived from a knowledge of the operations of that specific law of Optics which governs our powers of vision.

For the influence of the latter law can only enable us to see things as they present themselves to the eye; whereas, as regards their perspective appearances, it is the influence of the perspective law of Nature, alone, that causes them to present themselves to the eye in the forms they display. Consequently, to deduce the principles of perspective science from any other source than one exclusively connected with the perspective law of Nature, must manifestly lead, as it may be readily proved it does, to the certain propagation of obscure, conflicting, and erroneous principles of perspective science, as well as to arbitrary practice often resulting in perspective representation totally devoid of all symmetry, proportion, and naturalness of appearance, doing injustice to the work of the architect, and otherwise producing mischievous consequences to Art, which can only improve public taste and benefit mankind to the extent that it is truthful.



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*).

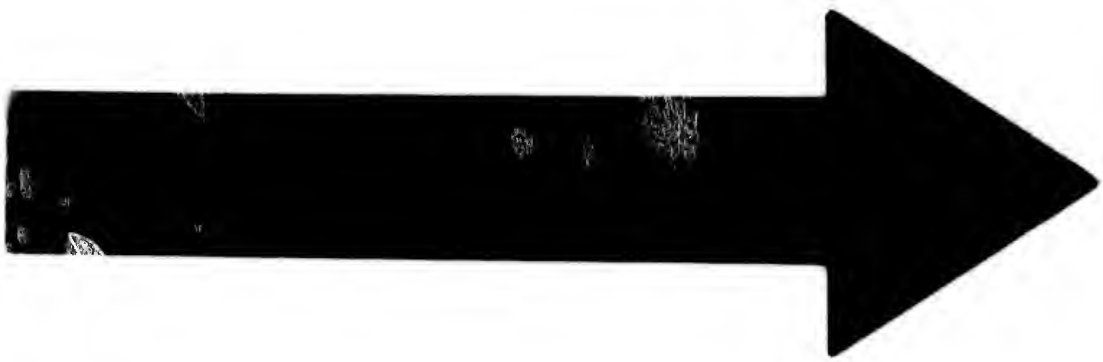
4. Wherever on the horizon this point of sight may be, there, also, is situated the apparent central point of as great an extent of space as it is possible for us to see distinctly at one fixed gaze, without moving the eye—or, what is the same thing, the apparent central point of the *range of vision*.

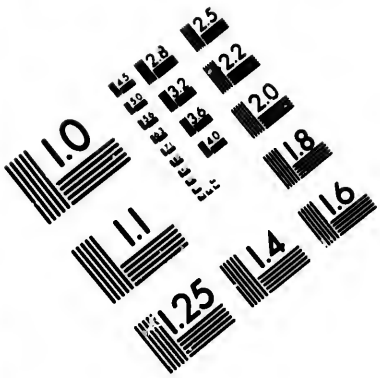
5. The point of sight (i. e., the apparent central point) of a range of vision, primarily governs the perspective appearance of all lines visible to us within the range, but not that of any lines or portions of lines existing outside its bounds—such lines, etc., having their perspective invariably regulated 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.

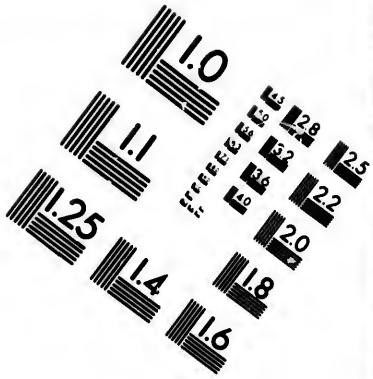
6. What we see presents itself to the eye as if it were all lying upon an upright sheet of glass (as on a window pane) that has its centre on a level with the eye and point of sight, or directly between them, and which may be called a *perspective plane*.

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







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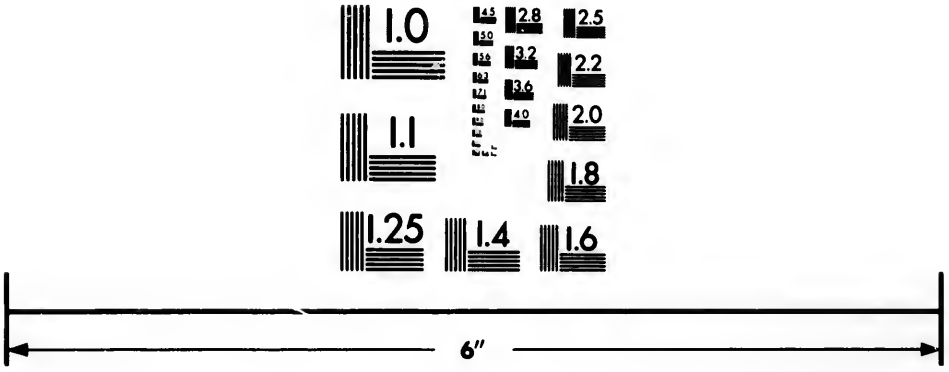

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its centre comes directly opposite the point of sight, in the case of a horizontal line; or so that its centre comes on a level with the horizon, in the case of a perpendicular line.

