A. K. Ramus.
25th May 1824

HAYTER'S INTRODUCTION

TO

Perspective,

DRAWING, AND PAINTING.

Printed by J. F. Dove, St. John's Square.

FRONTISPIECE

C. Hayter Inv.t Twinbr.s

See page 33 line 13.

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i

AN

INTRODUCTION

TO

Perspective, Drawing, and Painting,

IN A SERIES OF

Pleasing and Familiar Dialogues

BETWEEN THE AUTHOR'S CHILDREN;

Illustrated by appropriate Plates and Diagrams, and a Sufficiency of

Practical Geometry.

AND

A COMPENDIUM OF GENUINE INSTRUCTION,

COMPRISING A

PROGRESSIVE AND COMPLETE BODY OF INFORMATION,

Carefully adapted for the Instruction of Females,

AND SUITED

EQUALLY to the Simplicity of YOUTH and to MENTAL MATURITY.

WITHOUT TRUE GENIUS, VAINLY YOU ASPIRE!
WITHOUT SOUND ELEMENTS, IN VAIN YOUR FIRE!

BY

CHARLES HAYTER,

PROFESSOR OF PERSPECTIVE TO HER LATE ROYAL HIGHNESS THE PRINCESS CHARLOTTE OF SAXE COBOURG, PORTRAIT PAINTER, IN MINIATURE AND CRAYONS, AND TEACHER OF THE PRINCIPAL ELEMENTS OF THE ART.

THE THIRD EDITION, CONSIDERABLY ENLARGED AND IMPROVED.

London:

PRINTED FOR BLACK, KINGSBURY, PARBURY, AND ALLEN,
LEADENHALL-STREET.

1820.

PREFACE.

THOSE who have attained eminence in any accomplishment, are qualified to pass an equal degree of judgment on subjects which lie within the sphere of such attainment.

To such as are thus qualified, I submit the following work, solicitous of their sanction and approbation. It is a most encouraging foundation for my hope, to know that there never was an *apostate* to the science of perspective; and *those only* are on the negative side, who have not discovered its *utility—silence* is all I claim from them.

How mortifying it is to observe the prevailing antipathy to geometrical illustration, especially among those whose professional success so materially depends on this branch of elementary knowledge; and even supporting their objections by arguments as opposite to REASON as they are to TRUTH! One can hardly compose the mind to so gentle a sensation as *pity* for one who, wrapped in hyperbole, disavows the necessity of geometrical knowledge, by declaring that "*Genius having wings,*" can assume any region, passing over all boundaries, and ascending all heights, "without the mechanical aid of *keys* and *ladders:*" it surely would try the temper of an *Epictetus,* to see, from the hand of *such a son of Dædalus,* the colouring almost of a *Titian;* on a picture as absurd (in point of perspective) as the ingeniously sarcastic composition by Hogarth, which stands as a frontispiece to Kerby's Dr. Brook Taylor's Perspective.

To remedy this dereliction from so great an essential, demands the united efforts of all who have been initiated to the means. How this is to be done may still admit of an indefinite answer, the whole science

having been so repeatedly and fully explained that nothing can be wanting as to matter.

The only hope remaining, and on which I venture this essay, is, that a more simple and familiar manner might probably awaken that attention which would not fail of equivalent success.

The Complete Body of Perspective, by Malton, sen. may be relied on: but it insists on intense application; and his plates, at first sight, confuse a novice in the art; who, unless wise enough to enter deliberately and earnestly on a regular course of investigation of its ponderous, yet sterling contents, will most probably close that mine of pure gold for ever.

To obviate the ill effects of such an unfavourable impression has been my constant study, with my children and other pupils; endeavouring to give them an early taste of the *fruits* of science, as an inducement to a more willing cultivation of the roots. This easy style I have thought proper for the following dialogues; wherein conciseness and perspicuity, with as little reference as possible, have been my chief care, avoiding repetition in the examples, and as much so in the theory as the subject would admit; with a view to divest this SUBLIME SCIENCE of much of its apparent gravity, and thereby introduce an important branch of knowledge to a more general and favourable reception.

The letters which follow these dialogues, having given great assistance in their original form, I have selected and arranged them, progressively, as lessons. My inexperience in the accomplishment of authorship has rendered this a task of difficulty; and, after all, I must acknowledge, that had I at the first intended publishing any other instructions than those contained in the dialogues, I certainly should not have adopted the epistolary style; but being already by me in *that* form, and the proofs I have received of their *utility*, determined this point; which, if PROGRESSIVELY STUDIED, I have good reason to hope will answer the purpose of a *certain guide* in many instances, and a *faithful* director

in all; so as to form a safe basis for either youth or maturity to build on, and from which GENIUS may proceed with advantage.

I dare not venture before the enlightened public of this accomplished era without apologizing for the plainness of my diction, by confessing that I have been too much engaged in other elementary pursuits to attend to the mechanism of style; and my only reliance is on that of having endeavoured to communicate what must be considered USEFUL in a language (at least) intelligible.

ADDENDA.

A DELIBERATE and studious review of the last edition, has produced many additions and improvements to the present; which are diffused throughout the whole, to the best of my abilities, with a view of rendering the introductory rudiments of the *fine arts* as simple as possible, yet as complete as the limits of a single volume would admit, with a fair increase of hope, that its utility may be only equal to my gratitude for the liberal and disinterested encomiums obtained on the former editions, and especially from such as understand the subject of the publication: their public approbation is of too much importance to an author, both as to the honour thereby conferred, and the just advantage, on every other consideration, which must consequently follow, to suffer a re-publication of such a work to appear unaccompanied by the genuine testi-

monials it has produced. The favourable reception of former editions having enrolled the author's name among those of *useful* writers; *and the high honour of her late Royal Highness's the* PRINCESS CHARLOTTE *of* SAXE COBOURG *approval,* as communicated to him by the following notes from his son.

" *Cranbourn Lodge, April* 5, 1816.

" MY DEAR FATHER,

" I have very great pleasure in communicating to you the result of my having presented your work on Perspective, to Her Royal Highness the Princess Charlotte. Her Royal Highness likes it very much, and says you have her *entire approbation* to dedicate it to Her Royal Highness.—This I am sure will please you. Her Royal Highness is most gracious, and sits with the utmost condescension. I am fagging very hard to make this picture my best, as it is to be my last, in miniature.

" I am, my dear Father,

" Your very affectionate Son,

" GEORGE HAYTER."

" 5, *Woodstock Street, June* 7, 1816.

" MY DEAR FATHER,

" This morning, I received the honour of another sitting from her Royal Highness the Princess Charlotte of Saxe Cobourg, when I took the opportunity to mention your wish—her answer: Her Royal Highness does you the honour to say, that she will learn Perspective, and that I am to tell you *to call yourself* HER PROFESSOR OF THAT ART; as it is *through your book* she has determined to study it.

" I am, my dear Father,

" Your very affectionate Son,

" GEORGE HAYTER."

It would be not only ungenerous but ungrateful in the author, to pass to a new edition, without first recording his thanks to all his NOBLE, PROFESSIONAL, and *other* subscribers; and his particular obligation to the following gentlemen, for their kind suggestions on the first edition:

To I. DALBY, Esq. Professor of Mathematics, at the Senior Military College, Farnham, Surrey;

To JOHN LANDSEER, Esq. A. R. A. Engraver to the King, F. S. A. and Professor of the Philosophy of Art to the Royal Institution;

To P. NICHOLSON, Esq. Architect; Author of the Architectural Dictionary, and other celebrated Works of instruction, in Geometry, Architecture, and Perspective;

To WM. ROYSTON, Esq. F. L. S.;

And to CORNELIUS VARLEY, Esq. Artist; and Patentee of the Graphic Telescope.

RECOMMENDERS OF THE WORK.

"SIR, *Farnham, Surrey, Nov.* 17, 1813.

"PERSPECTIVE is a branch of the Mathematics I have not much attended to; but I find some things in your Work better adapted to the capacities of learners than in more diffuse and elaborate treatises. Should you print another edition, set me down as a subscriber. (Then followed some critical improvement in the geometrical figures of Plates II. and III. with which the author was favoured in time for his first edition.)

"I am, Sir, your's sincerely, I. DALBY."

"MR. LANDSEER thinks, that such an easy and familiar Guide to Practical Perspective as Mr. HAYTER's, was much wanted; and it is well calculated to facilitate the progress of Students.

"If Mr. Hayter should print another edition, as it is most likely he will, Mr. L. thinks that a similar simplification of the rules that govern the perspective of reflections on water, &c. would be an useful addition (which the author has fully given in this edition, from pages 93 to 100, with two plates.) The book would then, he thinks, be as completely rudimental in matter, as it is instructive in the manner in which Mr. Hayter has produced it to the public.

"*Foley-Street, Oct.* 14, 1813."

"Sir, *Chelsea, Nov.* 5, 1813.

"I regret that my engagements have not yet allowed me time to go completely through your little volume, which, as far as I can judge of it, pleases me very much. I have recommended it to a friend of mine, and I intend to have two books.

"I am, Sir, your obedient Servant, M. D. Brunell."

From an old Drawing Master.

"Dear Sir,—I have read your Publication: I think it is altogether the best work that has been brought forward to public view: it has more information and more proper instruction, than all that has been written on the subject, and does you infinite credit."

Ladies' School.—"Mrs. F.———— presents her compliments to Mr. Hayter, and is so well pleased with his methods, in his Introduction to Perspective, Drawing, and Painting, as to determine that none of her drawing pupils shall be without it."

Ladies' School.—"Dear Madam, Pray accept my thanks, and give the same to Mr. Hayter, for his Work on Perspective you were so good as to send me. It appears a very useful and ingenious Publication, and I shall have great pleasure in recommending it whenever it is in my power."

From an eminent Female Amateur.—"Sir, I have the pleasure to inform you, that I have just received your book. I am

obliged to you for sending it so soon, and like it much. I dare say I shall be greatly pleased with it, having heard it so well spoken of by Miss ————; and also, when I was in London, by SIR WM. BEECHEY."

" DEAR SIR, 46, *Sloane Square, Dec.* 14, 1814.

" Your book is likely to be of the greatest service to those who are studying drawing; and, indeed, is a book which I think every learner should possess.

" Dear Sir, your very obliged servant,

" H. W. BURGESS."

" DEAR SIR,

" I have received both pleasure and instruction from your Publication. I very sincerely wish you every success you can desire, both as a Writer and Preceptor. Any use of my name that you may think proper, will be most readily acquiesced in by, dear Sir, your very obliged servant, M. A. SHEE."

The PRESIDENT OF THE ROYAL ACADEMY, and all the subscribing ROYAL ACADEMICIANS, have given the Author the most flattering approbation, both personally, and by recommendation.

The SOCIETY FOR THE ENCOURAGEMENT OF ARTS, &c. Adelphi, have given the Author personal thanks.

" MATHEMATICAL SOCIETY.—At a Meeting of this Society, on Saturday, the 16th of October, 1813, it was resolved unanimously, That the Thanks of this Society be transmitted by the Secretary to MR. HAYTER, for his very handsome Present made this evening of his Introduction to Perspective.

" (Signed by order) P. STAINTON, *Secretary.*"

"DEAR SIR, *Leicester Square, Aug.* 25, 1814.

"I have of late been so much engaged, that I have not had my mind sufficiently at liberty to give that attention to your Book which it seems entitled to. From the little attention I have been able to give it, it seems a Work calculated to be useful.

"As you are preparing a Second Edition, you will please to put me down as a Subscriber.

"I am, dear Sir, your's truly, WILLIAM TASSIE."

FROM AN AMATEUR.

"SIR, *Bath, Sept.* 4, 1814.

"In the first place I must acknowledge my obligations to you for the instructions you favoured me with and further offered, and declare to you sincerely, that the impressive and correct exposition you gave of the principle of producing identity, afforded me more satisfaction than any thing I ever met with on the subject, as did indeed *your Treatise previously;* in fact, I never gained theoretic information from converse with any professional man (not merely in this science, but others) before. The cleverest people have not *always* the clearest general ideas, or do not know how to deliver them. But the impression of this will always remain in my mind as a beautiful truth—that of the *three progressive stages* in our course of study.

"Your's truly, J. S——."

"DEAR SIR,

"Having read your Book, and considering it a very useful one, and properly conveyed to the capacities of young students, I wish to encourage the patronage of it in my connexions.

"I am, dear Sir, your obedient humble servant,

"21, *Winchester Row, Edgware Road.* JOHN LAPORTE."

"SIR, 35, *Titchfield Street, July* 18, 1814,

"Having by chance met with your Introduction to Perspective, &c. I found in it more than I had a right to expect from its title.

You pretend no further than an Introduction to the Art of Perspective; but the choice of your problems (though few) are such that, if well understood, would in practice tend to regulate the designs of many excellent artists who are deficient in this respect: it would facilitate their works, and save the lash of the critical observers of perspective truth, which too often justly apply to painters. With regard to your precepts and observations, distributed in the course of the Work, I think, upon the whole, they are just and conclusive; some of which appear to me to be new, and of intrinsic value, equal to those already sanctioned, being, like them, founded on the laws of Nature. I wish you all the success your Work deserves, and beg you will place my name in the List of Subscribers to your Second Edition.

"I am, Sir, your humble servant, JOHN DIXON."

From JOSEPH FARRINGTON, Esq. R. A.

"SIR, *Dec.* 27, 1816.

"The Works on Perspective, of which the public are at present in possession, are generally of a form rather too scientific for junior students: I think that in your Book you have been very successful in obviating this, and at the same time have supplied such rules as are of general and practical utility.

"I am, Sir, your obedient servant, JOS. FARRINGTON."

"Mr. Campbell has found so much instruction contained in Mr. HAYTER'S Treatise on Perspective; and, since he has procured it, such additional pleasure when looking at pictures and drawings of every description, that he requests his name may be put down for six copies, feeling that he cannot offer to his friends (even those who cannot draw) a more fascinating occupation than the study of its contents, where the difficulties of the science are reduced to such pleasing simplicity.

"*Englefield Green, Egham, Jan.* 3, 1817."

From a GENTLEMAN entirely (personally) unknown to the Author.

"DEAR SIR,

"Your Introduction to Perspective, Drawing, and Painting, is, I think, the most useful, because it is the most perspicuous and comprehensive, Work that has hitherto issued from the press. It is a substantial and ample ground-work for industry and genius to build upon, and supersedes, as much, perhaps, as theory can, the assistance of a master.

"Dear Sir, your's with esteem, ROBERT HUNT."

Extract of another from the same GENTLEMAN.

"*Church Street, Stoke Newington.*

"Your able and highly useful Work on the Principles and Practice of Perspective, is lucidly comprehensive, and will be essentially beneficial to the student and the professor of art, being the genuine result of science, of solid thinking, and of taste. With such a Preceptor as its Author is, I am not at all surprised at the rare and premature attainments of your son, gifted, as he evidently is, with an excellent capacity and perseverance."

"SIR, *Dec.* 13, 1819.

"I shall feel it an honour done me, if I may be permitted, publicly to express my obligation and gratitude, for the advantages I have received from the study of your Treatise on Perspective, Drawing, and Painting; and to declare, that to whatever height I may attain in the fine arts, it will have been founded by the excellent instructions contained in your invaluable Essay.

"Sir, your most obliged obedient servant,

"CLIFFORD HOLROYD."

"DEAR SIR, *Gower Street, Bedford Square, Dec.* 29, 1819.

"Your Introduction to Perspective, &c. was of great use to me when I first began to study drawing; and I believe there is no other introductory volume that conveys so much practical instruction in

so clear a style. Accept this as a public tribute to your talents, as a rudimental preceptor on the subjects comprehended in your Book.

"I remain, dear Sir, your's truly, T. CHORSTMAS."

"SIR, 25, *Grove Street, Camden Town, April* 17, 1818.

"Your excellent Introduction to Perspective, &c. is (in my opinion) the best calculated for the purpose of any book I ever read on the subject, the whole being strictly scientific; conveying right ideas of the most essential objects of a student's first inquiry, with peculiar ease and felicity."

"I have the more freely advanced my judgment on your *Perspective*, from having early acquired a practical knowledge of that beautiful science, under an Italian painter of architecture at the Opera House: and I congratulate you on the triumph of your plain and fascinating style, over that of most other authors on the subject.

"Your Letters on Drawing and Painting, contain the best rudimental introduction to practice that can be comprised within so small a compass. The whole is so liberal, decorous, and applicable, that entertainment and instruction proceed together in delightful harmony.

"Sir, your very obliged servant, I. T. MITCHELL."

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☞ The Author hopes the *very moderate price of the book* will be considered a sufficient apology for the plain style of the engravings, as they are completely adequate to the purposes of illustration.

ERRATA.

Page 29, line 6 from *bottom*, for *architectural views*, interior caverns, read *architectural views* interior; caverns,
—— 43, line 14, *for* page 35, line 16, *read* page 36, line 24.
—— 95, *head line, for* XVI. *read* XV.
—— 108, line 17, *for* V P; so *read* V P's.
—— 109, — 22, *for* sight *read* right.
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NOTE.

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Those who aspire to the society of the Muses must not expect to find it in the Temple of Indolence; the Votaries of Idleness cannot approach them. They are as jealous of their gifts as they are generous in giving, and the fruits of their favour will only ripen to perfection by cultivating the sound roots of the Arts and Sciences, upon this perfect ground of *virtuous emulation*,—that every one ought to do their utmost to the improvement of the talent committed to their charge (not for vain-glory, but for the glory of the Giver), with a spirit nearly allied to piety itself, desirous of conveying the celestial rays of light, thus received, to the edification, use, and innocent delight, of their fellow-creatures. Those who are not thus stimulated, may waste their time and talents on the phantom Fame, and may assume the knowledge of such as have really deserved it; but the sincere student will seek the aid of Science, that he may be enabled to perform works worthy a pure and exalted motive. It is therefore strictly recommended to all who expect any benefit by the following *primary* conversations, to study them *practically*, by performing all the experiments in order as they occur, (at least double the size of the following examples) and *never* proceed without thorough knowledge of all the preceding information; the following not being intended as a *miraculous* method of giving instruction to the flighty, inattentive, and impatient; but as an endeavour to assist those, who are desirous of attaining the art by *due* application and study.

PERSPECTIVE EXPLAINED:

IN A

SERIES OF DIALOGUES

BETWEEN

THE AUTHOR'S CHILDREN,

GEORGE, ANN, ELIZA, AND JOHN.

Perspective, the foundation of truth in a Picture.

Introduction.

Eliza. My dear brother, when will you teach us perspective? You know I do not love a state of *darkness;* and you have told me that a painter might as well be blind, as ignorant of this most important *branch* of his art.

George. Indeed, my dear Eliza, it is of the very first importance; and is rather the *main root,* or foundation of truth, in a picture, than a branch. I am very happy to find you so earnestly disposed to study it; and if sister Ann is at leisure, and little John will be attentive, I will now endeavour to make you acquainted with all its necessary rules and principles. I trust you will not admit of doubts, or critical objections to interrupt the information I shall offer you.

John. Why, brother, you know I can draw, and yet I do not understand perspective. *What is it?* Shall I be able to draw better when I know?

Perspective generally defined.

Ann. You know, my dear boy, you have always something to *draw from;* which, it is granted, you imitate prettily; but what would you do without a copy ready designed to your hand? The "attention" which George has recommended, will be the best means of obtaining an answer to your question.

George. That is well observed, Ann; and I shall proceed—First, to call your attention to the general and distinguishing character of PERSPECTIVE; which is, TO REPRESENT OBJECTS AS THEY APPEAR, AGREEABLE TO THEIR REAL FORMS, DIMENSIONS, AND VARIOUS DISTANCES; BY DRAWING OR PAINTING ON A FLAT SURFACE; the eye being so wonderfully constructed, as to receive and comprehend all the visible matter which may appear, within a certain space, or (according to the technical term, to be hereafter explained), *under a certain angle,* at one view or action of sight, producing a perfect idea of the *real forms* seen, by an association of lines and angles *totally different.* Yet the *form* of a true and judicious perspective representation, will so perfectly agree with the knowledge conveyed by the absolute or geometric form, that the one will stand as an evidence, or test of the truth of the other; as thus—In viewing a street (which admit to be) level, straight, parallel, and uniform in the building, it will appear to *diminish* according to the distance, *converging towards a point* at the furthest end—thus a PERSPECTIVE REPRESENTATION WOULD DESCRIBE IT—which would preserve and convey to the mind a perfect idea of the geometric and real forms

presented to the view; although so very different, that there could be but *one* level line in the whole drawing, (the *horizon*) and *no two* parallel, with perhaps the trifling exception of what might be seen of the square parts of chimneys, some small projections or returns, or an accidental cross street.

Now for an experimental proof—Go to the window, and look steadfastly through (directly opposite) one of the squares of glass (which you know is a flat surface, and which may be understood to constitute the *transparent plane* in perspective); then, if you could keep yourself stationary, within reach of the glass, you might trace, with a pen, *a proper perspective outline* of the scene or objects in view; and by laying a thin wash of gum water, or isinglass, on the glass of the window, you might trace the scene, &c. with a black or red pencil, and then place a piece of drawing paper over it, and trace it off on that, so as to proceed to make a finished drawing.*

Ann. But, brother, you must tell us how to keep the eye in one position, as I instantly perceive the success of the operation depends on that.

Eliza. Oh, sister, that may be contrived many ways!

* Although the Author began his work with a note, he conceives a general objection to notes, in books which are intended for the information of *young readers*; especially such as have not received a regular education, who are too often unaware of their importance, and pass them by as foreign to the subject, or (more probably) without a thought. Yet he cannot here avoid repeating the instruction given in the latter part of that *note*; for the novice will read in vain, who will not be at the pains to make *this*, and every following practical experiment, *to thorough conviction*, before he proceeds.

—I long to try to take a view by this method. I wonder painters do not use it: I feel as if I wanted no further information on the subject.

George. This could not fail of truth for the *outline* of all *stationary* objects—but the *sun shadows* are continually changing, while a true picture requires that *all* should be represented *as seen at once.* As when you look at a picture—which you could not accomplish without the instruction that will follow in its proper place. A very complete apparatus is made, to take views in outline corresponding with this method, and is used where expedition, or a want of knowledge of art makes it necessary: but I direct you to the tracing on the window, only to confirm to your ideas *this leading principle*—that in every thing you draw, you are to conceive you are drawing, on a glass, or transparent plane, *objects* which are supposed to be on the other side. But you are not to sit down with these contrivances, if you intend to become acquainted with the art of painting; as it will be absolutely requisite for you to learn all the elements, beginning with practical geometry, sufficient knowledge of which I will endeavour to give you in due order, and leave all the *secondary* means of *picture-making* to those who will not acquire the art of doing without them.

John. What do you mean, brother, by "*secondary means?*"

George. All copying, by measuring, tracing, squaring, and pouncing, and *all mechanical* aids in making copies of pictures.

Its extensive Power.

Eliza. Then engravers are but secondary artists?

Ann. I believe, sister, this is too hasty a conclusion; for, by what I have already learned on the subject, engraving (although dependant on some mechanical means, to obtain a certain, and correct, outline of the subject of imitation) is one of the greatest departments of art, and may be as excellent *in its way* as painting itself.

John. I beg pardon, sisters, but I think you should not talk about engraving now: it is a hinderance.