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.

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.

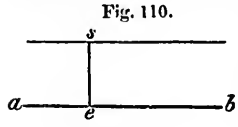
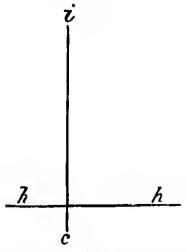


Fig. 111.



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:

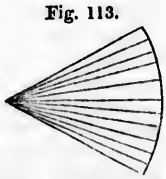
3. That we should not be able to see distinctly this amount of space but for the fact that every atom of every line of the square (represented by the dots Fig. 112) as well as every atom of the *scene* existing beyond its surface so as to appear to be lying upon or touching it, would have the same apparent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

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.

Fig. 113.



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.

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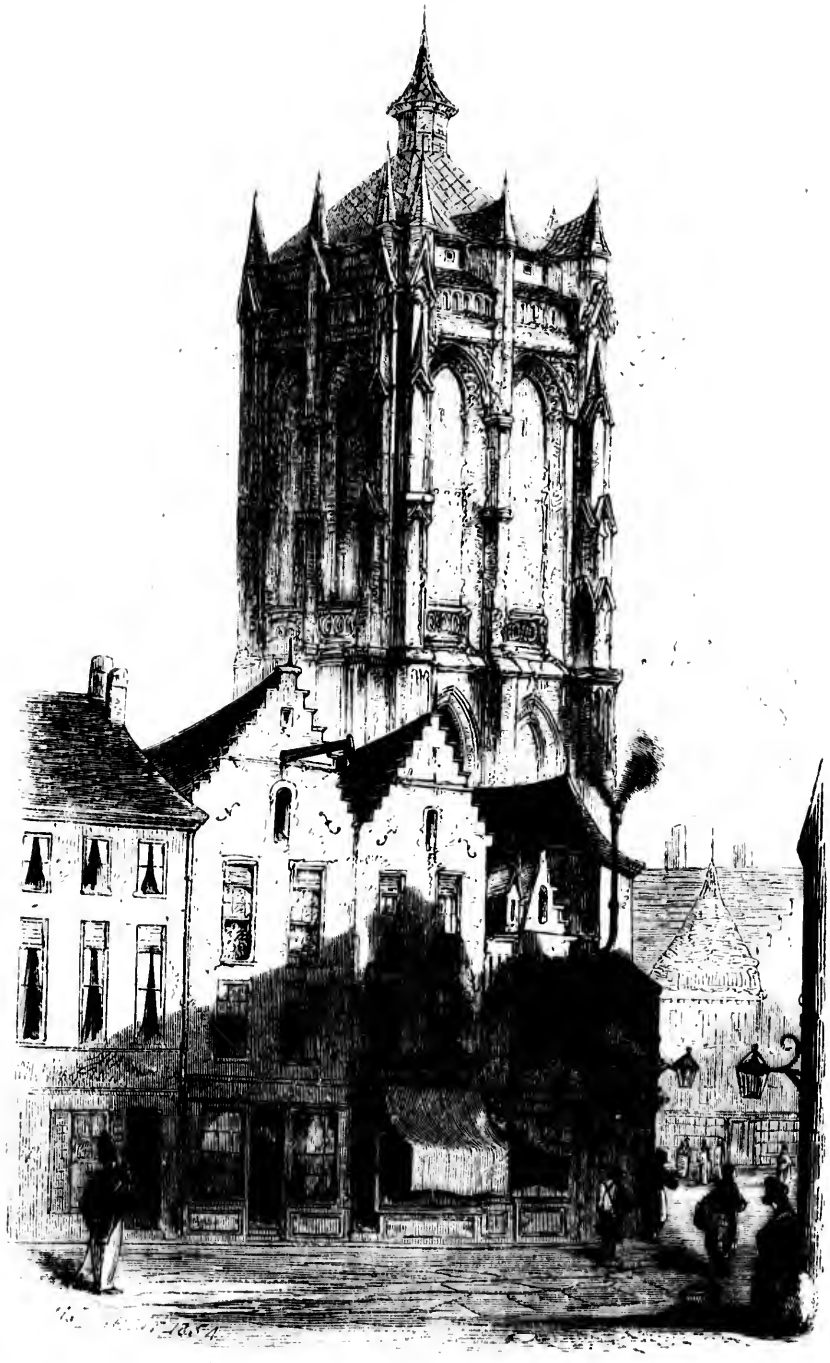

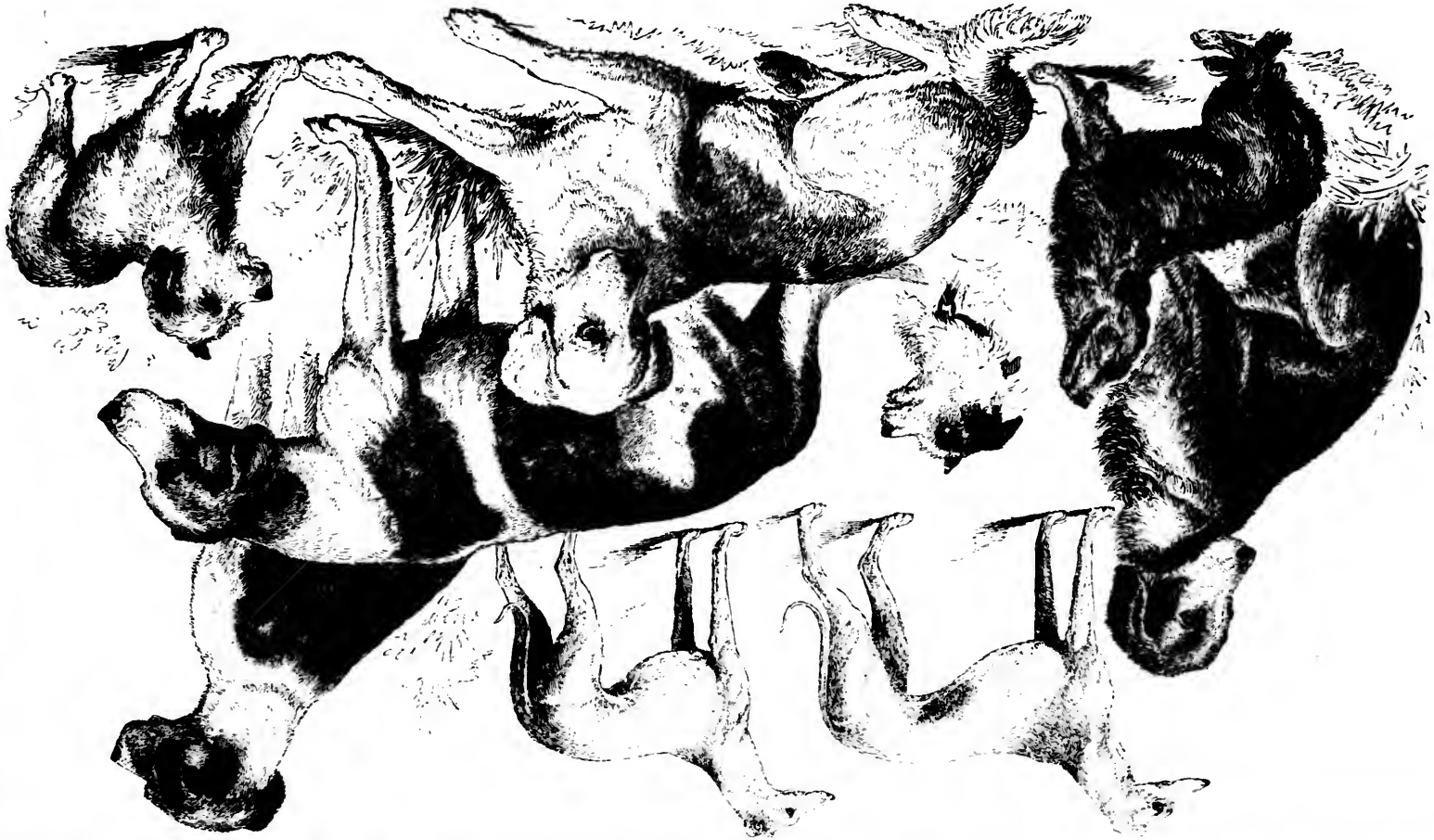

7. That each horizontal and perpendicular line of the *scene* visible through the square of glass would appear to be parallel with and to be, as it were, conjoined with some one or other of the horizontal or perpendicular glass lines of the square; therefore, the latter would become, as it were, representive 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 $\frac{1}{5}$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 ¾ths. 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.