George. Now, to convince you of the great advantage of a regular acquaintance with the art of perspective, please to observe, that architects, after they have drawn the geometrical plans and elevations of a building, can (by *due knowledge of this art,* united with a tolerable good taste for landscape) give very true pictures of *intended* buildings or improvements *before they are begun,*—the forms of trees excepted of course.

Eliza. What! Entirely without seeing them?

George. Yes, as perfectly as you could trace them on a *transparent plane,* after the whole is completely built and planted; and those architects who thoroughly understand perspective, can make out geometrical plans and elevations from *correct* perspective pictures of buildings, so truly as to enable them to erect exact copies of as much of the real edifice, as is represented in the picture, from this plain and evident reason: If a geometrical object presents the means of making a *true perspective* picture of it, such picture must contain the material evidences of the original geometrical elevation.

Ann. How delightful! What an art it must be!—I cannot help thinking it very difficult.

Eliza. Why, there seems to be a kind of prophetic power in perspective, if one is enabled thereby to shew the true picture of a place before it is built. I have also some serious notions of the difficulty.

George. Never fear, sisters. Attention and perseverance will surmount great difficulties; and *perspective being attainable by rules,* must not be classed among the greatest. I will do all in my power to make the whole as easy and pleasant as possible.

John. Then you know, Eliza, we shall be able to *prophesy* pictures without *tracing.*

Eliza. And yet, Mr. *Smart,* I have conceived a great partiality to this drawing on a glass; for while at the window I could imagine *the window frame to be a picture frame,* and all I saw beyond *appeared to be a* PERFECT PICTURE. Do come again and look, Ann, and if you take my idea, you will be delighted; for though the scene is not composed of the most picturesque objects, yet only consider it as I do (a painting), and tell me if ever you saw a better?

Ann. Oh, Eliza, I almost envy you this step! It has now taken my imagination properly. You may well call it a perfect painting, although the scene makes it a poor picture. Well, who could have thought we should ever feel so much pleasure in looking towards that dull street! *

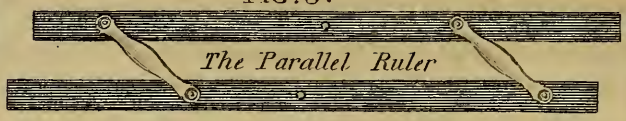
* *Edward Street,* seen from No. 42, Margaret Street; then the Author's residence.

THE INSTRUMENTS.

PLATE 1. FIG. 1. *Page 8.*

A Sheet of Paper Strain'd in the Framed Drawing Board.

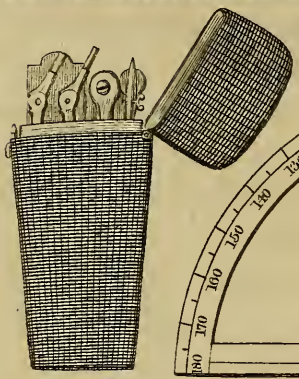
FIG. 8.



The Parallel Ruler

Page 15.

The Instruments omitted in this Plate are the Sector, the Scale, & the Ruling pen. They are explain'd in the Dialogue.



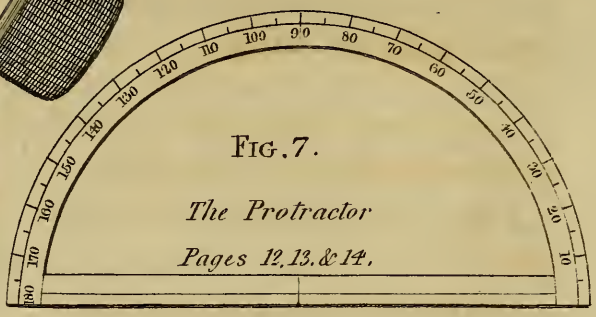


FIG. 7.

The Protractor

Pages 12, 13, & 14.

Page 10.

No Compasses 1

FIG. 2.

No 4

FIG. 6

No 3

Pen'l

Pen

Dividers

FIG. 5.

Page 10.

Diagonal

FIG. 9.

Right angled Triangle

See Page 20 line 21.

Perpendicular

Base

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Passive Attention recommended.

George. Now, sisters, if only a right idea of perspective has given you so much pleasure, you may fairly conclude that a right knowledge of it is worthy the study: for to study we must proceed: and I hope you will never quit a subject, or suffer me, till you *clearly* understand me. And let me entreat you to *follow* my explanations attentively, enquiring freely *on what is passing;* but *do not lead on too* fast by looking forward, as that may tend to that sort of dispatch which must be considered more a desire *to get rid of a lesson,* than to become acquainted with it.

On Geometry, and the Use of the Instruments.

Ann. PRAY, brother, is not *practical geometry* the proper introduction to perspective?

Eliza. Oh, geometry!—the word fills my mind with alarm.

George. And pray, sister, did not the word *alphabet* once alarm you; and afterwards the words *grammar, French, geography, gamut,* &c. &c.? Anticipation is as often erroneously awful as it is pleasing; possession is the test: let the rudimental knowledge you already possess, teach you how to feel respecting the sublime addition we are endeavouring to make to your accomplishments. What say *you* to geometry, my brave John?

John. I do not intend to be alarmed at a word I pro-

mise you. I suppose you will soon shew us the meaning of *geometry*.—What is it?

George. Practically, it teaches the methods of drawing lines, polygons, circles, ovals, &c. with truth, and proportionate to any scale you may find occasion to adopt. But it may be some considerable gratification to the *alarmed* to inform them, that little more than a dictionary of the general figures, and a very few practical problems, will be all that is requisite to our progress in perspective. *Do you know where* to find the case of instruments and the parallel ruler?

John. You know *you always clean and lock them up safe* in your drawer.

George. Here, John, take the key and bring them to me, and I will teach you how to use them; and I hope you will never forget that you found them *clean* and *safe* when you first began to learn the use of them; for if you let the instrument get out of order, you will soon feel the inconvenience of it.

John. Here are the instruments, brother. (Plate I.)—Are we all to have instruments and drawing boards?

George. Of course; and I must observe, that many a genius may be lost for want of the possession and knowledge of these simple keys to the doors of art.

The framed drawing board (Plate I. Fig. 1.) is made to any size you choose, and may be had at the principal colour shops; it only requires attentive inspection to know how to put the paper on it. First, cut a piece of drawing paper,* about an inch longer and wider

* See *sizes* of drawing papers, at the end of the last Letter.

than the pannel: pass a clean damp sponge over the *back* of the paper *(the back of the drawing paper is that side* on which the maker's *marks read backwards);* then take out the pannel, and place it even on the paper, and lift up the paper and pannel together, and place them into the frame; press it well up to the front, and replace the two bars behind, and it is ready to draw on.

Ann. Are these sort of drawing boards absolutely requisite?

George. No; draftsmen paste or glue the edges of very large sheets, and *lay them down* on smooth boards: this is the most usual method with architects and others, for *large* drawings.

Eliza. Please to tell us the process.

George. First, observe that you damp the *back of* the paper, and let it diffuse till it is *pliant;* then paste (with *strong* paste) about half an inch (quickly) of the edge of the paper. Some double back as much of the paper as they mean to paste or glue; but I think it best, when pasting, to lay a flat ruler, as a barrier to the paste. If you want to use the paper instantly, you must *glue* the edge, as that will bear drying by the fire: the pasted edges will not, but must dry gradually. It is well to lay down paper for drawing, on the evening previous to the day you wish to draw on it. Recollect to use glue quickly, and stick the part you glue to the board as you proceed; for glue will set, or *chill,* in an instant.

John. I hope, brother, the paper will soon be quite smooth—I want to see you begin drawing.

George. I must first explain the instruments, to which

Use of the Instruments.

I beg you will pay great attention: now take the largest compasses (Plate I. Fig. 2.) out of the case, and by unscrewing that little screw at No. 1, you may take out the steel leg: (take care of it) then take that instrument out of the case which has a lead pencil in it, No. 3, and place it in the compasses where you took out the steel leg, and turn the screw tight again; thus we are provided with the means of drawing the circular parts of geometrical drawing. Very highly finished instruments are made without the screw, No. 1, the parts being fitted to each others so nicely as to hold well together without.

Ann. That is very complete: will you tell me, brother, why there is a joint (No. 4.) in the pencil leg you have fixed in the compasses, as there is not one in the steel leg which you first took out?

George. Were it not for the joint, the pencil would lay too much on its side when a large circle is required, and the line would of course be broad; but by bending that knee or joint, you can draw to the full extent of the compasses, with the point perpendicular to the paper: this sort of precision is to be observed in all geometrical studies.

John. And what are those compasses for, which are without any joint or screw? (Fig. 5.)

George. They are to take dimensions with, and are called *dividers,* and are nicely adapted to set off any number of equal parts, &c.

Eliza. Here is another leg with a joint in it; (Fig. 6.) what is that at the other end of it, with a little screw?

George. That is a steel drawing pen, to place in the compasses after the pencil outline is correct; and you are therewith enabled to ink in all the *circular* parts of your drawing.

John. Then I suppose this long steel pen which has no joint, is to *ink* in the *straight* lines?

George. Very rightly supposed, John.

Eliza. What is this little rule for, which has so many lines and figures on it—I mean that with a joint?

George. You appear perplexed at this instrument: come, I shall soon relieve you; it is called the *sector,* and is particularly useful in many points of mathematical inquiry; but almost entirely useless in the *practice* of perspective: yet I hope you will take some opportunity of learning the use of the *line of lines* on one side, and the line of polygons on the other.

Ann. Where shall we find the proper explanation?

George. In the Encyclopedia, or Kerby's Dr. Brook Taylor's Perspective: there is also a cheap pamphlet on the use of the instruments.

Ann. And what use are we to make of this neat little thin rule, which has such a number of lines and figures on it? will you please, most indulgent master, to dispatch this intricate article, as you did the sector?

George. Your request is granted, without any indulgence on my part; as you will only use it for a nice ruler. But I may tell you that the lines and figures are only proportionate scales; as, suppose you consider any one whole division, on either of the lines, as an inch, foot, yard, pole, furlong, or mile, you will find

the proportionate subdivisions at the end of that line; and on the other side is a line of inches, each divided *by ten* (or what is properly called decimally), and below that is a decimal scale, which, by means of the diagonal divisions at each end, exhibits the smallest part of a tenth that a draftsman can distinguish practically by lines.

Eliza. I think we shall not, hereafter, be alarmed at intricate appearances, since your explanations are so very intelligible.

Ann. We were both cowards, Eliza; but George will pardon us.

George. Pardon, sisters! you know it cannot be long since I looked on these instruments with the same ideas of them you seemed to entertain; there is nothing to pardon, but a little impatience. Deliberate attention will render the whole as plain as that which I have already taught you.

John. Please to tell us what this half circle of brass (Fig. 7.) is for? then we shall know all the instruments.

George. It is called the *protractor:* it is used to find the number of degrees contained in an angle; as thus:* —Ann, draw a right line, and place the straight edge of the protractor truly on it; then make a mark on the paper, at the top of the semicircular part of the protractor, at 90, and (without moving the protractor) make a mark on the line exactly at that little mark on the

* The student must practise this, if unacquainted with what the problem explains.

straight edge of the protractor, which divides it in half, and which is the centre of its circular part: now take it off, and draw a right line through the two marks you have made on the paper, and it will be exactly perpendicular to the line first drawn. From this you may remember that a right angle contains 90 degrees, or a quarter of a circle.

Ann. I see any other angle may be found in the same manner; do you comprehend it, Eliza?

Eliza. Not quite so clearly as you appear to do; but brother will favour me with another example.

George. Come, Ann, shew your sister how to find the angle of 75 degrees.

Eliza. I have it, George! it is only to mark at 75, as Ann did at 90, and draw the line to the centre.

John. Oh! any body may do it: but I cannot tell what use it is to know it.

George. I will tell you, John: one advantage you have gained by it; you know you are very attentive to conversation: now suppose you had heard any one say that the sun was about 30 degrees above the horizon (before I taught you this), could you have conceived what height the sun was?

John. No, brother.

George. Can you now?

John. I must consider a little, brother; come, ask Ann and Eliza, and let me hear how they answer.

Ann. I think a line drawn from 30 on the protractor to the *centre,* would be in the same oblique direction to

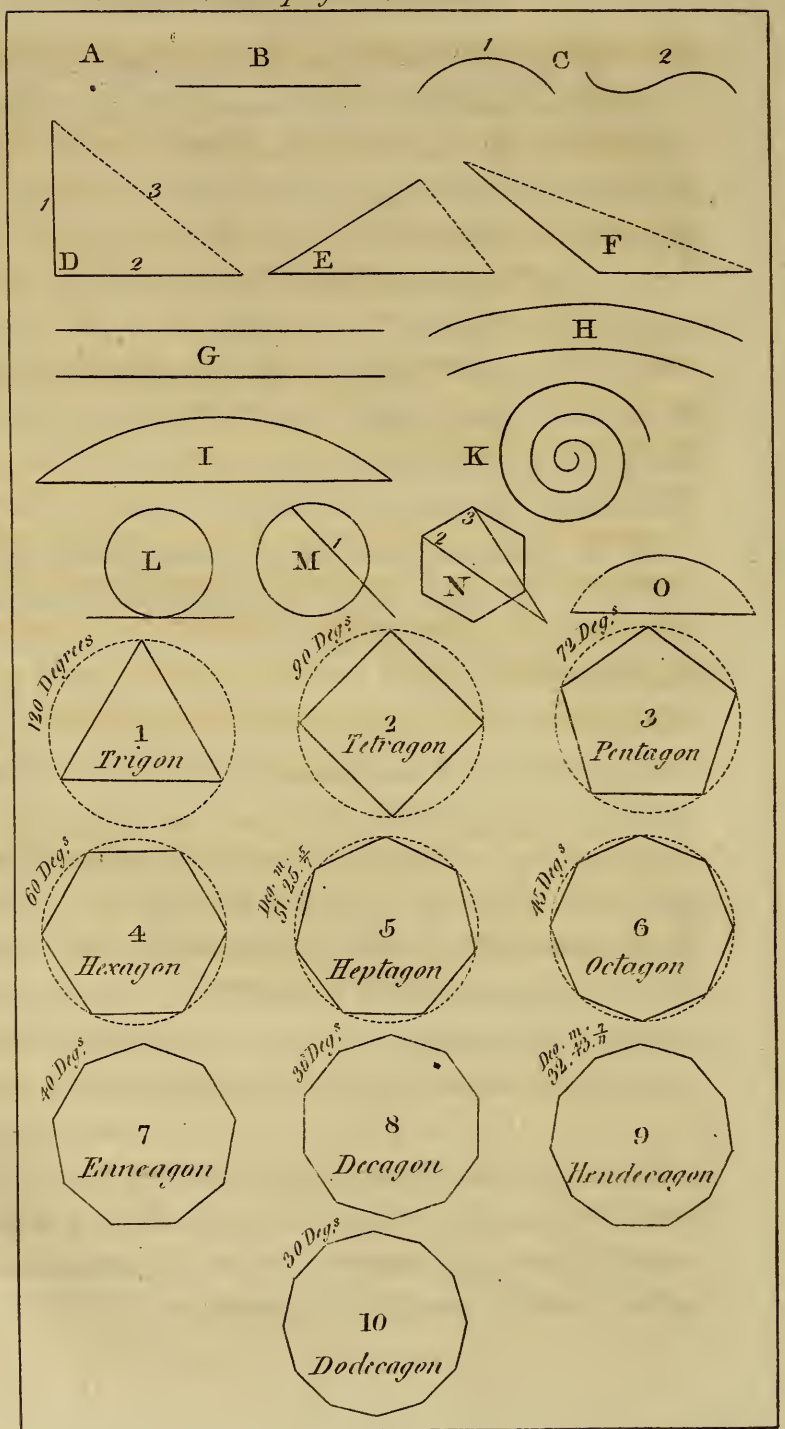
the level of the protractor, as the line from my eye to the sun, when it is 30 degrees high, or above the horizon.

Eliza. But the difference between a degree on this little instrument, and the vast extent of that circle which the sun is supposed to make to the earth, or rather the earth to it, seems to me to bear no comparison.

George. The observation is allowable at present, but you must henceforth *remember, that the three hundred and sixtieth part of the smallest circle* that can be drawn, or conceived, is as much *one whole degree* of such circle, as the three hundred and sixtieth part of the *largest circle* imaginable in *the vast immensity of space!* and 30 degrees on the one, would form precisely the same angle at the centre, as on the other. Now, Eliza, for proof: take a large sheet of paper, and draw an angle of 30 degrees (let the point, or centre, be near the middle of the paper): now place the steel leg of the *pencil* compasses on the point of the angle, and strike the largest circle the paper will admit; now strike the smallest you can, and two or three intermediate circles, *and observe,* that the space between the two lines which forms the angle of 30 degrees, will be found to be exactly one twelfth part of the circumference of each of the circles, where they cross them; and, consequently, each 30 degrees.

John. Now, brother, I understand how to conceive the sun's height, when I hear the number of degrees mentioned; and I love the instruments the more I know them; but I always thought them very difficult things

PLATE II. *See page 17, 18, & 19.*



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till you began to explain them. Come, will you please to explain the parallel ruler?

George. (Fig. 8.) It almost explains itself. Practice, with care and caution, will render it familiar to you; when you have drawn a line, and require another parallel to it, take care to keep that limb of the ruler, which you do not want to move, quite still, and firm to the paper with one hand, and move the other side, or limb of the ruler, upwards, or downwards, to the point required; then hold *that* firm to the paper while you draw the line: if this is not nicely attended to, you will loose the parallel, and confuse your drawing; indeed, the whole use of the instruments depends on precision, insomuch, that the words "*geometrical precision*" are the terms made use of to convey an idea of the utmost correctness. There are parallel rulers *on rollers.*

The Author considering it absolutely necessary to recommend a full treatise on Geometry, rather than such abridgment as the compass of this Essay would admit; he has only given the following

Explanation of the Terms and Figures in Practical Geometry.

George. PRACTICAL GEOMETRY will now engage our whole attention for a short space of time; and then, John, I will draw in perspective: you must keep your eyes on Plate II. while I explain each figure.

A. This is only a single dot or point, and is the first term in practical geometry: it is to be conceived a point without length, breadth, or thickness.

B is a *straight line*, which you may imagine to be a

number of dots united, having length, without reference to breadth or thickness.

C. These two figures are *curved lines,* having no straight part.

D is a *right-angled triangle,* or an angle of 90 degrees.

E is an *acute angle,* or less than 90 degrees.

F is an *obtuse angle,* or more than 90 degrees.

G and H are *parallel lines*: they always follow one another at equal distances. The two edges of the brass semicircle of the protractor are as parallel as those of the straight part.

D. No. 1, is a *perpendicular line* to No. 2. because it is at a *right angle* with it. *Observe,* that line is always considered perpendicular to a horizontal, or level line, which is at a *right angle* with it; but a *plumb-line* is the radical or original principle of the idea of a perpendicular, without any material exception to the object of our pursuit.

Ann. Can there be any exception?

George. Yes, when a plumb-line is suspended near the side of a mountain, it will be attracted out of its vertical and proper direction, towards the centre of gravity, by the mountain.

Eliza. In what proportionate degree, brother?

George. It will be too great a digression from the object of our present pursuit to answer your question properly; you will find it fully explained in the Encyclopedia, under the word "*Attraction,*" which you will read at your own convenient time.

John. What is a plumb-line?

George. Tie your top-string to the peg of your top,

and let it hang as a weight, and the string will be a plumb-line. You may have observed the bricklayer's building-rule, that has a line and plummet of lead: it is called the *plumb-rule,* by which they are able to prove the perpendicular of their work, which is a point of the utmost importance in building: the pavior's *levelling-rule* has also the *plumb-line.*

Ann. Then, as they are so very accurate in their works, I conceive we should not be less so in our imitations of them. Now I feel the force of your remarks on my first sketches; you used to say, that the houses I drew were *falling down.*

Eliza. What an unpleasant sensation it produces! all my little landscapes will shock me; for houses, churches, castles, bridges, gates, and stiles, are all tumbling down.

John. Then the best way, I think, will be to burn them, and mind to do better in future.

George. Well said, John.

D, No. 2, is a *horizontal line,* and represents a perfect level: it is the *base line* of this figure. (The term *base line* is properly applied to that line on which a figure is erected.)

D, No. 3, is a *diagonal line,* because it crosses the figure at opposite angles, and in its direction may be considered the *oblique line:* that is the geometrical term for a straight line, which in vertical figures is neither level nor perpendicular; and oblique lines, on *any plane,* are such as are not perpendicular or parallel to the base line.

I is a CHORD, or *subtense:* it is the straight line that

joins the two extremities of an arc, exactly as the string of an archer's bow.

K. A SPIRAL LINE is a curved line issuing from its centre, and continually expanding, and going off from it, at every turn.

John. I can make a *spiral line* by rolling this narrow slip of paper round my pencil; and, then letting it loose, it will be like the spiral line.

George. I like your observation, John; I shall soon direct you to the means of drawing one properly; let me first explain all the figures.

L is a TANGENT, which touches another line without cutting it.

Eliza. By the figure, it appears that the surface of the table would be a *tangent* to an *orange;* I wish you would make the experiment, brother.

George. The application deserves one; and we will divide it by cutting it into four equal parts: the lines which will pass through the orange, in dividing it, are secants, and are explained in our next figure.

M. A SECANT is a line that doth *cut* or *cross* a figure.

N is another example, shewing two secants through one figure.

O is the segment of a circle.

SURFACES may be comprehended under three terms: viz.—1st, the *plain* or *flat:* 2d, the convex: and 3d, the concave.

The geometrical *surfaces,* with which you should be well acquainted, are generally known by the name of polygons.

Geometrical Explanations.

No. 1. The trigon, an equilateral triangle, three equal sides and angles.

2. The tetragon, or perfect square, four equal sides, and its four angles are—*right angles.*

3. The pentagon, or figure of five equal sides and angles.

4. The hexagon, or figure of six equal sides and angles.

5. The heptagon, or figure of seven equal sides and angles.

6. The octagon, or figure of eight equal sides and angles.

7. The enneagon, or figure of nine equal sides and angles.

8. The decagon, or figure of 10 equal sides and angles.

9. The hendecagon, or figure of 11 equal sides and angles.

10. The dodecagon, or figure of 12 equal sides and angles.

These figures are to be described within circles, and all their angles must touch the circumferent line.

The number of degrees which is contained in one side of each polygon is marked, to shew you that the protractor may be used to divide a circle into any number of equal parts, in the manner explained under its proper head—pages 12, 13, & 14.

Triangular figures are distinguished by the qualities of their angles; as a *right-angled* triangle, an *acute-angled* triangle, and an *obtuse-angled* triangle: see Figures D, E, and F, Plate II.; and the trigon, No. 1.

Geometrical Explanations.

The distinguishing names of four-sided figures are as follow: see Plate III.

No. 1, *the square:* 2, is a *parallelogram:* 3, the *rhombus:* 4, the *rhomboid:* 5, *trapezoid;* which has two opposite sides parallel, and the other two unequal: 6, the *trapezium,* has all its four sides and angles unequal.

The other two regular figures, are No. 7, the true *circle;* and 8, the *ellipsis.*

No. 10, the *parabola,* is that section of a cone which is parallel to its ascending side.