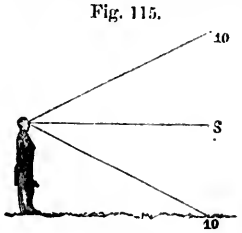
9. The *scale* distance of each angle point of the plan *from its* E.L.D., and in a *horizontal direction* (*i. e.* along the point's W.R. line), should also be found and denoted on the plan by numerals: as that of point *a.*, and which is 5 feet from the plan's E.L.D.;

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.

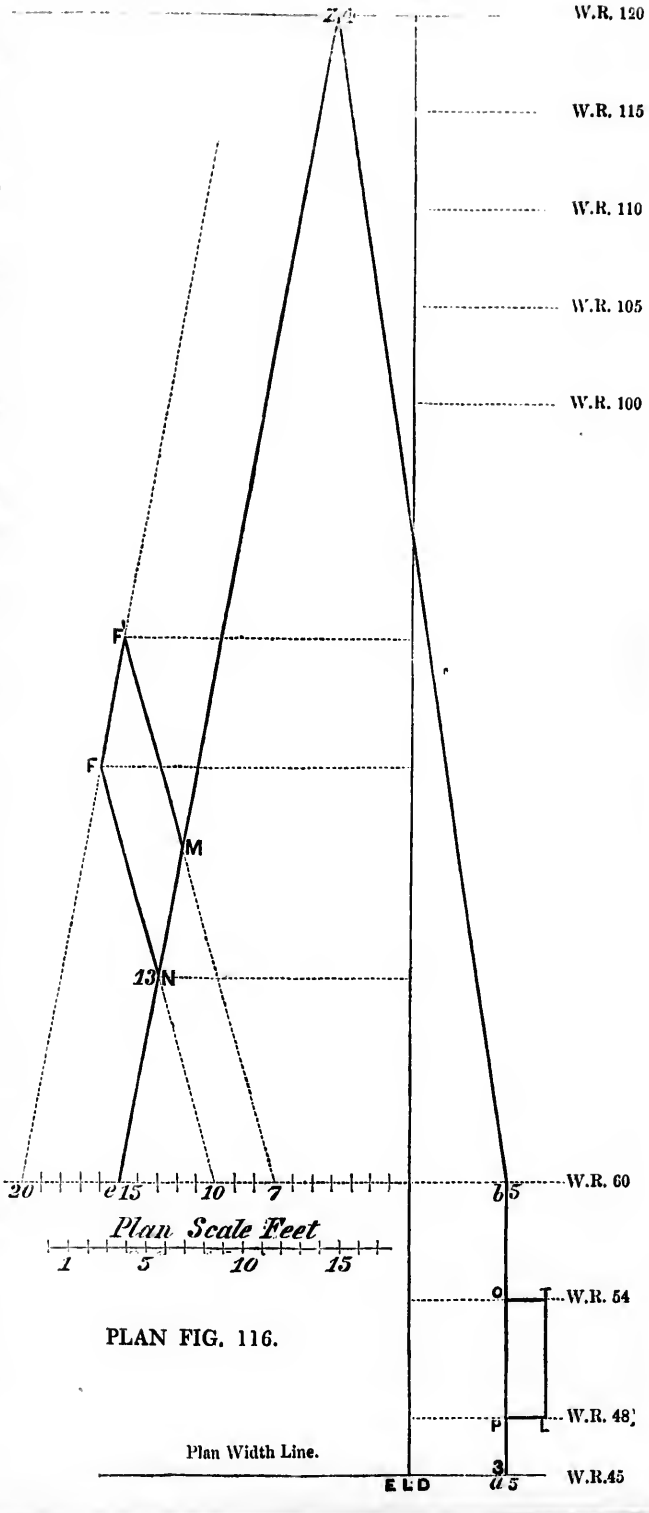
1. Supposing the ground plan to be as Fig. 116—that the base line of the perspective drawing of it is to represent a 30 feet W.R. (width of range), or a line 30 feet distant from us:—that the nearest point of the plan, as *a*, is to be represented as being on a 45 feet W.R., or as existing 45 feet from 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.