There are various other irregular figures; and you may easily acquire a thorough knowledge of the whole, if you will study some good treatise on practical geometry; Le Clerc, Nattes's, or rather *Dr. Hutton's Compendious Measurer,* being a brief yet comprehensive treatise on PRACTICAL GEOMETRY; either will be sufficient: but we shall now proceed to our first object, *perspective,* and only call on the aid of as much practical geometry as we may require.

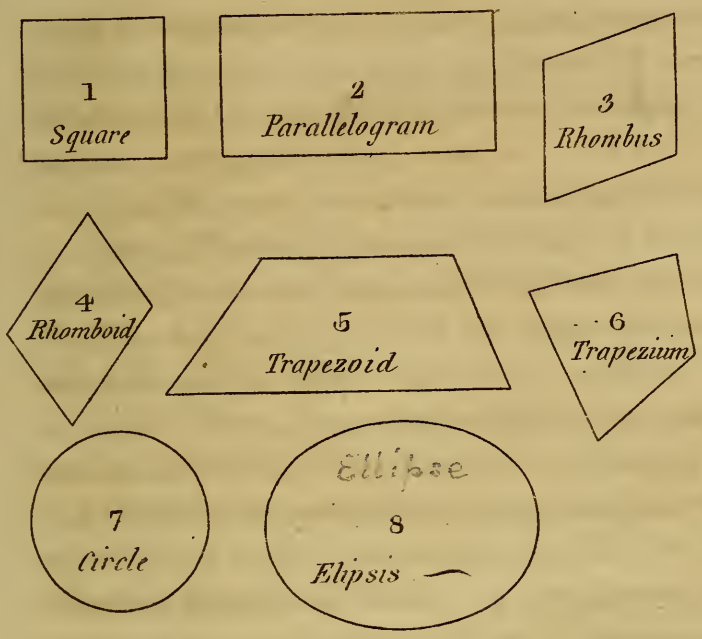
Ann. Here is a little triangular piece of mahogany; what is its use, brother?—Plate I. Fig. 9.

George. One of its angles is made a correct right angle, for the purpose of obtaining right angles in a drawing, without the geometrical process.

Eliza. And what is the diagonal side of this instrument for? and why are not both the right-angular sides of equal length?

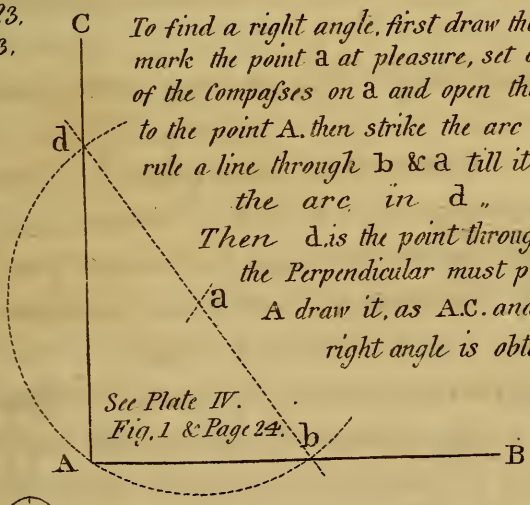
George. My dear Eliza, your question leads us a little deeper into Euclid than our course of perspective requires; but this triangle (if its three sides are properly

PLATE III. *Page. 20.*



Page 23. line 13.

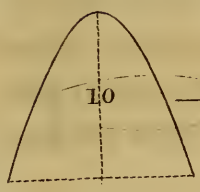
9



To find a right angle, first draw the line AB. mark the point a at pleasure, set one foot of the Compasses on a and open them exactly to the point A. then strike the arc dAb. rule a line through b & a till it crosses the arc in d.

Then d is the point through which the Perpendicular must pass from A draw it, as AC. and the right angle is obtain'd.

See Plate IV. Fig. 1 & Page 24.



10 — *A Parabola, is that Section of a Cone which is Parallel to its Side.*

C. Hayter. Inv.t *Turnbull. Sc.*

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made to measure 3, 4, and 5 inches, feet, yards, &c.) is so proportioned, that the *squares* of the two shortest sides added together, are equal to the square of the largest, or diagonal side.

John. What do you mean by the *square* of a side?

George. Multiply the side three inches by three, and that will be nine, or the *square* of three; then multiply four by four, and you have 16, which is the *square* of the next shortest side: add them together, and they make 25. Now *square* the longest side 5, and that will also produce 25, which stands as a general rule, that the *square* of any diagonal of a right-angled triangle, is equal to the united *squares* of the two lesser sides. By this rule, builders set their large framing at *right* angles; (such as the first timbers of roofs, which are termed plates) and planners prove the truth of their proceedings thereby.

John. I wish, brother, you would shew me how they make use of this rule?

George. I will give you one instance: now suppose a *jointed two-foot rule* to be two pieces of timber, 12 feet long instead of so many inches; and you would lay them down exactly at a right angle: first, open the dividers to 5 inches (supposed feet); then lay the rule on the table as nearly as you can at a right angle, and place one foot of the dividers exactly at 3 inches from the centre of the joint, down one limb of the rule, and move the other limb till the other leg of the dividers will touch the point, which is 4 inches from the centre, and the angle will be right. This one right angle, thus

found, is a rule for the rest of their operations, as far as relates to the square, because their opposite sides must be parallel: (the numbers 6, 8, and 10 feet, are generally the builder's guide, because their *ten-foot rod* proves the diagonal of 6 feet and 8 feet.) Endeavour to complete your knowledge of geometry; for a *smattering* of any art or science will only pass with the ignorant, and must expose you to ridicule or contempt in the mind of the proficient. Knowledge of this sublime nature is for use, not show; and every step one takes in geometry ends so delightfully clear, that the student *seems to feel as if he had always known it.*

Ann. Can we begin perspective now?

George. By the means of an example in practical geometry, you know, sister, it will be requisite to have a right-angled figure, or parallelogram, to draw our designs in; and how shall we make the angles right?

John. I can do that by the protractor now, if you will tell me how long and how wide it must be.

George. If you will make your words good, I promise you it shall be rewarded with a new book. Come, draw the figure 3¼ inches long and 2½ inches wide; and explain your work, as you proceed, in a clear manner.

John. (Plate IV. Fig. 1.) I first draw a line 3¼ inches long; then I shall set the straight edge of the protractor on that line, very even, and with the little mark at the centre of it exactly to one end of the line; then I shall make the mark at 90 degrees, as you told us, and draw a line through it, to that end of the base line

whereon I placed the centre of the protractor, which I must mark exactly $2\frac{1}{2}$ inches long—that makes one corner, you know: now I have only to mark the length $3\frac{1}{4}$ inches from the top of the perpendicular I have drawn, and the width $2\frac{1}{2}$ from the point of the other end of the *base line,* and draw the other two sides to the mark thus obtained, to complete it. See Plate IV. Fig. 1.

Eliza. Well done, John; this proof of your attention is worth a little library.

Ann. I am astonished and delighted!

George. This is success, indeed! You have merited the promised reward with great honour. Now I will teach you another method: see Plate III. Fig. 9.

Ann. This example is so clear and easy, that, instead of intricacy or perplexity, I am charmed by the knowledge it promises. Are all the figures found as easily as this finds a right angle?

George. They require much about the same degree of attention. I found no obstacle when I copied Le Clerc, except from the misprinting some of the letters referred to (as the edition I had was imperfect); and that did me some good, by exciting more attention than I otherwise needed to have given them: it is very easy to draw them; but, when drawn, they are themes for the most learned mathematicians.

Eliza. Are there any other methods of finding the right angle?

George. Yes, several; which you must learn from the books I have mentioned. We can begin perspective

now, without any immediate call for more rudimental figures in practical geometry.

Principles of Perspective.

The *youthful* reader is to bear in mind, throughout the following explanations —that the words " Object of study," " Scene," " or Subject," relate to *real nature,* not to the pictures, or drawings, they may undertake to copy; as all the laws of perspective, are or should be complete to their hands, in such examples.

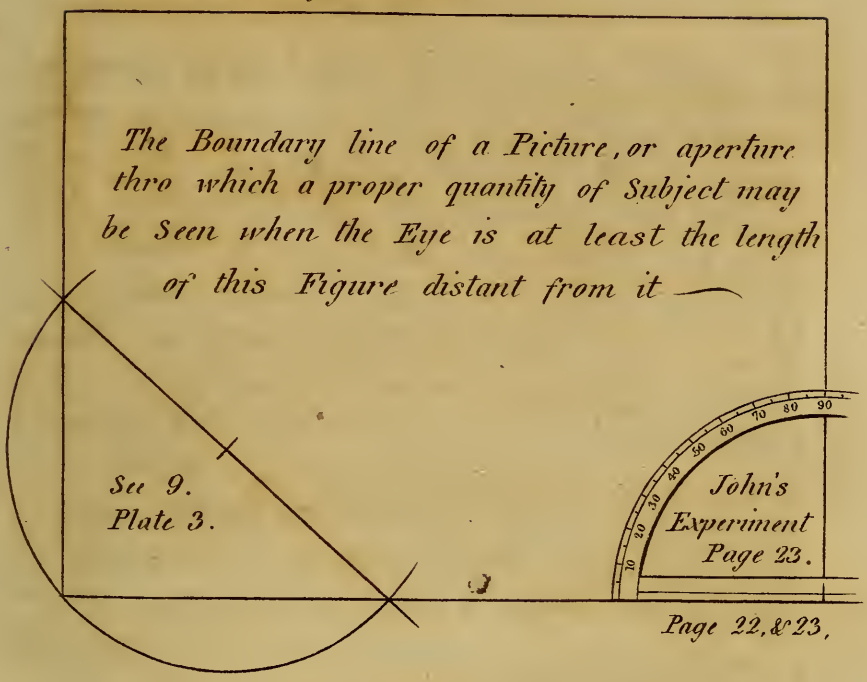
ON THE HORIZON OF A PICTURE—PLATE IV.

FIGURES 1 and 2.

George. Now let me remind you of the rule laid down in the first part of our conversations,—that this outline or limits of the picture, No. 1, must be conceived to be the size of an *aperture,* through which you view *the object* of your study (I do not mean a *picture,* or *drawing,* but a real scene, or object of nature); and the glass surface, supposed to cover this aperture, is always to be understood as the *transparent plane,* on which the drawing might be made a perfect outline, and in drawing, the ground plan preparatory for a perspective drawing: this transparent plane is always represented by a line called the *section line,* which will be further understood in proper course. Now, on viewing Fig. 2, you may imagine a level surface extending from the *base* line to the utmost visible distance: think it a smooth sea, if you please. The line which appears to meet the sky is called the *horizontal line,* and must be as high

The Horizontal Line.

Plate IV. *Page 24.* No. 1.



Page 24, No. 2.

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up in the picture as the spectator's eye; for the one *always* determines the other. In drawing landscapes from *nature,* the height is determined by the *horizon itself;* because, had you the *transparent plane* really set up to sketch on, you would mark the horizon on the glass exactly where it appeared (while keeping your eye still and at a proper distance from it).

Ann. As pictures are made of so many various dimensions, I should like to have some proportionate rule for the height of the *horizontal line.*

George. About one-third the height of the picture, or rather more, seems to be the most general rule for level subjects; but you are not confined to that proportion, as it may be sometimes proper to deviate.

Eliza. How are we to know when to make the *horizontal line* higher or lower than one-third up the picture?

George. When you take a view from an *eminence,* you must, consequently, have a high horizontal line, as conformable to the rule first given for its height (that of the *eye's height);* and if you make an *eminence* the object of your view from a *level station,* you must by the same rule have a low horizontal line. The antique, and all public statues, of great and noble characters, being generally placed on elevated pedestals, and viewed from level stations, must of course have low horizons, as also whole-length portraits of distinguished persons; which *judicious artists* provide for in their painting-rooms, by having a platform and *high chair,* for the purpose of setting their subjects as high as if they stood; conformable to the integrity of perspective, that is, agreeable to the

horizontal line of the picture. But subjects of familiar life, or less noble characters, may perhaps be the better characterized by a higher horizon. Genius must digest all rules, *but should never attempt to proceed without the knowledge of them.*

John. Now, if I were to draw the likeness of *my little dog*, I must have a high horizontal line to the picture; because my eye must be considerably above him, unless I placed him on the table, which you know is not a proper place for a dog; but the portrait of a horse, or an elephant, would have a low horizon, inasmuch as their height is above the level of my eye. Am I right, George?

George. You have comprehended me most happily, and your attention claims great praise. Such active and proper application of what I have taught you, is great proof of commendable attention.

Ann. I have seen some very strange-looking prints, wherein (what I *now* understand to be) the *horizontal line* was almost at the top of the picture, and one might see over the tops of houses, and (even) partly down the chimneys, and over a vast extent of country: what name do you give this sort of view?

John. Brother told me it was a *bird's-eye* view.

George. And it is so called; because the height of the *eye* is determined, in such pictures, to be inaccessible to any eye but that of a bird, by which an extensive view can only be obtained. This sort of pictures is rather descriptive, and the chief pleasure they give is information: they convey a tolerably correct

idea of both plan and elevation, in one piece, and are adapted to explain the positions of fleets or armies, the general view of an estate or fortification. Palaces, and other public buildings, have been thus represented.

John. I hope, brother, you will draw us a specimen of a bird's-eye view.

George. That you will find in the perspective view of the chess-board, Plate VI. Fig. 2. Now be *very* attentive; and, instead of 64 *square inches,* which admit to be the real dimensions of the *chequer*-board, you must consider them so many square fields, each a *hundred yards* square: let this fix the scale of proportion with regard to the height of the *horizontal line,* and you will find it exactly 400 yards above the base line, or level ground, which is certainly a height inaccessible to any eye but that of a bird.

Eliza. Or a *balloonist's* (suppose we new name it), since balloons have, in all probability, rivalled the utmost height of the eagle.

Ann. The thought is a-propos; but the old name is established, and, conveying the proper idea, need not be changed: we must all thank you, brother, for your very satisfactory explanations.

On the apparent Inclination of Levels to the Horizon.

George. Now you seem to comprehend the horizon as the utmost visible line of level land, or of water, you

must also take for a rule, that *all level planes* (as floors, tables, shelves, ceilings, &c.) appear to tend to the horizontal line of the picture, as directly so as level land or water.—See Plate V. Fig. 1, where are represented five *level planes,* which you may call broad shelves or floors, and their undersides ceilings: observe, they all converge towards the *horizontal line,* although they are representatives of *parallel surfaces;* two of which are below, and three above the horizon: and (as they are determined by breadth) were they to be continued to the utmost extent of visible distance, their retiring edges would all appear to unite in *one point* on the horizontal line, according to the lines in the example.

Eliza. This is very clear, brother: now will you tell me the proper name of the *point* to which all their retiring edges would converge?

George. It is the POINT OF SIGHT; because the eye which could see the *five level planes* just as they are drawn, must be exactly *opposite* that point.

Ann. Let me understand you clearly. Is this point to be considered as *in the picture,* and *on the distant horizon?* or is it placed there to represent the point which falls *directly opposite the eye* of one viewing the scene?

George. The large white surface in Fig. 3, of this same plate, which represents a plain canvass to be painted on, explains the matter at once; there the boy's eye is in its proper place, and the *point of sight* properly placed on the canvass. Suppose you go to the *transparent plane* (the window), and fix yourself steady,

Level Planes, &c.

Plate V.

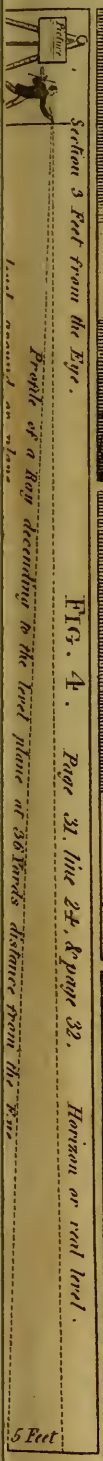

Fig. 4. Page 31, line 24, & page 32.

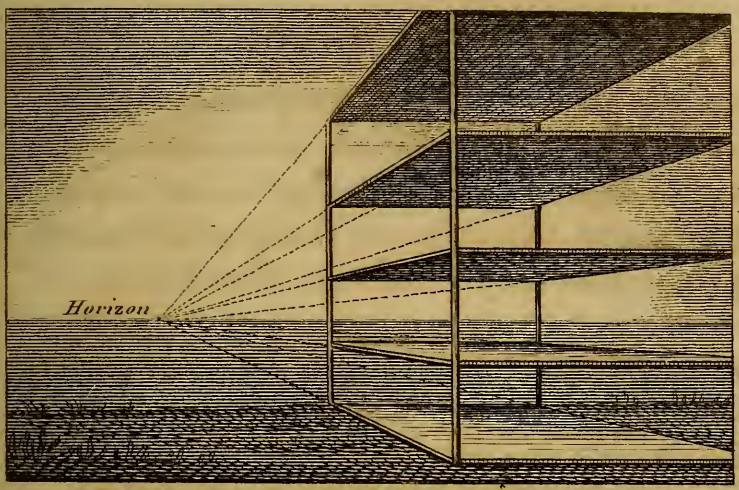

Fig. 1. Page. 25.

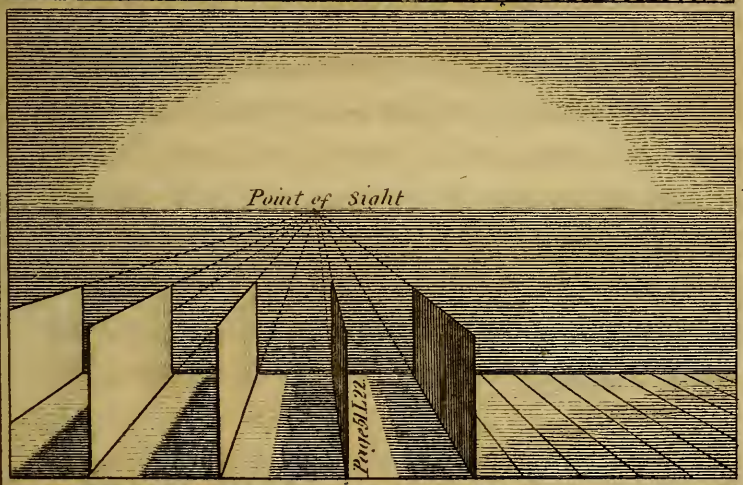

Fig. 2. Page. 34.

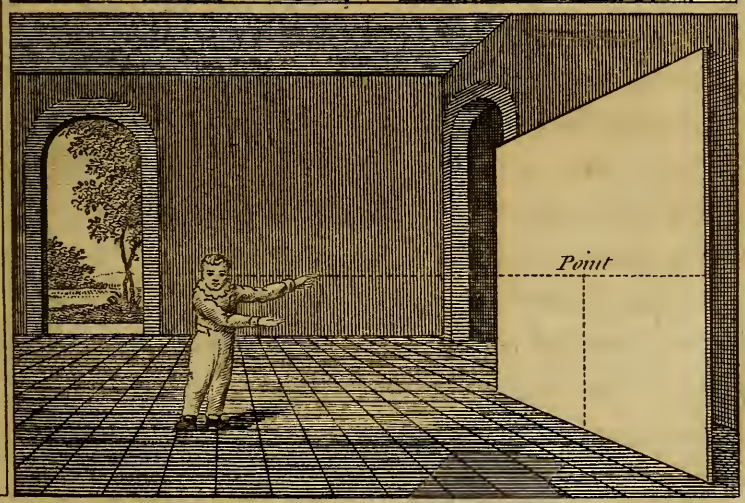

Fig. 3. Pages. 28. & 37.

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as if you would trace on it the scene before you,—there would be *one point* of the glass you look through, exactly level with your eye; and the continuation of that *point,* by a *level line,* right and left, would be the proper horizontal line: but *this particular point* must fall precisely on that part of this line, where the ray, or direct line of sight, would form a *right angle* on the glass, or be exactly perpendicular from its surface to your eye; and the ray of sight, which is determined by *this point,* is called the *principal visual ray,* which you will be well acquainted with when you begin *to draw* in perspective; therefore, as this ray proceeds *from* the *eye,* and *not from the horizon* of the scene, the *point* thus marked must be considered *opposite the eye;* and it is only marked on the horizon, because it is impossible to describe the real situation of the eye, as it must always be *at least the length of the picture* distant from it, as will bè further explained in its proper place.

John. I observe, brother, you sometimes say horizon; and at others, *horizontal line:* what is the difference?

George. All perspective representations *must* have a *horizontal line:* but there are many pictures wherein a view of the natural *horizon,* or utmost distance, cannot be expressed; such as *architectural views,* interior, caverns, woody scenery, mountainous distance, and perspective descriptions of machinery; therefore the strict distinction is, that the *horizon* is the real object, and the *horizontal line* is a line drawn on the *transparent plane,*

level with the eye, and governs all the level objects in a picture; because, as I told you before, it is determined by the height of the eye.

Eliza. It seems difficult to agree with one part of your law, that the horizon of *level land* should be drawn as high as my eye, when, in truth, it is no higher than my feet.

George. Your observation in this is very keen; and although you will still find the *horizontal line,* in the picture, as high as the laws of perspective have fixed it, yet I shall give you the satisfaction to know, that your *query* is founded in truth; and, strange as it may seem to you, is consonant with the law of vision.

Ann. Come, John, we must attend to this curious point: for if the ray of sight does really *descend* from one's eye to the distant horizon, which is admitted to be level, and consequently no higher than our feet, I cannot conceive how brother can maintain his rule, of drawing the *horizontal* line *as high* as *the eye.*

George. The ray, which conducts your sight down to the proposed point, is at the same time a conductor of the appearance of it up into your eye; and, consequently, in effect as high as your eye. Now suppose your eye to be five feet higher than the level whereon you may be supposed to stand, and you direct a ray of sight to three miles distant, towards the horizon of this level plain: now *conceive a transparent plane* of glass to be set up for you to sketch the scene on—say three feet from you towards the horizon; and you were then to draw the horizontal line (on the glass or *trans-*

parent plane) exactly where you would see it—you must allow that would be the true perspective situation of the *horizontal line* on this transparent plane; and how much would it be below the level of your eye, think you?

Ann. It must be *somewhat lower.*

George. It is, as nearly as possible, only the *eleventh part of the eighth of an inch* lower than your eye, when truly marked on the glass, at *three feet* distance from it: this is an atom in Eliza's favour; but too small to influence the rule laid down, *that of determining the horizontal line in a perspective drawing always as high as the eye;* and you must observe, that it is the *distance* of the *transparent plane from your eye,* which occasions this space between the absolute level of your eye, and the *descending ray :* for were you to advance the transparent plane to the distance of one foot from your eye, the space between the real level, and the apparent horizon, would be reduced to the *thirty-third part* of the eighth of an inch; and, agreeably to what I before observed, as the level ray and the descending one both *meet* in the eye, they will therein be of one and the same height.

For the sake of giving you a *diagram* within the compass of our paper, I have reduced the distance from three miles to 36 yards. Plate V. Fig. 4, wherein you may see and prove, by mathematical demonstration, that an object five feet high, at only 36 yards distance, would be but one inch $\frac{5}{8}$ and $\frac{1}{3}$ in height, when traced on the section, or transparent plane, at three feet

from the eye; and, consequently, but *that measure* from head to foot below the horizontal line of the drawing. The two lines drawn on the tablet (which is represented on an easel by the figure) supposes the horizontal line, and the height of a line at 36 yards distance, according with the profile, to make the space of one inch $\frac{5}{8}$ and $\frac{1}{3}$ of an eighth between them: then suppose you were to paint a life size figure or group, with the *perspective distance* at 12 feet, a figure at 36 yards distance must be four times the height of the space found in this example, where the perspective distance of the tablet is three feet. Should the calculations render my explanation difficult to you, take the *given rule for granted,* and let us proceed.

(*John.* We are sure now that the horizon can never be *higher* than one's eye.)

Ann. I thank you, brother. But first let me ask you one question respecting the horizon. Suppose you were as high on the mast of a ship as you could possibly be with safety, the sea perfectly calm, and your ship out of sight of land—would the horizontal line, all round, appear to *you* as high as your eye, in the same manner as it has appeared to me at the Panorama?

George. Whether by sea or land, or whether one is on a hill, a mast, or a tower, the horizontal line will be so near the eye's height, as to admit of no deviation from the rule. Come, sit down before the window, and mark the distant horizon on the glass of the sash. *Now be attentive,* rise up gradually, keeping your eye

on the horizon, and you will perceive it rise up the glass as you rise, and has left your first mark of the horizon much below that which you would mark for it now that your eye is higher. *Surely this convinces you.*

Eliza. Suppose, brother, we were to throw up the sash, and sit down at the window, and each of us was to make a drawing of the scene before us, would not each drawing have its horizon according to the various heights of our eyes?

George. Yes, of course; if you will all take the position proposed, I will make a drawing of you and the scene together: the sun is going down very beautifully —it ought to be a pleasing picture. (See Frontispiece.)

John. Well, that is a pretty picture: but, brother, you have made the *horizon higher than all our eyes.*

George. You must agree that I could not make *three horizons in* ONE *picture,* according to the rule I have taught you; and you must recollect *I* made the drawing, and you know I *stood,* which brought the horizontal line just the height I have drawn it. You will do well to make frequent application to true pictures, and to nature, to confirm all you learn.

Ann. I think we comprehend the theory of the *horizontal line:* what is the next consideration, brother?

The Theory continued.

George. OUR next business will be to shew John how

he may draw an army of soldiers, marching in open column, as at a review.

John. I shall be glad to see you do it.

George. Now, sisters, look to the drawing (Plate V. Fig. 2.), and remember the rule which it gives and explains, that *all parallel planes, which go directly from you towards the horizon, or parallel to the principal visual ray,* whether perpendicular (as those in the example), level, or oblique, *converge to the point of sight* (see the roof of Fig. 2. Plate VIII. for an *oblique* plane, subject to this rule); when, in geometrical fact, they are no nearer together, at their most distant parts, than they are at the *foreground.*

Eliza. What do you mean by *foreground,* brother?

George. It is the foremost ground, or that part within the picture which approaches the *base line;* and, in the real scene, is that ground perceivable within the boundary of the *aperture,* or picture frame, which is nearest to the spectator's eye.

John. But pray, Mr. George, where are the soldiers?

George. That is a very fair question, John; but I only proposed shewing you the perspective situation of the columns or rows.

Ann. And you have done it so plainly, that it only requires a little more of John's attention. Now, John, do observe, if these five parallel planes were so many ranks of soldiers, could any thing appear to keep better order, as soldiers marching?

John. (Ha! ha! ha!) I knew it well enough, but I

wanted brother to draw some soldiers; and I know all those lines on the ground are to represent *parallel boards,* although they all point to that *dot* in the horizon.

Eliza. You must not forget what that *dot* is called: if I have understood my brother rightly, it is that point in the picture which is exactly opposite the eye, and is called the *point of sight.*

Ann. Is there any rule, by which we may know on what part of the *horizontal line* this *point of sight* should be placed?

George. The best rule I can give is, to place it at, or near, the centre of the horizon of the picture.

Eliza. Why, brother?

George. I have, from the beginning, endeavoured to fix on your minds, that a picture should be conceived the real objects it represents; and the frame, or boundary of the picture, a hole, or an aperture, through which you obtain the view. If this idea impresses your minds properly, you will reasonably conclude, that *near the centre of such aperture* must be the most advantageous position of the eye; which, you now know, determines the point of sight opposite it, in the picture. Now carry on the supposition to the *covering the aperture with a glass,* and observe *very* attentively the advantage of *this situation* of the eye, and *point* of sight, when you begin to trace the scene before you. You consider, I presume, that your eye must be stationary as *to its place,* while tracing

the scene; and would view the various objects before you as they fall under different angles from that point.

Ann. I do not clearly comprehend what you mean by "*objects falling under different angles;*" will you please to explain it?

George. The rays which diverge from the eye to the objects of study, each form *some* angle with the *principal,* or central ray, at the point or station of the eye. Suppose the extreme width of the picture to be 50 degrees, then the angles, right and left of the centre, would contain 25 degrees each; and every object in the scene would most likely fall under different *smaller* angles, according to the scale of degrees on the protractor, fixing its centre on the station of the eye, on a ground plan of rays (as in Fig. 2. Plate XII.), and the more right or left objects are from the *principal visual ray, or perpendicular of your eye,* the greater must be the angle under which those objects will fall; and in tracing them on the *glass,* or *transparent plane,* as they would thus appear thereon, especially near the *foreground,* you would mark them *broader* than their proportionate size, *which will be made clear to you in* Plate X. Fig. 2.: let this suffice to lead us on towards a complete knowledge of the *point of sight.*

John. I have heard you explain the ray of sight which goes from one's eye, *directly through the glass,* or transparent *plane,* to the horizon, as the "*principal visual ray.*" This, I think, I understand, but I cannot

see how a ray can be *perpendicular* to a picture, without you lay it on the floor, and look down *perpendicularly* over it.

George. I cannot expect you to apply all I have taught you in one course of reading; but could you recollect the definition of a perpendicular line, in Plate II. Fig. D. No. 1, I should think you would not have asked this question; but, for the sake of confirming you in a thorough knowledge of this matter, I have a drawing which I hope will explain it to your thorough comprehension. (Plate V. Fig. 3.)

John. Oh! I thank you, brother, for this drawing; why, it is like the large canvass which stands in the passage, and I suppose that little boy is intended for me: there is the garden too: do look at it, sisters—I hope we shall have some more drawings.

George. Now you must all attend to the *boy's eye,* and the *dotted line,* or ray, from it to the centre of the canvass; which *dotted line* is drawn to exhibit to your view the *principal visual ray,* as perpendicular to the picture; for it is to be understood to be at a right angle to the surface of the canvass on all sides; and if the picture, or canvass, were laid down on the floor, as John proposed, and that ray were a substance of straight wire, properly fixed, it would then be as perpendicular as a plumb-line: therefore, place the surface of the canvass in whatever direction you choose, the wire (thus fixed) would retain its relative perpendicular to it; and any eye directed along this *ray* (of wire) must, according to

the perspective acceptation of the term, be perpendicular to the canvass whereon it is thus fixed.

Eliza. Will you shew us how you made the pavement in this drawing look so square; as they decrease in their apparent width as well as length—by some regular rule, I have no doubt?

On the Point of Distance.

George. THIS question brings the *point of distance* under our attentive consideration, which is *the distance of the eye from* the transparent plane through which you are supposed to see the objects of your study, and on which you would mark or trace them accordingly; were it not for the *geometrical means* you are now attaining, to produce precisely the same effect: for although we do not absolutely trace on the glass from a given point of distance for the eye, we are under the necessity of introducing a *section line,* on a ground plan of the subject (see Plate XII. Fig. 1.) to answer all the purposes of the glass, in order to obtain the true perspective measurements of the objects; and the *distance* of the eye from *this line,* or substitute of the surface of the picture, (glass, or transparent plane, which always means one and the same thing) constitutes the *point of distance.*

Ann. I take it very kind that you so often repeat the words "*or transparent plane,*" whenever you have occasion to treat on the surface of the picture; but don't

FIG.
Page 39.

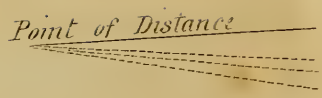
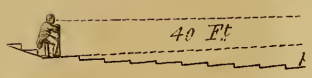


FIG.
Pages 4

FIG.



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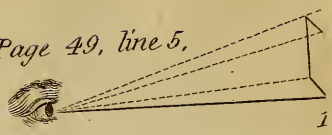

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Point of Distance.

Plate VI.

Fig. 1.
Page 39. line 9.

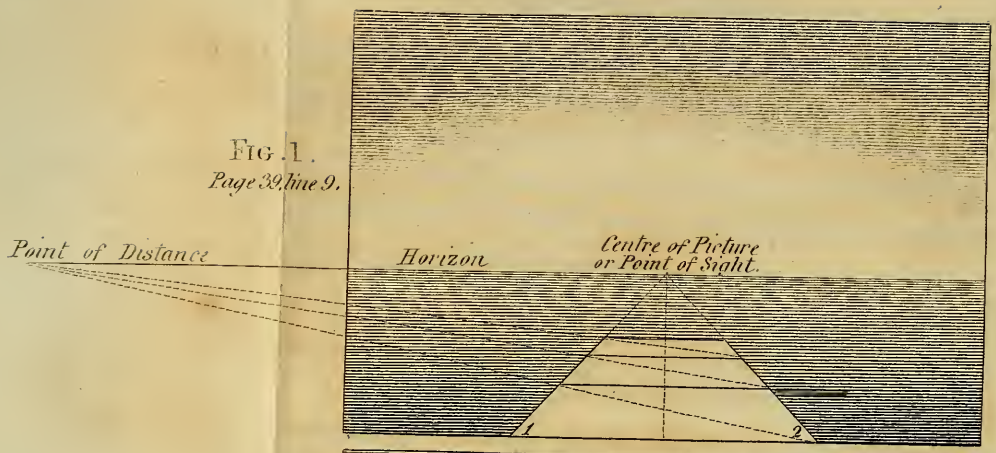


Fig. 2.
Pages 40, 41.

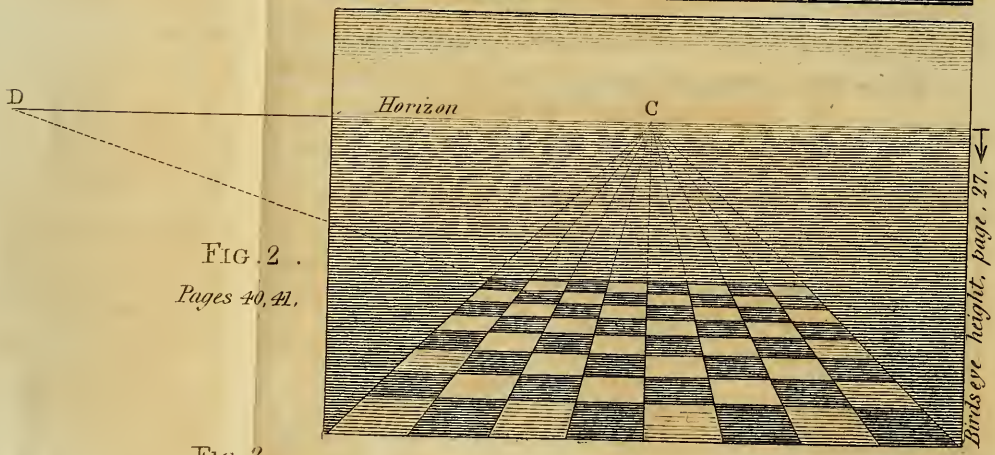


Fig. 3.

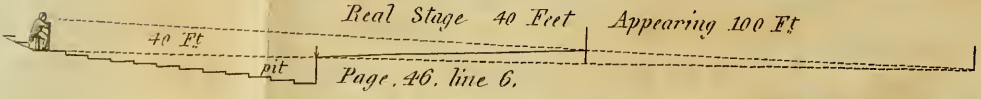
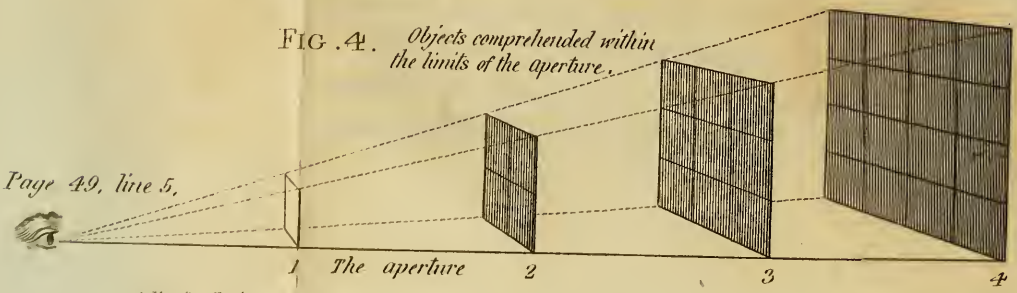


Fig. 4. *Objects comprehended within the limits of the aperture.*



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you remember, brother, we all caught the right idea at the very first? when you called John to the window to trace the view on it? (see Introduction)—You need only say *picture* in future.

Eliza. And leave our "minds' eyes" to comprehend the rest.

George. I thank you, ladies, for your good-nature, attention, and wit.

John. Come, brother, shew us what is to be done with this *point of distance.*

George. It is always to be marked on the horizontal line, on the right or left, or both, of the *point of sight,* exactly whatever measured distance of the eye from the picture may be determined on. Now, Ann, you shall make the drawing, Plate VI. Fig. I.

Ann. I have some *parallelograms* ready drawn.

George. First draw the horizontal line, any height you choose, and above twice the length of the picture: take care that it be parallel to the base line. Now find the *centre* of the picture, and mark it on the horizontal line, as the *point of sight;* then take the length of the picture with the dividers, for the *distance* of your eye from it, and set one foot of the dividers on the point of sight, and the other will mark the *point of distance* towards your left hand (as in the example) on the horizontal line; next draw a perpendicular line from the *point of sight* to the base line; now open your dividers any width you choose; for *half* the width of a square of pavement, set one leg on the centre of the base line, and mark the points 1. and 2. on each side of it

with the other: then draw lines from those points to the point of sight. This determines the perspective width of the pavement. Now draw a line obliquely, from the *point of distance* down to the opposite side of the pavement, terminating at 2. on the base line: observe where it crosses the left line of the pavement—*that is the point* which determines the depth of the first square; thus, you have only to draw a horizontal line from it to the opposite line of the pavement.

Eliza. Oh, this is delightful! let me draw one square.

George. Only draw an oblique line from the *point of distance* to the same side Ann did, and down to the top of her square, and rule the horizontal line: now we have two squares: come, John, you do the third.

John. That is soon done; but I wish to see as many as are on the chess-board—then we should know how to draw a whole floor.

George. You shall, and *I* will draw it, to teach you to handle the instruments in a better manner than you do. Now attend: I shall first draw the representation of the whole chess-board, (Plate VI. Fig. 2.) as one large square seen in perspective, by the same process. Sister Ann found the perspective of one square of pavement; then I shall divide it, at the base line, into eight equal parts, and draw lines from them to the centre, or point of sight: these divisions will cross the oblique line which I first drew, to find the whole square, exactly where the horizontal divisions of the squares must be drawn.

Effect of Perspective Drawings explained.

John. I see this *comes** like all perspective; but I wish you could draw them to appear *quite square,* as the real object does when I am not thinking on perspective: this drawing *appears* to diminish; and the furthest divisions *look really smaller* than the *nearest.*

George. My dear ingenious boy, I hope I shall clear this very reasonable query. Perhaps one reason why the drawing does not give a more true effect may be, that this sort of lesson is drawn with too little attention to the gradual diminution of *each* retiring line, as it recedes from the base line; but the chief reason is, that the utmost perfection perspective can give to a picture, is only to convey the true idea of a scene or object, when viewed at the *very point* of distance the artist determined his picture by; which, you have already been informed, means the measured distance of the eye *(of perspective)* from the picture. Suppose then the picture to be one, two, or more feet in length, that measure will determine the proper distance to view the picture, if the distance be taken by the rule I have made general in my diagrams. The examples I have given you are *small,* and the *point of distance* proportionate to them: if you can bring your eye to that distance, you will find the effect you wish. Now, for experiment's sake, open the dividers the length of the distance, (Plate VI. Fig. 2.) that is, the space between the point of sight and the point of distance; keep one foot on the point of sight, and raise the other, as near

* Professional term for *effect produced.*

as you can, perpendicular over the point of sight; then bring your eye carefully to the *raised* point of the dividers, so as not to hurt your eye; and look steadfastly on the drawing for a few seconds, and you will find the true effect is properly produced.

John. Indeed, sisters, you must try this experiment, for the whole chess-board looks really square, just as I meant: mind to keep your eye perpendicular to the point of sight.

Ann. I confess I felt the same objection John made, till we had this experimental proof; which is so clear, that I think I could give another example.

Eliza. Pray, Ann, treat us with one of your best.

George. I see Ann is prepared.

Ann. It is certain, when I look upon any object, that *my eye* is at the *only* point it could possibly see it in that particular shape; and, were I to draw it, while viewed from that point and distance, ever so perfect in all respects, I think that no one, who was not determined to be deceived, could suppose the drawing to be the real object; except while viewing it exactly in a similar light, shade, and distance, as the object was when drawn. Now, only lay the dictionary on the table, and as we sit in two different directions from it, were we to make each a drawing of it, and then exchange drawings, without, at the same time, changing places, it would be impossible to compare them with the original; and, more so, to suppose either could be taken for the *real book.*

Eliza. I am very much obliged to you, sister. Now

The proper Distance from the Picture.

I wish to ask George, why the *length* of a picture is fixed on as the proper distance of the eye from it?

George. It is the SHORTEST distance allowable; because the eye is so formed, that were it to take a *nearer point*, it could not conveniently perceive, at one view, all the objects within the boundary line of the transparent plane, right and left, above and below, the point of sight, or centre of the picture, under a practically convenient angle; because that same distortion and widening of the appearances of objects, that fall under a greater angle than about 25 degrees from the principal visual ray, would occur; as I described to you by reference to Fig. 2. Plate X. when explaining the *proper station of the point of sight on the horizontal line* (see page 35, line 16.); therefore the triangle, which would shew you the largest a painter should take, is found in the heptagon, as a ground plan; by appointing the centre for the station of the eye, and any one of the circumferent sides of the heptagon, as the length of the picture, which conclusion determines a single landscape to be about one-seventh part of the whole panorama, or circle.

Ann. I perceive the great importance of taking a proper distance; and if I comprehend what has passed, I think the *point* in *all respects* which we take to *paint a picture* must be the best *point to view it from.*

George. You are perfectly right, sister; and I expect this subject will afford you some mirth when we study the term "*foreshortening.*"

Eliza. Then, I suppose, it is contrary to the laws of

perspective for one to go from side to side of a room to view a picture, since *that point,* and *distance,* which the painter performed his work by, is determined to be the best?

George. Most assuredly it is, when the light falls properly on the picture; but, unfortunately, many very fine paintings are hung so disadvantageously, that the glittering of the varnish, or glass, is all one can see at the true mechanical point; this obliges one to take some indirect position to avoid the glare; and, without some such good reason, you may rely on the "*rule in perspective,*" as an unerring guide, always taking a perpendicular position, and moving forward or backward till you find you are at the *painter's distance;* and this is a duty you owe the artist before you are qualified to criticise the *perspective* of his picture, *especially* of circular planes.

John. Will you please to tell me why pictures of circular planes require to be viewed from the proper point more than the representation of any other object? and at the same time tell me what are circular *planes?*

George. Circular planes are circles described PERSPECTIVELY on a flat surface, as a circular waiter, a coach ring, a wheel, the top of a saucer, cup, or glass, the section of a column, &c. &c.; which will not only appear very unpleasing, but incorrect, when seen in a picture from any point except the true point of sight and distance. Perhaps the *direct front view* of St. Peter's at Rome, of which there are engravings with the circular

colonnades, is one of the best specimens you can prove this by; for, on viewing this picture obliquely, the whole scene is distorted.

Ann. I thank you, brother; this explanation leads to the solution of an effect which has puzzled me ever since we were last at the theatre. You know we sat *on one side,* near the stage, and the scenery and side wings appeared so badly arranged to what they were before, when we sat in *that box which is behind the pit:* then they all united so surprisingly natural, that I wondered at the ingenuity of the contrivance: this was owing to my being much nearer to the *painter's point* at one time, than at the other; was it not?

George. Your observation has been very correct, and it is extremely cheering to me to find myself so well understood; for when you sat in the *front box,* you were *on an exact level with the horizontal line* of the scenes, and at *the very point of distance* the artist drew them by, or *should* have drawn them by, which governs the perspective associations of the stage, scenes, and side wings.

Eliza. I did not make the remark Ann did, but I could not discover that the stage was unlevel till we sat *last* in the *side* box. Why does it slope towards the front?

George. The *stage* is made to have a *due inclination* towards the *horizontal line,* as are the *side wings* to the *point of sight,* governed by the distance of an eye in the centre of the front box; where the deception or stage effect is the greatest, and the converging inclination

the least perceivable. Suppose a theatre to be eighty feet long from the front of the boxes to the utmost extent of the stage, then allow forty feet for the pit, and there will remain forty for the stage; but should it be required to make the stage appear 100 feet long, see Fig. 3. Plate VI. a profile: draw a level line 140 feet long (by a *scale suited to the extent of your paper)*; then make a mark at 40 feet for the length of the pit, and a perpendicular mark at 40 feet from the front of the stage, which is the *real* length of it; then suppose an *eye* in the front box about four feet above the level line first made, and draw a ray from the *eye*, down to the end of the 140 feet line; and, where it crosses the perpendicular, which you marked to represent the real extent of the house, is the point to which the back of the stage must be raised, and it will correspond with the proper horizontal line, and produce the effect.

John. Upon my word he must have been a clever fellow who *first contrived all* these things.

How to begin a Sketch from Nature.

Ann. I WANT to know if I might sketch *a large extent* of prospect on a leaf of my *little sketch book?*

George. You may sketch an extensive view on paper of any size, by due regard to proportion. Perhaps there cannot be a more certain method of finding how much your paper will probably contain, at one view, than by holding up the edge of it horizontally, at about

its length distant from your eye; then quickly and carefully mark the top with your pencil, in contact with each of the principal objects, observing, after you have marked the situation of the most conspicuous, to keep its mark directly to it, when you mark the others. When you have taken enough of these memorandums, you may begin your drawing, looking to the touch at the top of your paper for the situation of the object under it: you should use this same method for the heights of objects, by finding an object on the ground for the height of your base line: then bring the bottom edge of your paper to that, and mark *heights* on the *side* edges of it, *taking great care to abide* by *that point* in the landscape which you determine to be the bottom line of the drawing, and the same distance you first held the paper at.

Eliza. This I understand; but how should I proceed were I desirous of taking into my picture a *certain object* on *the right hand*, and some other picturesque matter on the left; and, on holding up my paper at the proper distance, should find it too short to include all I would draw?

George. If it be practicable, and a picturesque effect can be preserved, you may obtain your wish by *taking a greater distance* to view the scene; especially if those two extreme objects, you wish most particularly to include, are no great distance from each other; as thus: Suppose them two hundred yards asunder, you will then find, at two hundred yards distance, that *your paper would include the whole scene*, if held up *ex-*

actly its length distant from your eye; but, taking this only as an answer to your question, I must not confine you too closely to rule in this particular. *The rule is the standard,* and should never be lost sight of: yet there are beauties in picturesque nature which perhaps would be lost to the port-folios of the landscape painter, if he confined his labours too strictly to rule: genius must ever be one of the council.