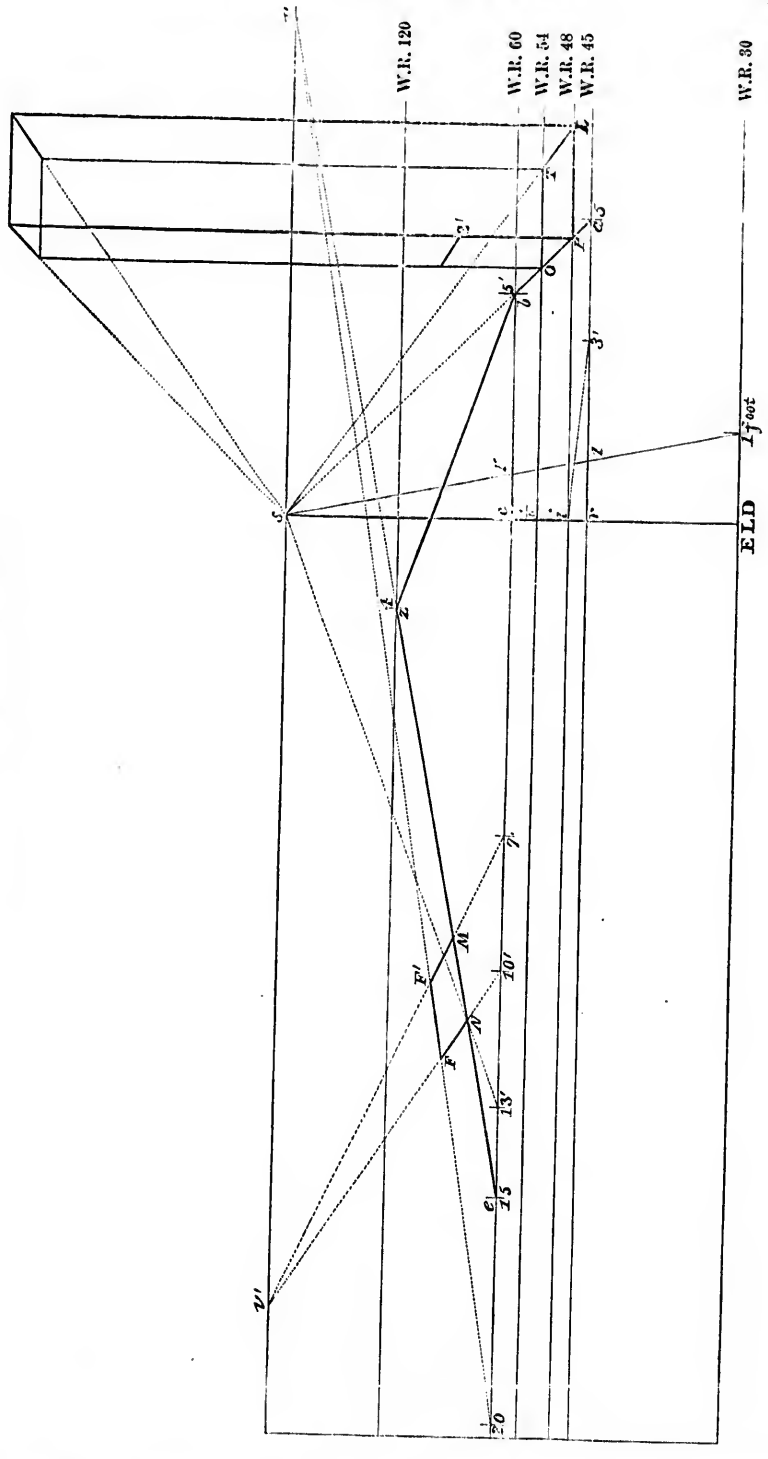
2ndly. Represent an eye's line of direction, horizon line, a point of sight and a determinative point, according to the instructions contained in Lesson V., and as shown in Fig. 117 in every respect, excepting as regards the determinative point, which could not be placed therein, because of the contracted 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 $\frac{1}{3}$rd of the E.L.D. extending upwards from the drawing's base line W.R. 30, or as to *r*, and through the $\frac{1}{3}$rd 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 proceeding; 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 *c*—*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.

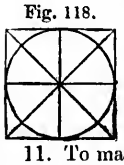
8. To produce the W.R. of any previously represented point, as of point *M.* or *N.* Fig. 117:—run a horizontal line through the point and across the drawing.

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.*

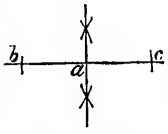
10. To represent a circle in perspective:—enclose it in a square, and run lines through its centre, as shown in Fig. 118; then, make a plan of it with an E.L.D., and find the W.R. and P.S. diagonal of each point of contact that the circle makes with the accessory lines shown in the diagram. Next represent 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.