Ann. Now, suppose I had made all those leading marks on my paper; how am I to obtain the oblique lines which so generally occur in the perspective appearance of buildings?

George. Take care to keep the top edge of your paper strictly horizontal, and move it higher or lower, till you see the lowest end of the inclined line you would obtain in your drawing; then sketch a line, as near the top of your paper as you can, parallel to the line of the building which is the subject of your observation: this must, of course, be done carefully *over* the place in which it is to occur in the drawing; and its length is supposed to have been previously marked on the top edge of your drawing, according to the former part of this instruction. A very few of such lines as are the representatives of converging *levels,* (such as top and bottom extremities of roofs; the horizontal lines of rows of windows, and the base, or ground line of level objects) if truly marked in their proper places in the drawing, will converge to the horizon, and indeed, by their meeting, will find and fix the station of the horizontal line of the drawing; which, once ob-

tained, will govern the inclination of all other levels. It may be a very good experiment, to practise this from large pictures, within doors, first; for you have all the points the same, if such pictures are truly drawn from nature. Plate VI. Fig. 4. will shew you the proportionate increase of extent which may be seen through an aperture, say one foot square; (No. 1.) and you are to consider the aperture to be your sketch-book, held up to draw any object, that might be on Nos. 2, 3, or 4, and it would cover either, exactly, in effect; as the eye at the beginning of the line would see them. I have placed the surfaces about *three* feet apart (instead of *one* foot, which, according to our rule, as above given, is the proper distance), that each surface might be seen clear of the other in the drawing. The eye is there represented as looking through No. 1, the square aperture; and the surface, No. 2, shews you that the eye can see a space twice the length and breadth of the aperture, at twice its distance; and three times each way, at three times the distance; and four times four, at the fourth distance; and so on, in the same progressive proportion.

John. Then I think I can tell how large a space might be seen through the one foot aperture, at nine times the given distance from the eye.

Ann and *Eliza.* How can you tell?

John. Nine times nine is *eighty-one;* is it not, brother? then that would be a surface of eighty-one square feet.

George. You see, sisters, that boys do not learn their

multiplication table for nothing: you have known it as perfectly as he does, but practice has strengthened his memory in this particular, and enabled him to apply his knowledge readily: it only required your recollection to the explanation of the *square of a number,* to have had no doubt of John's making the answer he has. By this diagram, it is proved, that at the distance of a mile, a space of one mile, square, would be comprehended by the eye, within this *one foot aperture!* Keep your mind clear, and do not fancy any thing more *deep* or *intricate* than it really is.

An Angular View.

Ann. I NOW want to know how to draw the chess-board, in perspective, when viewed with one corner or angle of it nearest my eye, instead of the side?

George. I have one drawn, Plate VII. Fig. 1.—Now I beg you will begin attentively, and endeavour to explain the manner of drawing it.

Ann. I should first draw the *base line,* then the *horizontal line,* and mark the *point of sight* about the centre of the horizon; and draw a perpendicular line from it to the base, to mark the hithermost corner of the board; then I should mark the *point of distance* on the *horizon,* equally on each side the *point of sight;* then I see you divide the base line into sixteen equal parts, eight on each side the centre, and draw lines from each to the point of sight; then draw the two oblique lines, from

PLATE VI

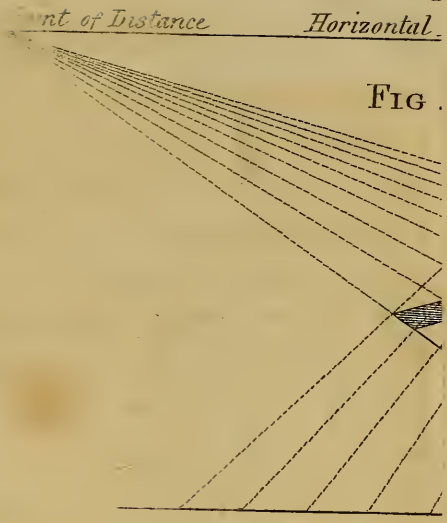
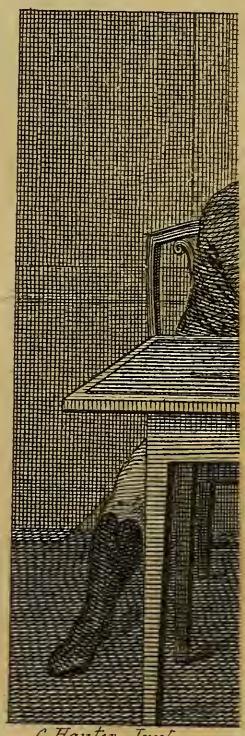


FIG.

FIG. 2.



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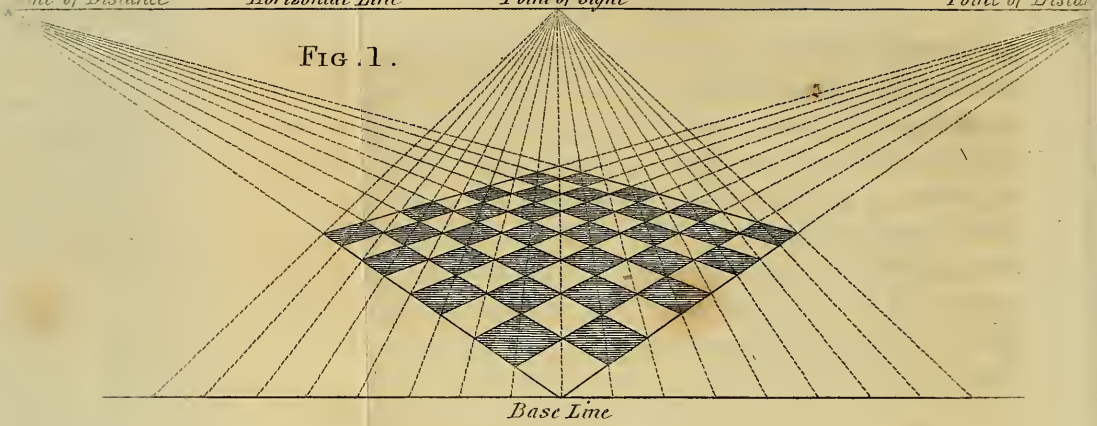
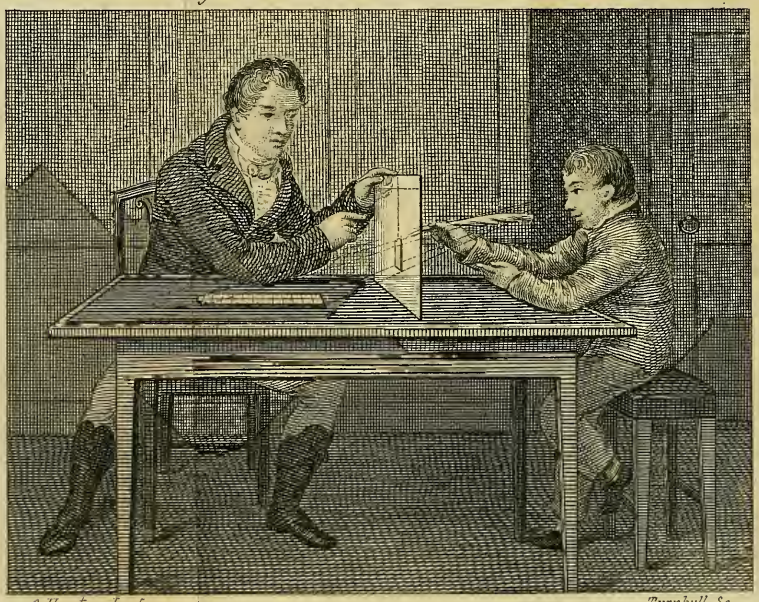
An Angular View.

Plate VII. *Page, 50, line 16.*



Foreshortening.

Fig. 2. *Page, 53, line 12.*



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the *points of distance* to the *centre point on the base line*; this, I perceive, forms the two nearest sides, and the hithermost angle of the chess-board; then I have only to draw lines from all the points, where the sixteen equal divisions cross the two oblique sides, to the opposite points of distance, and the outline is done.

George. Those points, which you called the *points of distance*, are properly called *vanishing points* (as explained in the Dialogue on Plate XII. page 78); and the distance of the eye from the picture will not determine their situation, except in a view *directly* diagonal: in all others, one point will be further from the *point of sight*, and the other nearer, according to the angle you view it under.

On Foreshortening, and Anamorphosis.

Eliza. Now, George, will you give us a clear idea of the *technical term, foreshorten*, or *foreshortening?*

George. The word *perspective* is a general explanation of the term; because the effect of all surfaces, except those whose sides are directly opposite to the eye, are produced in the picture by *foreshortening*. Observe the *five parallel planes* in Plate V. Fig. 2: those two which are nearest the centre of the picture, are the most foreshortened: the edge of one of them is nearly opposite the eye; yet foreshortened as it is, I believe you have never doubted its being a tolerably just representation of a surface equal in size with the other four. The re-

gular diminution of the chess-board, Plate VI. Fig. 2, as it recedes from the eye, is *foreshortening;* but the term is most particularly applied to such figures as are more distinguishable by their *length,* than their *breadth* or *thickness;* as the limbs of the human figure represented *endways,* or pointing out of the picture towards the eye of the spectator. Foreshortening the limbs of the human figure should be as much avoided as possible, especially in single figures, for they seldom produce an agreeable effect, even when drawn with the utmost skill: yet there is a picture which from the skilful management in the foreshortening of a figure in it, has obtained the title of "*Miraculous!*" and there is a picture by one of the Dutch masters, of a man presenting a gun directly to one's eye, which excites the idea of "*Beware!*" yet you see only the muzzle of the gun. There is also a very pretty Cupid, by Cosway, drawing an arrow to the head, pointing directly towards one, entitled "*Beware!*" The arrow and the barrel of the gun are, in the painter's phrase, *foreshortened:* genius and judgment must govern this very difficult point; because it will be not only sometimes unavoidable, but absolutely necessary, to that variety of character and expression, which must naturally occur in groupes, as well of other animals as in the human figure.

Ann. Then if I lay a print, or drawing, *flat* on the table, to copy it, I must view it *foreshortened,* which would be an imperfect representation?

George. You are right, sister; this thoughtless or ignorant habit, with many who attempt to copy a print,

or drawing, thus laid before them, arises from copying, by writing, where it matters little how they place the original, so they can but read it: in the same manner they think they can copy a picture, if they can but obtain a glance, so as to *conceive* they see the object before them—I say "*conceive,*" because, unless it is placed, as *all pictures should be,* according to the rules already explained, students must depend on a thorough knowledge of design, and copy rather what they *know* to be in the picture, than what they could possibly see while viewed in an *indirect position.*

Now, John, tell me how long the 12-inch rule appears to your eye, as you see it *end-ways* to you, where you sit? (Plate VII. Fig. 2.)

John. I think it appears *twelve inches* long.

George. And I will presently prove, that it only appears about *three inches* long to you. Come, sit still, and shut one eye; now mark with the pen (carefully) the shape of the rule on this glass which I hold up;—there you see it is, as I told you, about three inches long.

John. That is very surprising! why, I drew the whole length of the rule, and you know it *is* 12 inches. Must it be so short as I have traced it on the glass, were I to sit down here to paint a picture of it without tracing?

George. Most assuredly; because PERSPECTIVE requires you to draw things as they *appear;* and this tracing of the rule on the *transparent plane of glass,* is a general outline of its *appearance,* at the point you viewed it.

Eliza. It is clear to me now, having this perspective drawing of the 12-*inch rule* on the glass, that there can be no position proper for me to set it in for copying, but that wherein the *principal visual ray* of my eye would be a perpendicular line to the point of sight of this surface, as *John's*, when he traced it, was.

John. Why, sister?

Eliza. Because your perspective representation of it has already reduced 12 inches to three; and, were you to lay it on the table, where the rule is, and copy truly, what would then really appear to your eye, I suppose the second drawing would only be about *three-quarters* of an inch long!

Ann. This would be *foreshortening foreshortened!*—Oh, I am now so convinced of the absurdity of looking *obliquely* on a picture when copying it, or on my own drawing, that I fear I should shew symptoms of *ridicule*, were I to see any one copying a drawing set obliquely before them, and it is but fair to begin with myself. I must laugh when I recollect how improperly I have placed some of the things I have attempted to copy.

John. But, sisters, how is it then that I have taken copies, which you all have praised, from drawings laid *flat* on the table?

George. Do not you recollect that you often took up the original, to have a *direct view* of it, as you proceeded?

John. O yes! I believe I did.

George. *It was thus* that you learnt what you had to

do; for had you never seen the original in any but the oblique view you had of it when laid flat on the table, you would never have earned the praise you received.

John. I thank you, brother; I now see the necessity of taking the same point to copy a picture, as one ought to take to criticise it.

Eliza. 'Twill be good fun to see persons twisting and turning pictures about in all directions, saying, "Now I have it completely," when the picture is in *such a position* as to represent only an *anamorphosis.*

Ann. And to see the *connoisseurs* pulling one another to various positions, saying, "Do but come here, I have it to perfection!" Ha! ha! ha!

George. This is the mirth I promised you; it is the well-earned joy of intellect refined by rudimental information; yet we must not suffer vanity to grow up with our knowledge, but patiently teach those who desire to learn, and suffer the lazy and "*will-governed*" ignorant, to pass on in their errors.

John. Pray, brother, will you explain the meaning of the word that Eliza made use of just now; I should have looked in the Dictionary, but having never heard it before, I cannot spell it correctly enough to find it.

George. "*Anamorphosis*" was the word I believe—it is a sort of drawing, which, to the direct view, represents a monstrous deformity, entirely unintelligible; but when seen in one certain direction, or viewed in a cylindrical mirror, appears regular and in due proportion: "there are several of these curious pieces in the

Ashmolean Museum, at Oxford;" and I think Eliza made a very proper use of the word.

John. Can I see an anamorphosis any where?

George. Yes, in the Encyclopedia. —What are you smiling at, Ann?

Ann. An expression of yours—when you were very young, you saw some incorrect pictures, and father has *told me* you gave him a smile of gratitude for the early information he had given you, and said to him, "*What a fine thing knowledge is!*" I am now in a similar mood, enjoying the knowledge you have given us.

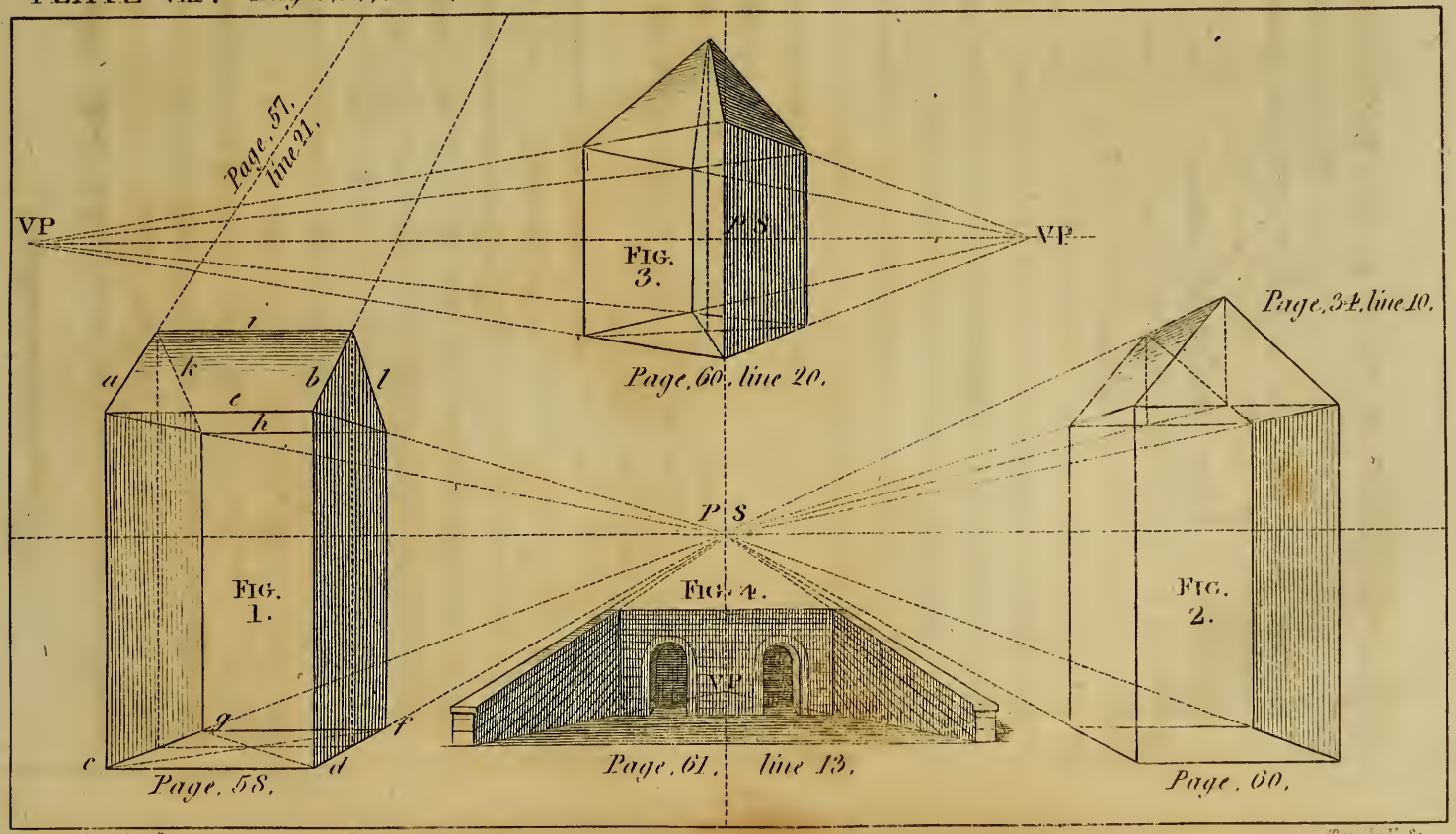
George. May I conclude, then, that you are perfect in the progress *we* have made?

Ann. I think, with the assistance of my *drawings* and *notes*, I could perform and understand all that you have taught us. But I expected you to say more in explanation of *vanishing* points, when Eliza introduced the subject of *foreshortening*, which, being equally interesting to me, prevented my interruption till you had *completely* explained it; and I now shall be glad of your farther assistance, to enable me to take a clear view of the *vanishing* points.

On the Vanishing Points.

George. THEY are those points in a picture towards which all *lines* and *planes*, which are parallel to one another, converge; the *points of sight* in Plates V.

PLATE VIII. *Pages, 57, to 61.*



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and VI. are the vanishing points of the level, and parallel objects in them; but the distinguishing application of the term *vanishing point* belongs to such converging points of parallel and level planes, as (from their oblique position to the eye) fall on some remote part of the horizontal line.

Eliza. Do all vanishing points fall on the *horizontal line?*

George. Only those of *level* parallels, such as the chessboard, the pavement, and the shelves; but the converging point of *unlevel* parallels, which are called *inclined* planes, (see Plate VIII. the roof of Fig. 1. as explained, page 59, line 21) must fall above the horizon, according to the obliquity of that plane: these vanishing points are called *accidental points.*

Ann. Will you shew us an example or two, to make us understand these distinctions?

George. Plate VIII. will shew you such objects, as have some of their sides in such directions, as to have their parallels converge to vanishing points, not on the horizontal line. The roof of Fig. 1. is formed of two *inclined planes,* and the *vanishing point* of the sides *a* and *b* must ascend far above the horizontal line, to a station perpendicularly over the *point* of *sight,* which is the vanishing point of the *level planes* in this perspective view; and were there fifty (more or less) *such* houses adjoining the example, and seen in the same direction on the receding line, the visible sides of their roofs, if all of the same obliquity, would converge to the same V. P. as the two lines *a* and *b;* be-

cause *all retiring planes, that are parallel to one another, converge to one and the same V. P.*: but I shall (in this stage of our study) produce the inclination of the sides *a* and *b*, without finding the vanishing point—the rule for which will be given in the plate on shadows.

Ann. Is the method, you now propose taking, better than the one you allude to?

George. I find it *as* scientific, and *much* easier to beginners; and, producing the same effect, I consider it, for the present, preferable; for many of the methods already extant, appear to be scientific confirmations of truth, rather than the readiest means of attaining it: yet you should learn all.

Eliza. Come, then, shew us how to draw the roof of the first *figure*.

John. Why do you call a *house* a *figure?*

Ann. Illustrations, by this sort of designs, are generally termed *figures*.

George. Now attend, and apply to the figure at every reference, while I teach you how to draw it: as it is chiefly to illustrate the method of finding the *points of the roof*, I have not *made* any scale of dimensions. First (after having drawn the parallelogram as a boundary line to your picture) draw the horizontal line, and mark the point of sight near the centre; then draw the line *c d* a convenient length, to form a figure on, *level*, and near the base line of the picture; let it be sufficiently to the left hand of the point of sight, to shew the inclination of theroof at the end *d*.—(This end, and its opposite, and all such, are called by builders, "*gable*

ends.")—Now raise perpendiculars from *c* and *d*, of equal length, a convenient height above the horizon; then draw the line *e*, which forms the bottom of the roof; next draw the four rays, from the four angles of the figure you have drawn, to the point of sight; then draw that level line, which forms the farthermost side of the figure from *g* to *f*, at a convenient distance (as no *particular depth* from *c d* is required); from *g* and *f* raise perpendiculars, till they touch the two top rays, and there draw the level line, which forms the opposite side of the bottom of the roof: thus you have the *perspective lines of a cube*, to which we only require a roof. Now draw lines from *c* to *f*, and from *d* to *g*, and where they cross is the central perspective point of the figure; draw a level line across this point till it touches the two bottom rays, which go from *c* and *d* to the point of sight; then draw perpendiculars from these points, to a proper height, for your roof; draw then, the inclined line *b*, to any angle you please; then draw the ridge level, as *i*: this produces the termination for the line *a*, and its opposites, *k* and *l*—and the figure is done.

Eliza. What are those two dotted lines, which ascend from the lines *a* and *b* of the roof?

George. Were they to ascend till they met, they would form the *vanishing point* of the visible side of the roof, which is an *inclined* plane, of which the lines *a* and *b* are the two edges: this point always falls on that perpendicular line which would arise from the original vanishing point on the horizon, towards which the side

of the figure converges; but you prove by the manner, we have found the true inclination of the roof, that its V. P. might be dispensed with.

Ann. This is very satisfactory, brother: now shew us how to draw Fig. 2.

George. You will produce the whole *(below the roof)* exactly by the process used in drawing Fig. 1. (which you may take as a general rule for drawing the perspective view of a cube, when viewed in the like position, and when you are not confined to any particular scale of measurement): now divide the top line of the hithermost side of the *cube* in half, and raise there a perpendicular, as high as you intend the roof to be; from the bottom, and top of which, draw rays to the point of sight; and by raising another perpendicular, on the furthermost side of the top of the *cube,* at *c,* which divides it in half, till it touches that ray which forms the ridge of the figure, you will have found the points where the inclined planes, which form the roof, terminate; and their ascending sides will be parallel.

Fig. 3, shews you how to draw a cube seen on one angle, where the vanishing points are not the same length from the point of sight, as the distance of the eye from the picture; and to make the point of a roof, or spire—find the centre, according to the method used in Fig. 1. and page 59, line 11, and raise a perpendicular the height you require, and draw lines to the top from the three apparent angles, and the sides of the spire are *inclined* planes.

John. I think you should have shewn us these things

before you taught us to draw cottages and roofed buildings, for I begin to think all I have drawn must be very much out of perspective.

George. Your study, hitherto, has been rather to bring you to the right method of using a pencil, and to learn to distinguish a perpendicular from a level, and a circle from an oval; or a right angle from an acute, or obtuse one, by the means of sight and practice, in order to obtain a correct *eye* and *hand, from the study of others:* but now, as you are improving, *it is proper you should know the causes of the effects you produce,* and form a critical judgment of whatever you take in hand.

Eliza. What are we to learn from Fig. 4.?

George. As Plate VIII. is on the subject of inclined planes, and the converging or vanishing points of their parallel sides, I have thought it proper to give you one example of an inclination of the plane, receding downwards, directly before you, as a "down-hill" effect, towards the arched entrances. The vanishing point in the declining planes of this figure, as in the roof of Fig. 1, is produced by the meeting of the lines of its two sides; and consequently arises out of the process in drawing the figure, which saves the trouble of searching for this point (as a *necessary* means of performing the work).

Eliza. And I feel no doubt of its being quite sufficient to enable us to draw any inclined figure.

George. By proper application of all the simple maxims that I hope to make you acquainted with, you may possess "*competency;*" but the "*riches*" of geo-

metry and mathematics, like gold, require incessant searching after. I would not, on any consideration, hint at a wish to prevent your acquiring full information of all that has been produced on the subject, by the most learned authors, had you the means: but a more extended knowledge of mathematics, than you may ever find time, or perhaps inclination to possess, is absolutely requisite to the pursuit.

Ann. Since you mention "gold," pray are we not to learn how to draw guineas in perspective? as, perhaps, when I am improved in the art of design, I may wish to paint a subject similar to that by Quintin Matsys at Windsor Castle, of misers counting their riches: excuse my mirth—how are we to put circles in perspective?

John. And suppose, sister, you were to draw the picture of a gentleman who was not a miser, you might require a knowledge of the perspective of circles, in the *iris* of his eyes, or even the buttons on his clothes; and in all pictures of familiar life we find circular plates, cups, glass, &c.—Oh, we must have the perspective of circles, of course!

George. Certainly, and when a picture is well painted in all other respects, even the *buttons* must be touched with a scientific hand.

John. Come then, shew us how to accomplish this object.

Perspective of the Circle.

Plate IX. *Page, 63.*

Fig. 1.

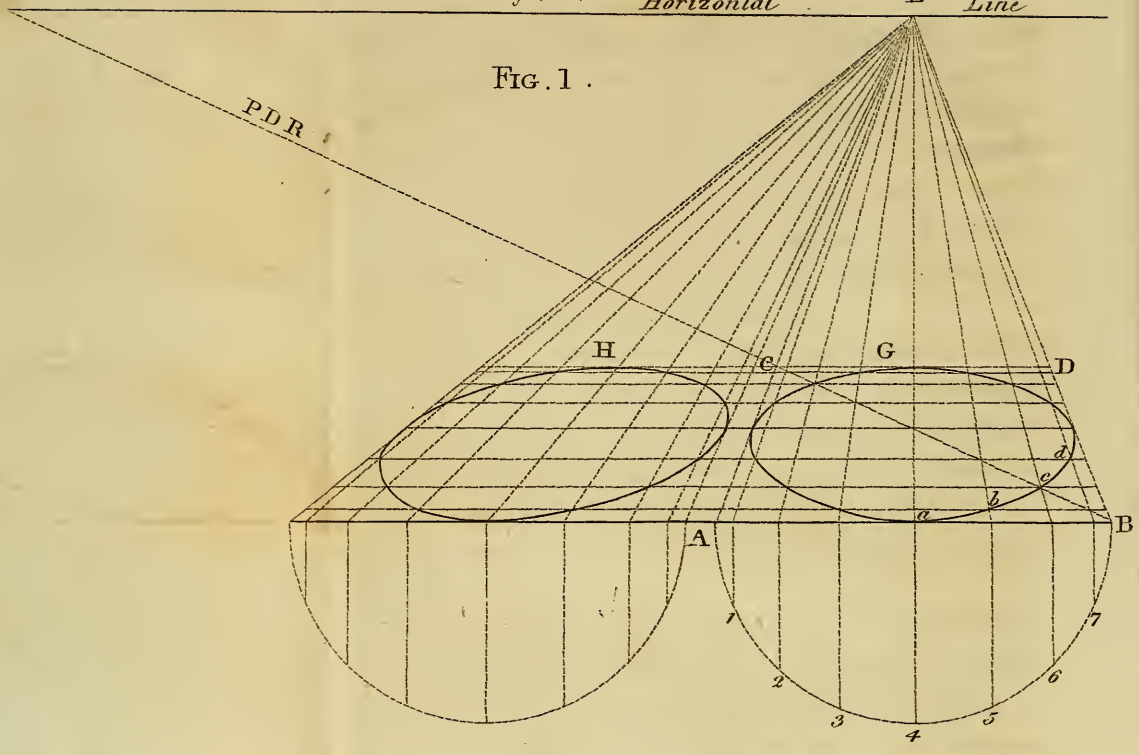
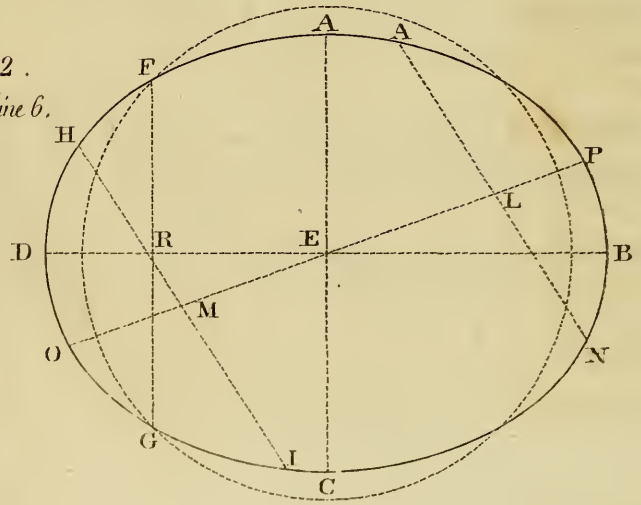


Fig. 2.
Page, 65, line 6.



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The Perspective of a Circle.

George. A CIRCLE seen in perspective, is a regular *ellipsis;* therefore you have only to find the perspective view of a square, in which the circle is described, as any one of the squares of the chess-board (Plate VI.), and describe an ellipsis therein; which expert draftsmen can do sufficiently correct *by hand,* for general purposes—but for architectural drawings and circular machinery, it will be proper to use a certain method; one of which the "Jesuit" attributes to *Serlio,* I have given (in Plate IX.), with an additional example of a circle on the same range, but not directly under the point of sight. (See Fig. 1. G. and H.)

Eliza. Pray, brother, how are we to proceed?

George. I hope the example is sufficiently clear to direct you in that. Take courage and begin, and I cannot doubt but you will accomplish it.

Eliza. I shall begin with that which is marked G. as I find its *apparent* square part is produced exactly as the chess-board, or Plate VI. Fig. 1, and explained in pages 40 and 41.

George. Then leave a small space between G and H, and set off the same width for H as the figure G, which you have drawn; and carry the ray to the same point of sight E; the depth inward or upwards is determined by that of G: this completes two squares in perspective, within which you are to describe the perspective lines of the two circles by the process laid down in your example.

Perspective of a Circle.

Eliza. I perceive I must draw a half circle under each square, and divide them into eight equal parts; and then draw perpendicular lines from each division till they touch the line A B, and from them to the point E. I find the same divisions are repeated *across* those I have drawn to the point of sight, in which I am governed by the diagonal ray P D R, which I first drew from the point of distance, to find the depth of the whole square, precisely as the horizontal lines of the chess-board were drawn. Now I have only the circles to draw, which I see pass through those angles which you have marked *a b c d,* &c.; this will easily direct me to the end of the operation; as, I understand, I have only to repeat the same on the other square, which is marked H.

George. I thank you, sister; I hope your success in this will encourage you to venture on other problems: for, if you attend to the directions which must *of course* accompany them, the vast number of lines which at a general view appears confusing, will lose that effect as you proceed; and the principles will be unfolded to your mind much more forcibly, than when you have a master by your side, to help you over every difficult passage.

John. But this only teaches us to draw the perspective of circles on a floor or a table: how are we to find the circular arches of doors and windows, or the perspective of a circular ceiling?

George. The example will answer each of your questions; as thus:—Continue E as the point of sight, and

make E *a* 4, the horizontal line, turning the diagram accordingly, and place the perspective of the circles to your right or left of E, and you will find the arches you require; and, for a ceiling, turn the diagram topsyturvy.

Ann. Are circles in perspective *perfectly* elliptical?

George. Yes: although it has been questioned by some, but you may prove it by a simple experiment; that of drawing a circle in perspective in any aspect, and doubling it outwards correctly in half; when, on holding it up to the light, you will see the two *semi-ellipses* to tally, so as to appear but one; or you may mark a number of pin-holes through the one side on the elliptical line, and unfold it, when you will find that they have passed through the other half. For *this* experiment, you must find its two *extreme* diameters, that it may be properly folded; as no view of a circle in perspective, except a *direct one* (as in the example G), will give the long diameter level.

Ann. Please to shew us how *this* is to be done?

George. Brother John has copied the fourteenth proposition of Le Clerc's second book of Practical Geometry, on purpose: come, John, explain the process to your sister. (Plate IX. Fig. 2.)

John. The ellipsis is marked by the letters A B C D, and you draw (at pleasure) the two parallel lines, A N and H I; then bisect those two lines, which produces the points L and M, through which you draw the line P L M O; bisect it at E, which is the *centre* of the ellipsis; upon this point describe a circle (at pleasure),

only observe that it is greater than the shortest diameter of the ellipsis, and less than the longest, that it may *cut* the ellipsis; then through the intersections F and G, draw the right line F G; bisect it in R; then you can draw the greatest diameter B D through R E, and the lesser through E, parallel to F G.

Eliza. I see *bisecting* a line, is dividing it in half: you had not taught us this, George?

George. Had you studied Le Clerc, or Nattes, *as I told you*, sister, you would have been well acquainted with the term. You will proceed with difficulty, if you do not make yourself acquainted with practical geometry: the authors I have recommended will answer the desired effect.

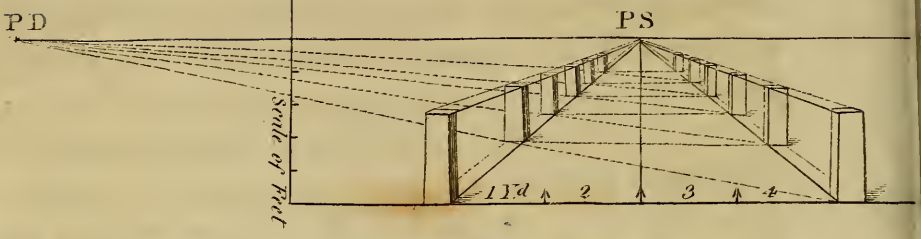
Practical Perspective.

George. Now, Eliza, we can proceed to what you termed *prophetic*, in perspective, by drawing various objects to measurement, as they would appear if seen from a given point. Our first essay shall be the perspective view of a level walk, which may represent the appearance of 20 yards long, and four yards wide, on the sides of which I will place six square posts, each one yard high, and nine inches square, at equal distances from each other. (Plate X. Fig. 1.) I suppose I need not repeat the method of proceeding?

Ann. No, brother: I will undertake to prove to you

PLATE X. *Page, 66, to 70.*

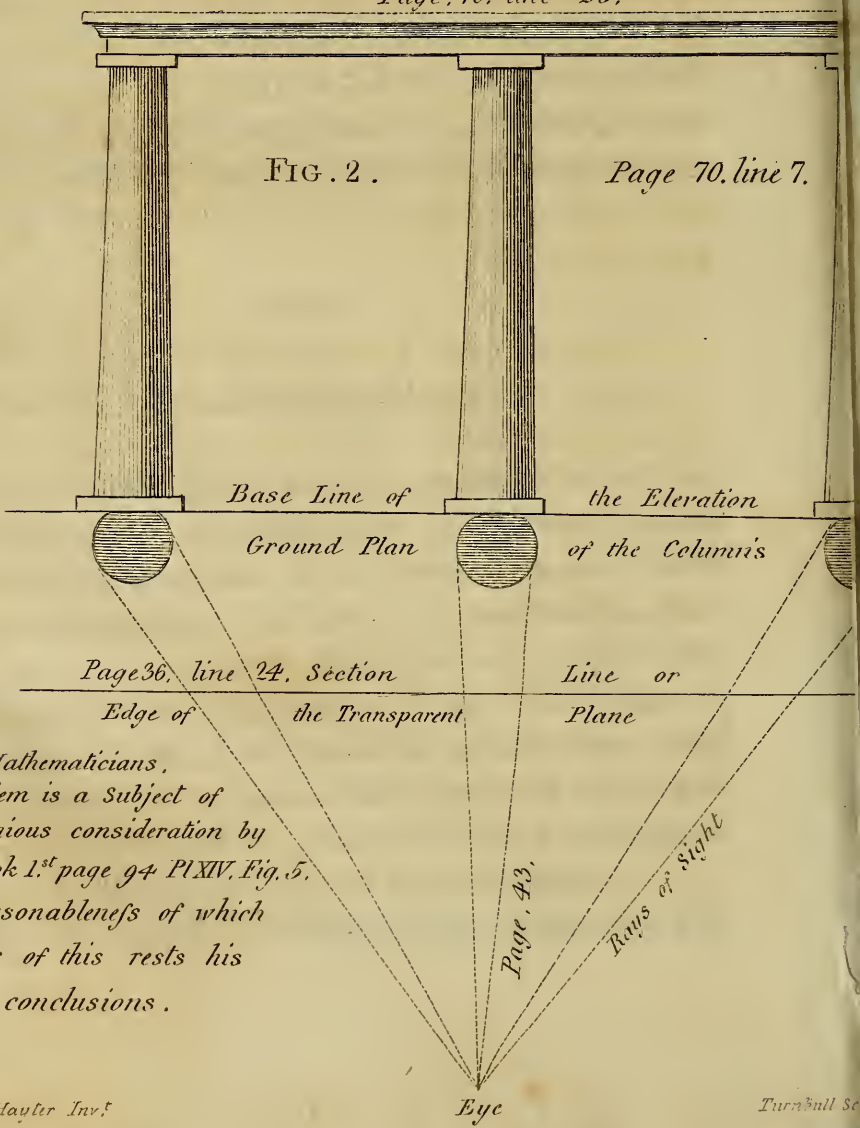
FIG. 1.



Page, 70. line 23.

FIG. 2.

Page 70. line 7.



To Mathematicians.
This problem is a Subject of very Ingenious consideration by Kirby, Book 1.st page 94 Pl XIV. Fig. 5. On the reasonablenefs of which the Author of this rests his present conclusions.

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that I understand the process, if you will please to remark any mistake I may make.

George. I shall be very happy to attend to you: but let me repeat our original general rule, to draw it considerably larger than the example—and permit me to remark, that (by due application to your *scale*), the rule you will receive for drawing this problem, will serve to guide you in taking a perspective view of all such geometrical objects as are perpendicular, level, and parallel; as streets, squares, walks, roads, rooms, &c. by applying their geometrical dimensions properly. For, suppose all the *posts* were immense obelisks or towers, and their distances asunder, bearing the same proportion they do in the example, the drawing might be precisely what it is; but, most probably, and more properly, they would rise far above the horizontal line. And when we come to Plate XII. and you have made yourselves thoroughly acquainted with it, it will only be necessary for you to repeat the knowledge you will have then acquired, by drawing a few different subjects, such as come properly under the laws of our present problem, and the whole of Plate XII. and you will find yourselves enabled to draw geometrical objects in any similar direction.

Ann. I will draw it on this half sheet of foolscap: I shall first draw the size of the picture, or *plane*, not more than two-thirds the length of the paper, that I may have room to mark the *point of distance* at the proper place, on the horizontal line; and the width propor-

tionate to the original, is about three by two; then I divide the height of my drawing into three, and give the one-third from the base line for the height of the horizontal line, which I shall next draw; this space I see you have divided into five equal parts: I understand each division is to be considered as one foot, which forms a scale for the measurement of the rest of the work.

Eliza. Why do you determine the horizontal line to be five feet high, brother?

George. Because this prospect is considered as a *level* one, and viewed by a person *standing*, whose eye would be nearly that height, and being a whole number, is better adapted as a rule than five feet six inches, which might be rather nearer the height of the eye of a tall man: go on, Ann.

Ann. I now draw the *horizontal line the whole length of my paper*, and mark the point of sight on the centre of the picture; then, with the dividers opened to the *length of the picture*, placing one foot of them on the point of sight, and touching the horizontal line with the other, I find and mark the *point of distance*.

John. Why do you draw the horizontal line so much longer than the picture?

Ann. That I may mark the point of distance on it: have you so soon forgotten how we found the first squares of the pavement? (See Plate VI. Fig. 1.)

George. Very good, indeed, sister!—Proceed.

Ann. I believe I must next draw a perpendicular line

Fig. 1, *Plate X. continued.*

from the point of sight to the base line, and then mark *two yards* on each side of the centre, on the *base line,* for the width of the walk.

Eliza. Pray, sister, how will you determine this measure?

Ann. Observe the height of the horizon; that is determined to be five feet; therefore I take three of those divisions to make one yard: is that correct, George?

George. Certainly.

Eliza. I feel I must have been forgetful of what you explained respecting the *little scale rule,* in the case of instruments; but I am very glad I have inquired, as it helps to confirm the knowledge of drawing *proportionate* to a real object.—Excuse the interruption.

Ann. I shall now decide the width of the walk, by drawing lines from the point of sight to the *determined* width on the base line; then, as there are to be six posts, there will of course be five intermediate spaces of four yards each (except the nine inches for the size of the post, which I see begins on the base line of each division of posts), and are found exactly as we did the square pavement (Plate VI.); and by repeating it five times from the base, towards the horizon, I produce the perspective length of twenty yards, with the addition only of nine inches beyond for the farthermost post.

John. And how will you draw the posts, sister?

Ann. I shall first mark the space of nine inches at the base, on the outsides of the walk, and draw lines from those marks to the point of sight: this gives the width of the posts, their *depth* inward being exactly the same

Plate X. Fig. 1, *concluded.*

as their *width.* The ground plan of each post, I find, as I did that of the *larger square;* from which I must draw all the *visible* perpendiculars, or angles of the posts, their heights being determined by drawing those perpendiculars which arise from the two *first posts on the base line, three feet in height* (by my scale), and rule lines from these to the point of sight: this will mark the proper height of the rest.

George. My dear Ann, your progress delights me! I hope I shall not grow vain as a preceptor.

Eliza. Indeed, brother, you have a right to the pleasure this gives you: pray call it by a better name than vanity. As this drawing has proceeded, I observe it must invariably happen for objects to *diminish* in appearance, according to their *distance* from the eye; and yet I find, that when *a row of columns or posts,* &c. are drawn *fronting the eye,* and their bases are *parallel to the base line,* they appear in many pictures to be given *all of one dimension,* whatever may be their various distances from the eye.—Will you please to explain this matter to us?

George. Were you to trace a direct front view of a portico, or row of columns, exactly as viewed from a fixed *short* point of distance, (see Plate X. Fig. 2.) you would find those nearest the centre would *mark the narrowest,* and those to right and left, although farther from the eye, would (from their oblique *point of view*) *mark broader* than their diameters, if viewed through, and traced on a glass *directly fronting them. This has raised some objection to the strict adherence to*

the laws of perspective, when such an object of imitation falls under *so great an* angle; because, notwithstanding the true effect would be obtained by following the real situation of the outlines of the columns on the transparent plane, when viewed from *a pin-hole point*; they would appear disproportional when viewed from *any other point*; therefore, to accommodate the subject to our conceptions, and adapt the picture to all points of view, "*experience* and *sound reasoning*" have determined to draw the perspective views of such subjects (when viewed in front) at the *greatest possible point of distance*, consistent with a good effect; by which all apparent distortion and disproportion is avoided, *without* DEVIATING FROM THE LAWS OF PERSPECTIVE. I may here remark, that this supposed necessity of deviating from the governing principles, has been of one great service to the rational student, by filling the minds of cavillers with doubts and objections on the whole system; thereby shutting the door of knowledge against themselves, to the advantage of real merit and its encouragers.

John. I think, brother, if you go on in this manner, you will fix the door so wide open, that we shall all pass through; and the really clever fellows will *want elbow room*, there will be such a crowd.

George. Never fear, John; *clever fellows* have the art of remedying such trifling inconveniences: besides, the "*pursuit*" of excellence cannot be figured as a "*station*." In arts, one degree of merit is continually following another in such regular order, that their very

nature is to *proceed:* admitting and encouraging succession by the example of vigorous perseverance; and thereby providing ample elbow-room, as you term it, for all.

Ann. I had a question similar to Eliza's, respecting our view of *level lines;* such as the parallel joints of brick or stone walls, when *viewed in front*—must they be drawn *level* and *parallel?*

George. Straight lines, which are level and parallel, will always retain those properties in the perspective representations in a picture, when taken at such a proper distance as that the whole subject may be comprehended within a visible angle in a *direct front view;* which, I believe, you all understand to be *when the principal ray of your eye forms a perpendicular to the surface* of the object.

Eliza. Excuse me, brother, for the trouble I give you; I have acquired just knowledge enough of the subject to *question* this point; although, I assure you, I expect you can explain it. But, surely, if I stood opposite a long wall, so as to direct my eye, by a perpendicular ray, to its side, I could not turn my eye right or left along the joints of the brick work, without *seeming* to see the consequent diminution of their size regularly converging to a point, as much as in any perspective view I can imagine.

George. Your question gives me an opportunity of clearing a point, which has confused many, through an imperfect construction, or a deviation from the original position. Now attend to this *plain remark,* and

all question is at an end: the proposition *does not admit of your turning your eye either right or left;—a direct* view was proposed; that is, as much as can be comprehended by the eye within the boundary line, or picture frame, when placed at the *proper distance*—say 40 or 50 degrees of a circle from left to right, of which your eye would be the centre. Now, suppose, that from this *centre* you could form one continued sheet of sight rays along the whole visible length of any one joint of the brick wall, you would find this triangular sheet of rays to be *a perfectly straight surface* (admitting the wall to be well built), *so it* would be to every joint of the wall, which, being parallel, and *so* seen, *must be so drawn.*

Eliza. Oh, brother! what "*half-formed insects*" our imperfect imaginations resemble! that which a minute ago seemed a very reasonable question, has now changed its shape to that of absurdity. Who, with a grain of thought, would propose looking to the *right* or to the *left*, for a demonstration of a question on a *direct view?*

George. And yet, my candid sister, some who have imagined themselves greatly your superior in the science, have maintained your first idea with great obstinacy.

Ann. Upon what grounds, brother?

George. By *departing* from the accepted and general practice of using a *flat* surface as a *transparent plane,* and inventing a curved one, for the theory of the drawing, which must be erroneous, unless the picture be painted on a concave surface, strictly corresponding with the

curved sectional line; or, according to panoramic perspective, on an improper conclusion, founded on the curved form of the eye.

John. And how would a *direct view* of the joints in the wall appear, if traced on a *curved* sectional plane?

George. They would then converge to the right and left; or as the lines of the floor and ceiling do, when viewed in the *convex* mirror.

Ann. This brings us to the full and clear acceptation of your *first answer on the subject;* by which I feel convinced we may safely abide.

To draw Objects any given Height *at any given Distance.*

Eliza. Now, brother, suppose I were to begin a drawing, in which I would represent several figures, at *various* distances and heights; how should I proceed, so as to ascertain that they were all done according to the truth?

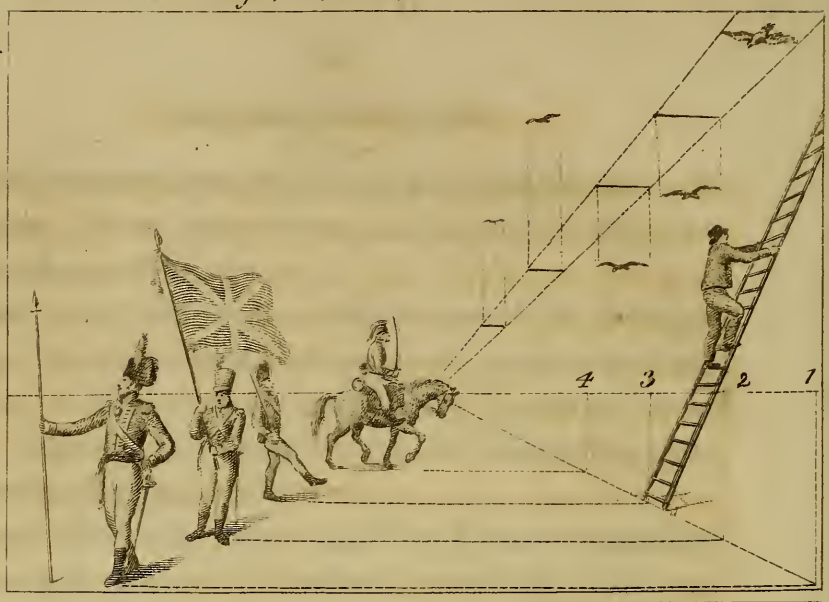
George. Can you answer this question, Ann?

Ann. If the figures were intended to represent all one height, and were placed at equal distances, I should proceed as I did in finding the heights of the posts (Plate X. Fig. 1.); but as *various* distances are proposed, I must beg a little of your instruction.

George. First draw the size of your picture (Plate XI. No. 1.); then the horizontal line, which, *in a level view,* is (at the proportion of) five feet from the base

PLATE XI. *Page. 74. to 78.*

No. 1.



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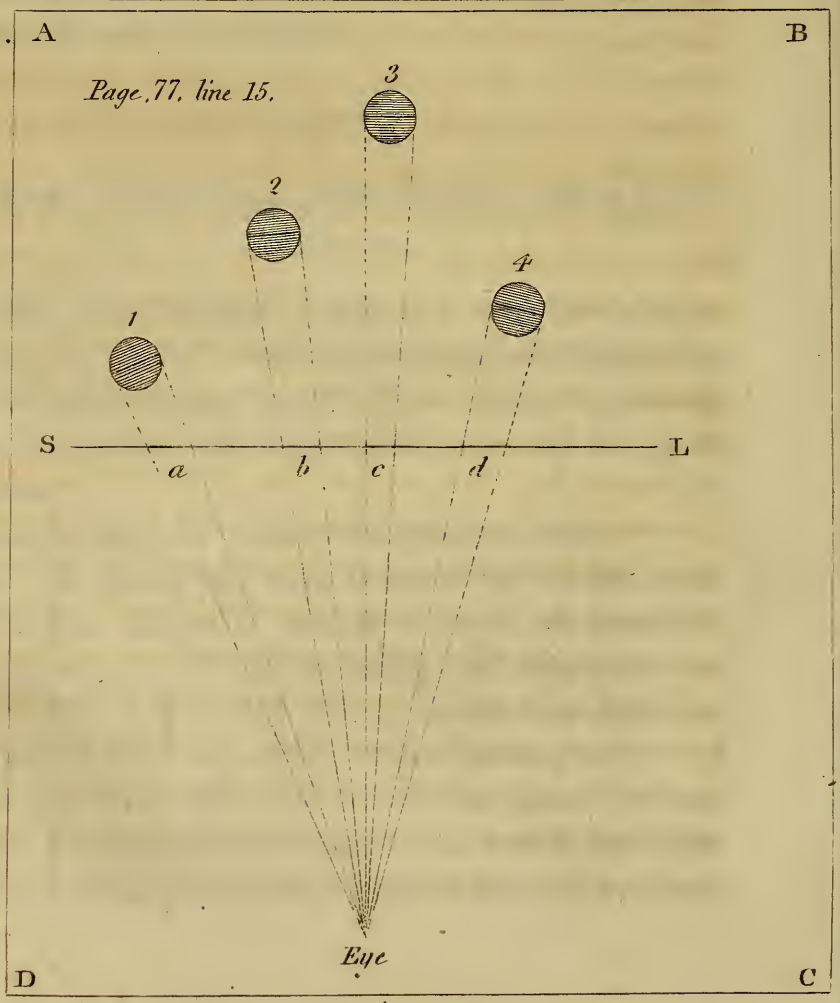

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line; then determine a point of sight, and draw a line from it to one end of the base line. Now, although this last line and the horizontal line both meet at the point of sight, yet every perpendicular line which could be drawn between these two lines is admitted to represent the height of five feet, as strictly so as the space between them on the marginal line of the picture. This may be termed the *converging scale,* by which the measure of every object in a scene might be geometrically ascertained: thus the military character, on the base line, appears a head taller than five feet, because it is all above the horizontal line. The next figure is *evidently* shorter, because his eyes only reach the horizon, and the flag is found to be about four feet deep by this scale. The third must be taller, as his chin is above the horizon; and the horse's back rising just to the horizon, assures us he is full 15 hands high.

John. Let me see: — four inches make a hand's breadth, three hands a foot—O yes, you are right, brother; five feet are 15 hands.

George. And the exact distances of all the figures from the base line, and from each other, may be easily found by the rule given in Plate X. Fig. 1., by which the distances of the *posts* were determined; and it is proper for you to observe, that the *horizontal line* is not required to be any particular height on this occasion; for in the example, just quoted, the horizon is much higher than the *posts;* yet their exact heights, size, and various distances, are as well determined as the figures in Plate XI., our present study.

Eliza. I perceive, that, to find their distances, the horizontal line must be lengthened, and the point of distance marked properly : from which, rays should be drawn across the points whereon the figures appear to stand, till they touch the base line; and the space between each mark thus produced on the base line would, with the help of a scale, shew us the real distance between each figure, as well as their distance from the base line.

John. And pray, sister, how would you measure that space, so as to tell how many feet they were asunder ?

Eliza. By the scale of five feet, which is agreed to be the height of the horizon of the base line, to be sure : do you not recollect how Ann determined the height of the posts in Plate X. ?

George. I have traced level lines from the feet of each figure to the scale line, for the purpose of ascertaining the heights of any figure, in any part of the picture, at the same distance. For example: Suppose a ladder, placed as far back in the *scene* as the third line; a man's height, on the top of that ladder, would be found by the height of the third perpendicular, on the *converging scale:* it would answer the same purpose, if the figure were required to be represented above or below the level surface they are on. This is evinced in the scale of birds on the wing, as seen in the same diagram; wherein it must be understood, that the diagonal or real distance is not attended to within the limits of a convenient angle of view. High towers, which are geometrically parallel, are never drawn narrower at the top

Explained, see Plate XI. Figs. 1 *and* 2.

than at the base. Although the distance be known to be greater from the eye of the spectator to the one, than to the other, so the bird that could stretch its wings two feet wide on the top of such tower, which we will say measures forty feet in width, then such bird would certainly occupy a space equal to one twentieth part of the width of the tower; but *all objects* take their measures from their apparent measures at the feet of the perpendicular over which they are found; which *must* happen in some part of the converging scale.

Ann. And are all breadths, as well as heights, ascertained by these means?

George. The scale of the birds alludes to *breadth* chiefly, but I will give you a proof in another way: Suppose the figure *a, b, c, d,* Plate XI. No. 2, to be on the floor of a large room, and four figures (whether pillars or men, it matters not) stood on the circles 1, 2, 3, and 4, all of one size, that of the circles: then their apparent sizes, as viewed from the word *eye* (where we will suppose you stand to view them), is found on the line S L, at the corresponding *spaces a, b, c,* and *d.* This line S L, represents the edge of a glass or transparent plane, and is termed the *section line;* through which, were you to view them from the *station* of the *eye,* as before *proposed,* the rays of sight would pass to the several objects of view, and would determine the width they should be painted; height is not regarded in this instance, but the rule, which explains the method of obtaining *widths,* answers the same purpose for *heights,* and should be well understood by those who compose groups of

figures, and also *single figures,* which is farther explained in Plate XV. Fig. 3.

Eliza. How perfectly this section line conveys to my idea the edge of a glass set up for one to mark the objects on; the rays from my eye to the edges of the circles, passing across *that line,* appear to my mind to go through the imagined glass, as much so as when I first went to the window; and I have so accustomed myself to the experiment, that I almost see my own visual rays, as *absolute straight lines;* like those in your explanatory diagrams.

George. This proof of my success in teaching you is delightful; and your clear comprehension arises from your recollection of what passed *in our first conversation* on the subject, which is a compliment equally due to you all.

John. We all thank you, brother: now will you permit me to propose a subject for our next lesson?

George. Most willingly.

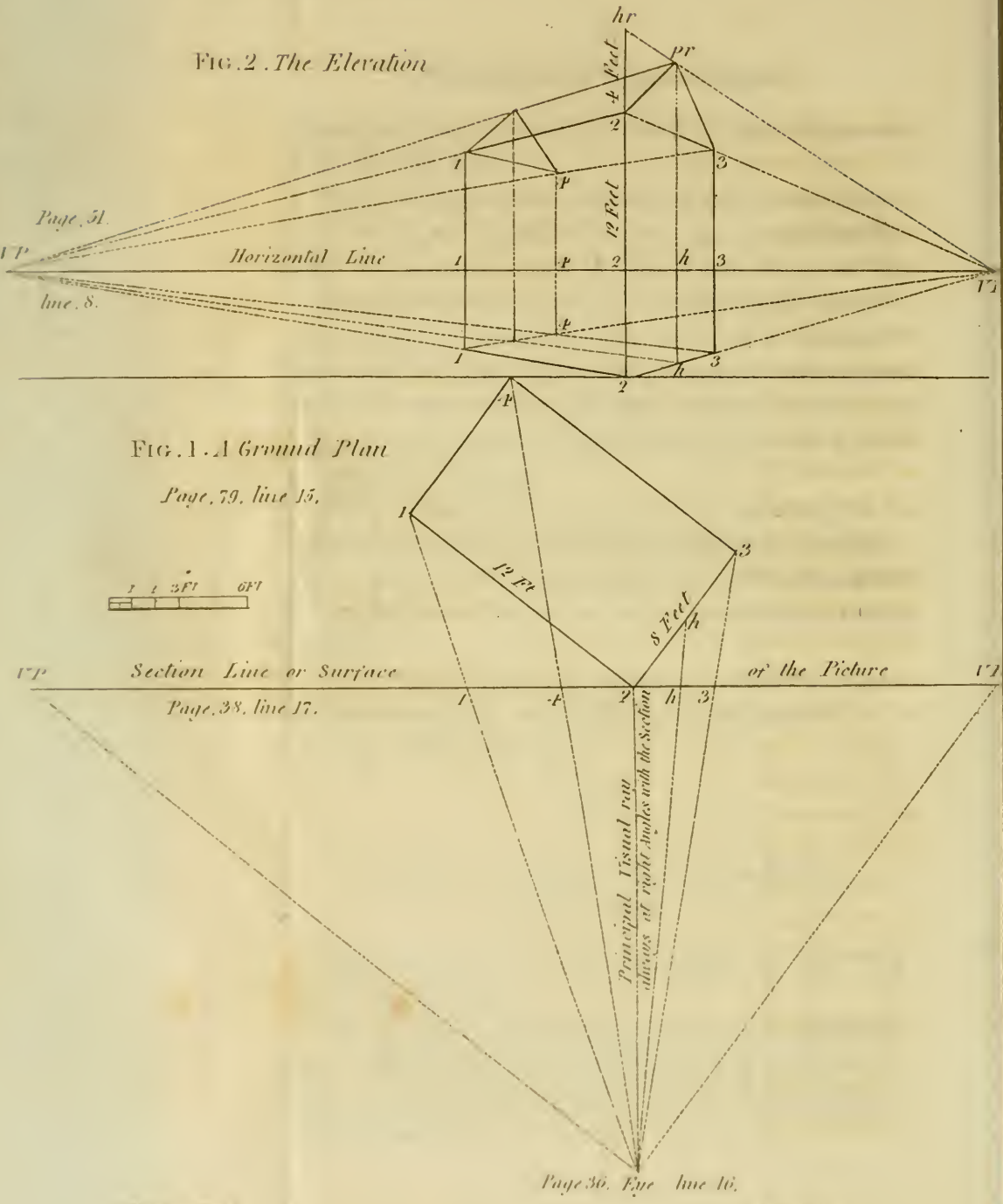
To take an Angular View according to Measurement.

George. WHAT is to be the subject of our next lesson, master John?

John. I saw a plain building, with a roof which had *gabel* ends, and I think I could draw it in perspective; but I cannot tell how I should convey an exact idea of its *measurement.*

An Angular View.

Plate XII. *Page, 78.*



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How to draw Plate XII. by a Scale.

Ann. Do you know the real dimensions of it?

John. I think it was about 12 feet long, and eight feet wide, and it looked as high as its length to the bottom of the roof; and the ridge of the roof appeared to be about four feet higher.

George. We will take this as the dimensions, and proceed; and I can bring it in proper course of study, by drawing it, as viewed, on *unequal angles.*

Ann. Will you please to let it be an example of vanishing points at different distances from the point of sight, such as you mentioned after you had explained the first figure of Plate VII.?

George. That was my intention, sister, which I expressed by the word "*unequal.*"—Come, John, to business: first draw a section line, then draw the ground-plan line, 12 feet by eight (Plate XII. Fig. 1.), letting one angle of the plan touch the *section line,* so that the sides of the plan make different or unequal angles to it.

John. What length shall I take for one foot?

George. Let it be a quarter of an inch, if your paper will allow on so large a scale—*remember that you always calculate* the size of your paper when preparing the scale.

Eliza. You mean that 12 quarters of an inch are to represent 12 feet, if I understand you right?

George. That is the meaning of the scale. Now, John, draw the *principal visual ray* from that angle of the plan which touches the section line, as a perpendicular *let fall* from it.

John. O yes, I know the *principal visual ray* must be *always* perpendicular to the section line.

Plate XII. continued.

George. Then for your distance, or point of the eye, you may take somewhat less than twice the length of the building. It will be a good rule to take the length of the two visible sides added, as the length of the distance; never less, in *single* buildings, because the vanishing points would be so near as to make the inclination towards them (in the picture) too apparent. The point you have made will do: now draw rays from the other three corners of the ground plan to the point marked "*eye,*" and mark them 1, 2, 3, 4; then divide the visible *end* 2, 3, in half at *h,* and draw a ray to the point marked "*eye.*" You have now only to find the two *vanishing points,* which is always done by drawing lines, or rays, from the point or station of the *eye, parallel to the two visible* or *hithermost sides of the plan,* till they cross or touch the section line, and thus the vanishing points are always found. This rule will enable you to find the converging point of such parallel lines as retire *upwards* or *downwards,* in any oblique direction, *directly from the* eye, such as a pantile roof of a house viewed in front; for by drawing a line from the station of the eye, parallel to the slope of the roof, it will cross the section line at the point required. *This must be a profile study,* and the section *perpendicular,* of course, with a true scale according with the manner of the ground plan of Plate XII.

Ann. Pray, brother, tell me *why* the vanishing points are thus determined?

George. Because they are produced by their retiring guides; the *visible sides of the figure,* and you have a

rule already, that determines *all retiring parallels* to converge in *one point*, and if level, that point must be in the horizontal line. And if you reflect on the effect which must take place were you to direct your eye along either one of these two lines which are drawn from the word *eye*, parallel to the visible sides of the plain; either V P. would become the *point of sight*, and the sides of the building would still converge to the same: because *such line* would then become the principal visual ray, and every line that is geometrically parallel to it, must converge to the point of sight.

Now suppose one of the visible sides of the building to form a part of a street, you know that when looking directly along the centre of a street, the sides converge to the centre or point opposite your eye; and admitting the station to be as we have determined, it would only require you to change the position of the section line to make the V P. ray, that it would cross (at *right angles*), the *principal visual ray*, but then the distance of the eye would be too small, from this *removed section line*, which by this time you know how to remedy, namely, to take a *greater distance*. *This prepares* for the perspective elevation.

Eliza. I wish to draw that, if John will give it up?

John. As you please, sister.

Eliza. Where shall I begin?

George. Draw a base line, just clear above the plan; then a horizontal line, five feet (by the scale) above the base; and *(for the sake of convenience)* draw the hithermost perpendicular rising from the base line, on a line

with the principal visual ray, and mark 2 at the horizontal line; now take the length of the longest V P, from the angle 2 *in the plan,* and with this opening of the compasses from 2 on the horizontal line *in the elevation,* mark the longest V P; then repeat the like for the shortest V P. You must next mark 12 feet for the height of the wall from the base, and four feet above that for the height of the roof, on the perpendicular line which is to form the hithermost angle of the figure; and draw lines from it (at the base) to both the points marked V P, and also from the mark of 12 feet high, and one from the top marked *h r,* (or height of the roof,) to the shortest V P; then take the length from 1 to 2 on the section line of the plan, and mark 1 from 2 on the horizon of the elevation, and draw the line 1, 1, 1; then, from 2 to 3 on the section of the plan, set off the space from 2 to 3 on the horizon of the elevation, and draw the line 3, 3, 3; then from the bottom and top 3, draw rays to the longest V P; and from the bottom and top 1, draw rays to the shortest V P. From 2 to *h* on the section, mark 2 to *h* on the horizon of the elevation; and draw a perpendicular, from the bottom of *h,* till it touches the top ray, which gives you the apparent centre and point of the roof at *p r;* from that draw a ray to the longest V P, which gives the ridge of the roof; then draw a ray from the bottom *h* to the longest V P, and where this crosses the bottom ray which goes from 1 to the shortest V P, raise a perpendicular for the furthest point of the ridge, and draw lines from 1 and 4 to it, and from 2 and 3 to *p r;* which completes the out-

line in perspective, agreeable to the given dimensions, aspect, and distance: and were you to add to the ground plan, the proper marks of the situations of doors, windows, embrasures, or battlements, and ornaments, common to buildings, all their respective *widths* would be found on the *section line,* according to the preceding; that is, by drawing rays on the *ground plan,* from the *point of station* (or distance) marked "*eye*" to the visible angles of *such* doors, &c. and transferring their measures from the section of the ground plan, to the horizontal line on the elevation (or picture,) according to the methods given in the outline before you; and their various *heights,* on the *hithermost perpendicular angle,* when *it touches* the base line, as in the present example;—and as you found the height of the wall to be 12 feet, and the height of the roof to be four feet more, all other measures of heights might be determined.

To avoid the intricacy of too many pencil lines and rays on your drawing at once, it is advisable to secure them (in *pale* Indian ink) by *degrees* or classes, descending from general to particular, methodically; and rubbing away the pencil lines of what you have secured, to make clear for the next class. The first class should comprehend the general outline to all *exterior* angles, thereby securing those points, which must govern the drawing of the *interior ones,* which, in *due order,* become the next class to be inked in. The reason for making the outlines of your object with a *pale tint,* must be obvious, when you observe that the visible evidence of all angles, is by the meeting of two *masses,* the one *whole,*

mass darker than the other, *and not blacker at the edge,* as too black an outline would give it. This may be proved by observation, on any architectural object.

Accidental Surfaces and Points.

Ann. The folding doors, that divide the two parlours, sometimes stand open promiscuously, one more than the other; will you teach us how to draw them properly?

John. They all are open sometimes; this will be a good lesson for us.

George. Study Plate XIII, attentively, and proceed. as nearly as you can, according to the rules and observations given for drawing Plate XII. Begin, and I will assist you, if required.

Eliza. I see the ground plan must be first completely drawn, and the station of the eye determined, from whence of course all the rays of sight must be drawn, one to each terminal point of the plan; indeed *the whole* of the *plain* part of both plan and perspective view, is clear to me by Plate XII. but I doubt being able to proceed to the additional matter.

Ann. Then, sister, do so much; copy the plan entirely, and draw the plain walls and the spaces for the doors, in the elevation; and ink them in, and I will try my skill with the doors and circles, if brother will permit me.

George. I shall be very proud of my pupils, if you complete the work between you.

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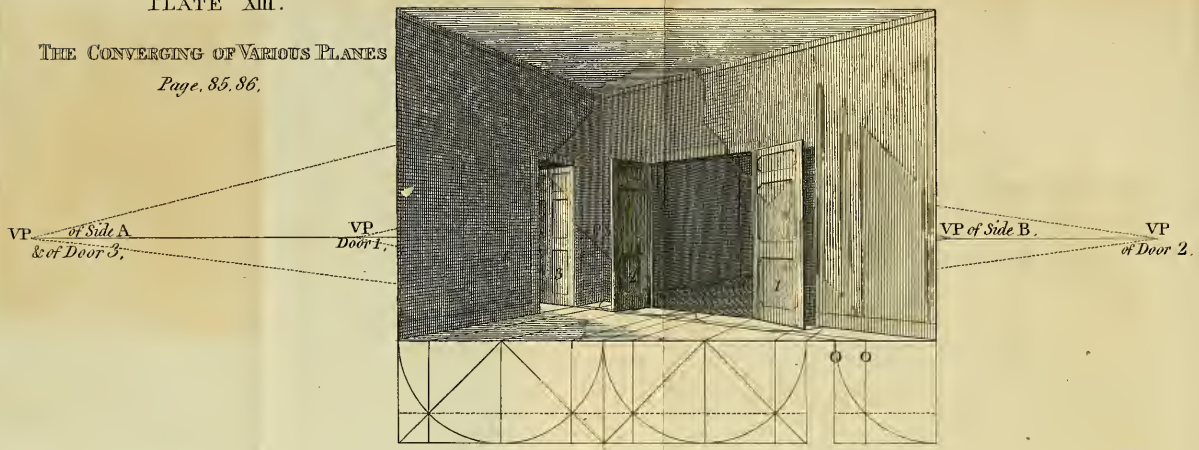
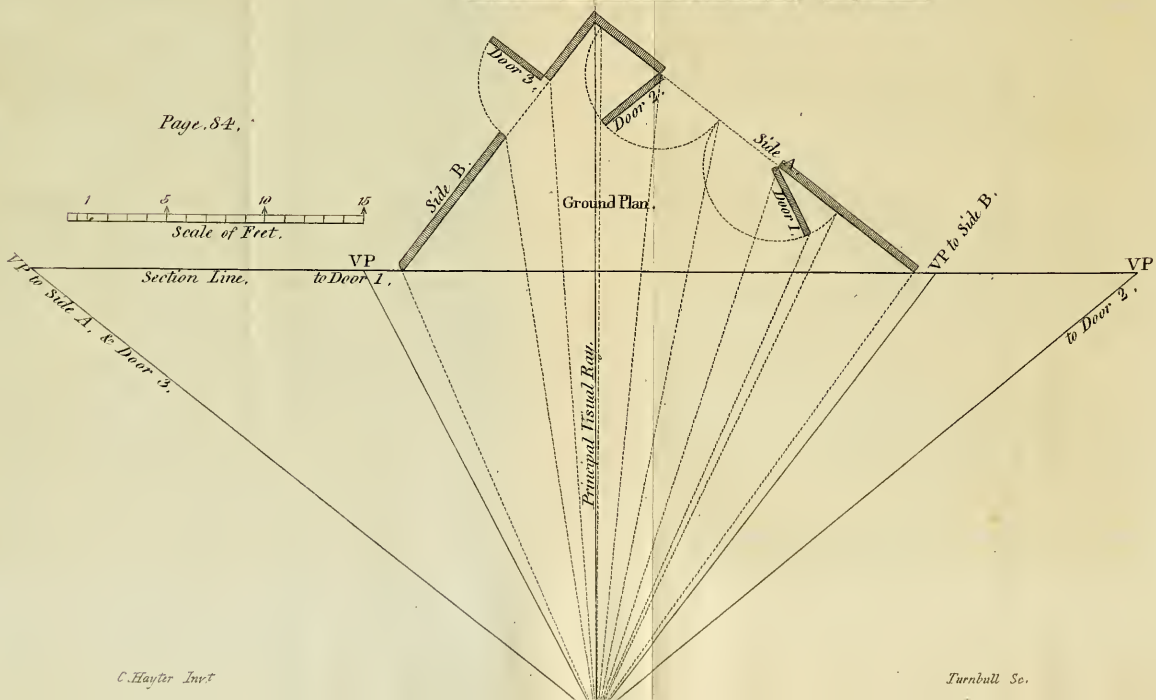
PLATE XIII.

THE CONVERGING OF VARIOUS PLANES

Page. 85. 86.



Page. 84.



C. Hayter Invt.

Turnbull Sc.

Practically explained.

John. What are these half circles for? and why are they put in perspective by a different method from Plate IX.

George. The different manner of putting them in perspective, is only to shew you *another* method of producing the effect, and I hope sister Ann will answer your question clearly as she proceeds.

Ann. I observe by the ground plan that each of the doors converges to different vanishing points, which I must mark on the horizontal line of the picture, according to the method for setting off the two principal ones; which is clearly provided for in the ground plan; and the geometrical semicircles at the base line, must be drawn as guides to the perspective ones in the picture: now John, the plan shews very plainly that these semicircles are supposed to be produced on the floor by the track of the outer edges of the doors, as they move on their centres (their hinges); so if I take the width of a door for a radius, and set one foot of the compasses on the point over which the centre of the hinges is, and describe a half circle (as on the plan), I must mark the proper width of the door *at any* opening.

John. But how do you determine the right size of those half circles at the *base line?* they are much larger than *those on the plan.*

Ann. I draw lines from the V P. of the side B, one through each point of the side A, where the doors hang, till they touch the base line; and as the space between them on the base line, represents the *whole* opening proportionately, I divide this space in half,

according to my example; and take it as a width of a door, or radius for the geometrical half circles below the base line, and the quarter of a circle at the beginning of the side A directs us to the perspective width of each door, by the ordinates O, O, fixing the perspective extent from the side A, of the circles on which the outer edges of the doors must move. Now, George, I must beg you to explain the lines and angles that are in and about these semicircles?

George. You are to observe, that the geometrical semicircles on the base line are to lead you to a correct formation of the perspective ones; on the floor in the picture, we must therefore produce some few correct points (as ordinates) to guide us.

Ann. I thank you, brother, I see that I can complete it. I first draw the straight-line that touches the lower extent of the semicircles, then the perpendiculars at the outside point of each of them, then the diagonals from the centres to the right angles, crossing the semicircle, and where these cross I have points to draw the other level line, and all the perpendiculars; and where those in the two half circles touch the base line, I draw lines to the V P of the side B; and where the two perpendiculars in the quarter of the circle touch the base line at O, O, I draw lines to the V P of A, obtaining a perspective representation of the *oblong square,* which the original semicircles produced, and by the guidance of the additional lines, I am enabled to draw the *perspective* semicircles; and from these I draw the perpendicular lines that represent the outer edges of the doors, and

PLATE XIV. *Page, 87.* FURNITURE. &c

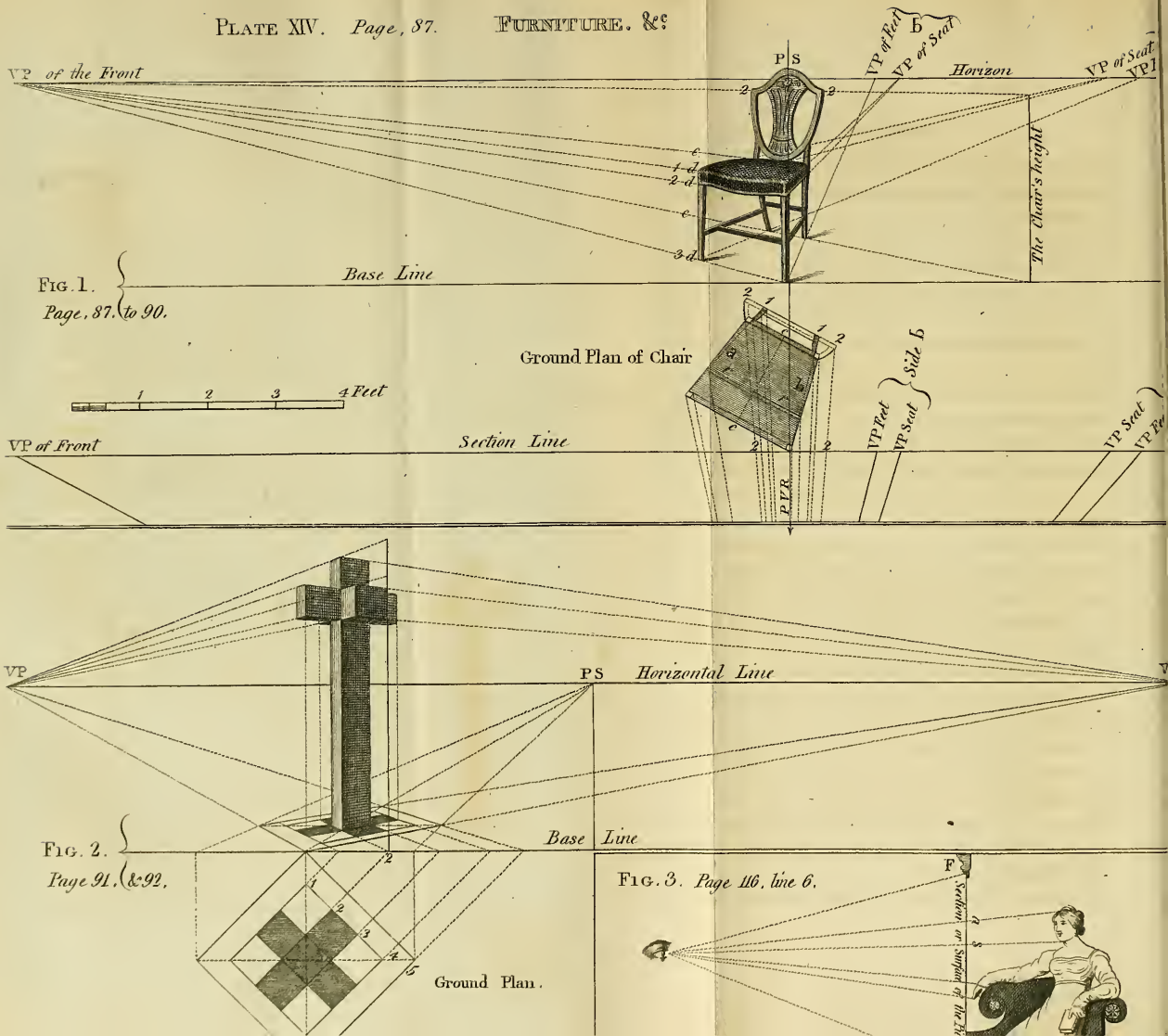


FIG. 1. *Page, 87. to 90.*

FIG. 2. *Page 91. & 92.*

FIG. 3. *Page 116. line 6.*

draw the bottoms and top extremes of the doors to their proper V P's, as marked on the horizontal line of the example.

The Chair.

(Plate XIV. Fig. 1.)

John. Now, brother, as we have learned to set the doors open, we shall want some furniture for the rooms.

George. A chair *(well understood)* will give you an universal rule, it being an irregular figure. The example (Fig. 1. Plate XIV.) with what you (ought to) know of the principles of Plate XII. will sufficiently explain the process. Come, sister Ann, you will begin this drawing, and explain what you do.

Ann. I think I must first draw the ground plan, according to a scale properly calculated, to admit the whole drawing within the compass of my paper.

John. And what rule will you calculate by?

Eliza. As I perceive the station of the eye, and the rays that tend towards it, are only cut off in this plate to make room for the figures below, I think the width for the whole problem should be taken.

Ann. That is the way I shall treat it: thus I find the length of the example to be about 18 feet, and the width 14 feet; now as my paper is much larger than the print, I may make my scale so that one foot may be *somewhat less* than *one eighteenth part* of the length of my paper.

George. I hope, John, you will remember how well

your sister has explained this very essential point, *that of calculating the extent of the space you are drawing on,* and make it a *general rule.*

Ann. I shall first draw the section line, the P V R, and determine P D; and then begin the ground plan of the chair by drawing the lines that form its front and back, and mark their lengths by the scale; but as the back part is not so wide as the front, the central line *c c* must be made to mark the width at the back part equal, this enables me to draw the two sides *a,* and *b,* which completes the geometrical outline of the seat; now I must find the place of the back feet and the top rail of the back, over them, *beyond* the back line of the seat.

George. Which, you are to observe, sister, you might as easily do by measurement from a real chair, as from the problem before you.

Ann. I thank you, brother; I understand it so throughout, and think I could as soon make the perspective drawing from a *real* chair as from the print, as I find my scale *the same to my drawing* as the *two-foot rule is to a chair;* and it only requires to set the chair in the same aspect and at the same distance specified in the example. I now proceed to draw all the visual rays from the EYE to the terminal points and angles of my ground plan; and the vanishing point of the front of the chair, by a line from the eye to the section line, parallel to the front of the chair. Why have you two V P's for each side of the chair?

George. You will observe, that the back of the chair is not parallel, being much wider at the top than at the

feet, while the front legs are; now as the *rule for finding V P of sides is,* that they must arise from a point produced on the section line by a line drawn from the eye to the section line, in a parallel direction to such side, you readily discover the necessity of those additional V P's by *practical* investigation.

Ann. Well, I will first draw the parallels of the two sides of the seat *a* and *b*.

George. Now you see the V P for the *feet* are wanting—lay your ruler successively on the *plan* parallel to the sides of the front legs, and the two sides of the back feet, marked 1, 1, and you will find the two V P's of the feet.

John. And now we have the *plan* complete.

Ann. In drawing the elevation of the chair, I must begin, as usual, with the base line, and then the horizontal line; which I should like to set a little higher than that in the print, just to clear the top rail of the chair, brother.

George. It will be an improvement; do so, Ann.

Ann. I shall now set up a perpendicular from the base line to the horizon, as the hithermost angle of the chair, and the P S over the P V R of the plan. Now I mark the V P's on the horizontal line, according to their distances from the P V R of the plan, and then mark the height of the upper and under edges of the seat, on the *central* perpendicular, and draw the three lines, *d* 1, *d* 2, *d* 3, to the V P of front, and repeat them on the side *b*, to the proper V P's of seat and feet; next I take the space on the section line,

from P V R, to the ray that goes to the back corner of the seat, side *b*, and mark it on the elevation, from the central perpendicular to the right, on the retiring seat and feet lines: from the points thus obtained I draw the two *back* lines of the seat and feet *e*, *e*, (that correspond with the front) to the V P of front—then I apply to the section line for the width of the front of the seat, and mark it from the central perpendicular and draw the outside angle of the left front leg, from *d* 3, to *d* 1; then I repeat the lines of the 3 *d e*, back to the V P of the side *a* for the left side of the chair—and to obtain the height of the chair-back, I continue the lower line *e* down to the base line, and there set up a perpendicular, the measured height of the sides of the back, when a line to V P of front, determines the perspective height;—the width I gain by 2, 2, on the section; then I sketch the commode line of the top rail, and the middle part, to complete the skeleton of the elevation.

George. When you draw the two rails under the seat, on the sides *a* and *b*—you will find that they must not converge to either the V P of seat or feet, but to an intermediate point, because they lie between a greater and lesser angle; and to be *extremely nice*, their V P's should be given.

Eliza. I think, brother, that would be clipping the wings of genius too close; for surely if many will try to draw a whole chair without any other rule than their eyes, we may safely draw one intermediate line by the guidance of a scientific one on each side of it.

John. Oh, any body that can draw could easily finish the chair now, without any more perspective rules.

George. Then, John, you may *furnish* the rooms to your taste, as soon as you please.

Ann. But I expect the pleasure of finishing the first chair, as I have begun it.

The Double Cross.

(Plate XIV. Fig. 2.)

Eliza. This lesson falls to my lot.

John. I think it is *like* Plate XII.

George. Not *all,* John. The plan of the cross is *equi-angular to the base line,* and *the point of sight is to the right of the figure;* besides, you have no section line, as in Plate XII.

John. I did not perceive all this difference, at first sight—come, begin, sister.

Eliza. I first draw the ground plan, to touch the base line at the uppermost angle; but I suppose I am not confined to the very same distance from the P S.

George. Not if you can give a good reason for deviating.

Eliza. I only think the *perspective rules* of this problem would not require *one particular situation* of the object.

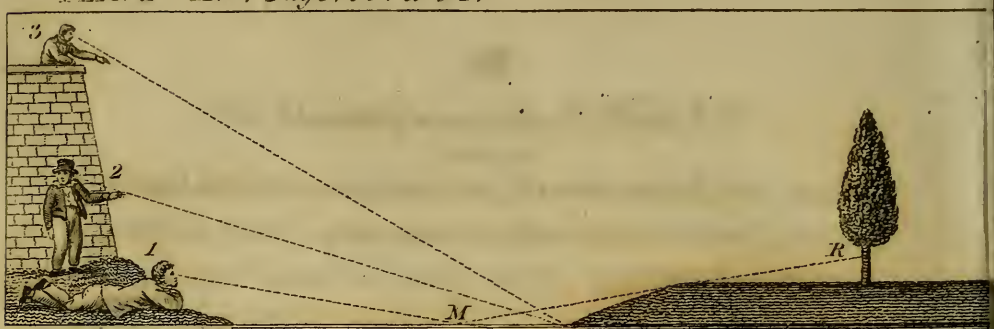
George. You are so far right, sister; but you will please to bear in mind the rule *you have received,* for viewing objects under *a convenient angle,* so as to avoid the appearance of *distortion,* and to produce the most

agreeable view; suppose you do take a different angle, —which would you take, a greater or a less? that is, would you place the plan nearer, or further from the point of sight?

Eliza. I have not considered that, so I will follow the example, if you please; and as soon as I have made the two perpendiculars from the right and left angles of the plan, to touch the base line, I draw the horizontal line, and mark the P S, in the centre, between the two V P's, and as they are equidistant from the centre P S of the picture, each V P represents the distance of the eye from the surface of the drawing; (this we have from Fig. 1, Plate VII. John.) Now I continue the three points of the plan that touch the base line, up to the P S; then I carry on the lines 1, 2, 3, 4, 5, of the plan, up to the base line, and from thence up to the left V P; as also, a sixth line, from the uppermost angle of the plan. I perceive it is *that horizontal line* which *crosses* the centre of the *perspective* plan, that gives me the points from which I draw the remaining perspective lines of it to the right-hand V P:— Now I set up the central post, on its proper central square, on the perspective plan, and the arms of the cross over their respective squares, according to the example.

George. You will find that perpendicular which is raised on the base line at 2, will enable you to mark the top and bottom lines 2 2 of the cross arms, equal to their width, by taking the absolute width from the plan, with the *dividers*, and marking both points as high upon the perpendicular as in the example, according

PLATE XV. *Page. 93. & 94.*



Nº 1. A Profile of the Views the Three Figures have of the Tree, & its Reflection on the Water agreeable to their Various heights.

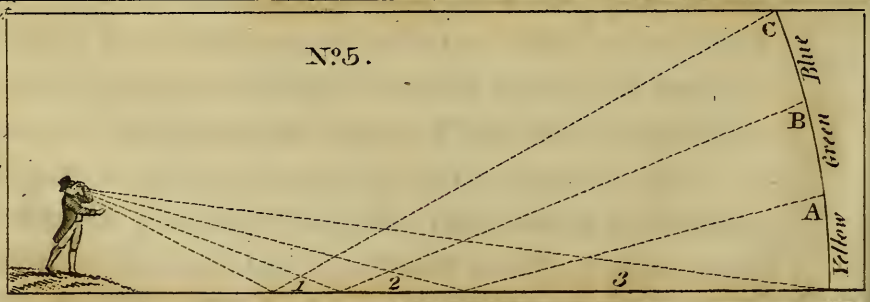
As view'd by the 1st Figure
Nº 2.

As view'd by the 2d Figure
Nº 3.

As View'd by the 3d Fig
Nº. 4.

C Hayter Inv.

Page. 95. line 16.



to the proportion of your drawing: the scale (in the figure above) will answer this purpose.

On Reflection.—(Plate XV & XVI.)

Ann. I HAVE some general ideas respecting the reflection of objects on water; are we to have any particular rules for this?

George. To do away all notion of mystery or difficulty, in this department of our pursuit, you may establish one clear and general idea as a clue to the right understanding of reflections, which is, THE REAL *object inverted to our view;* for were you to place any object on a plate of *looking*-glass laid flat on a level surface, and could bring your eye precisely to the edge of the surface of the plate, you would see the reflected object a perfect repetition of the real one, in all respects (except colour, which would depend on the colour of the glass,*) and should be treated precisely as a real object seen in such position, conformable to the same horizon and point of sight, which governs the real scene in all other perspective conclusions. We must first consider water as a perfect mirror. Plate XV. No. 1, is a geometrical *profile* of a single tree, on the level bank of a river; and on the opposite side are three figures, supposed to be studying reflection: they are placed at various heights, for the purpose of shewing you the different

* *Complexions* are much clearer than what is reflected to our view, *in the best of mirrors:* this may be worthy the note to *vanity.*

effects of the same object; for you will be convinced by their respective views of the self-same scene, as expressed by Nos. 2, 3, and 4, that the best effect is as much dependant on a *proper height* of the spectator's eye, as on a well chosen position to the right or left. Now observe the ray from the eye of the figure, who is lying along on the ground, appears to pass on into the water, at M, to the tree; but you must be certain it does not, and that there is no tree there; the *point* R, on *the real tree, is what you see at* M, because it forms an equal angle to that surface of the water line, with the ray from the eye to M; and also with the apparent continuance of that ray to the trunk of the reflected tree, at that part marked 1, which corresponds with R on the real tree.—And it is the interposition of the angle of the bank, which carries the eye up to R as the first visible part of the reflected tree, while his eye, being on a line with the level part of the bank, affords an entire view of the real tree according with the second diagram.

John. And I suppose Nos. 3 and 4 are to be explained in the same manner?

Eliza. Yes, undoubtedly: now I clearly perceive the difference there must have been in our three drawings, had we taken the view from the window, according with the situations given us in the FRONTISPIECE.

Ann. The variation could have been scarcely perceivable, we are so nearly one height as respects the horizontal line; but with regard to the view, right and left, your's and John's must have been very different,

because each could see that which the sides of the window prevented the other from seeing, but these three men appear to be, at least, six feet one above the other.

John. Pray, brother, do you consider this a digression ?

George. Certainly not, John, because the observations sisters have made arise out of the subject of explanation, and is a very satisfactory proof to my mind, that they unite reflection with application; and the three different horizons of 2, 3, and 4, will shew you, as I before observed, that the proper height of the spectator's eye, is of the utmost importanc to the picturesque effect of any scene; for the examples before you are very unlike to each other, from the single circumstance of being viewed from *various* heights.

John. Well then, the truth is, I am very impatient to hear the explanation of the fifth diagram.

George. That is contrary to a piece of advice I gave you at the commencement of our studies; but I am ready, if you clearly understand the first four.

Ann, Eliza, and *John.* All clearly.

George. The fifth diagram is a *profile* intended to shew you geometrically the precise situation of the colours of the sky, when reflected on smooth water. You are to admit that the curved line is to represent the sky, as apparently meeting the water, and is divided into three equal portions of colour—yellow, green, and blue, according to the example; agreeable to this, the figure on the opposite side would see blue on the water, in the space 1, green in space 2, and yellow from space

2 to the bottom of the curved line of colours, which to the figure appears to be the horizon, which space is marked 3; and although these three spaces are so unequal to us when viewing the *profile*, they must appear equal to the eye of the figure, which I have shewn in the sixth diagram.

Ann. How is it proved, that the colours must fall on those particular parts which you have assigned them?

George. By a determination proved to be invariable, "*That the angle of reflection and the angle of incidence are always equal.*"

Eliza. Will you please, brother, to favour us with some further explanation of this rule?

George. If you will pay due attention to Fig. 1, Plate XVI. you cannot fail of comprehending the rule. Imagine all the shaded part to be the ground plan of a wall or side of a room, against which is a looking-glass (A B), and all the rest of the space is to be considered the floor of the room; the small circles are stations, marked 1 *a*, 2 *a*, and 1 *e*, 2 *e*, where you are to place yourselves according to your initials, that I may explain this matter.

Ann. 1 *a* signifies my first position, so I shall go and stand directly opposite the glass.

George. And pray, sister, what do you see *in* the glass?

Ann. Myself to be sure, brother.

George. And you think, I presume, that the reflection of your person is as far *beyond* or *within* the surface of the glass, as your distance from it?

Reflection continued.

Ann. Certainly, it seems perfectly so.

George. Now consider, the glass is about one-eighth part of an inch in thickness, on which is an opaque body of quicksilver, through which nothing can be seen; and if it were not so, the glass hangs close to a solid wall, into which we need not endeavour to penetrate, as I see you are already convinced, that the subject of our inquiry is to be found on the surface of the glass.

Eliza. Pray, brother, is it the inner or outer surface of the glass that reflects the object?

George. Waving (in our present pursuit) the laws of *refraction,* you are to understand that it is the inner surface, which forming a perfect polish to the coat of quicksilver, makes that, rather than the glass, perform the office of a mirror, the glass only serving as a proper surface or varnish to the metallic body.

John. Then it is *in* the glass we see ourselves? Pray is it proper to say, "reflections *in* the water?"

George. No, reflection is returned or conveyed to the eye from the *surface* of the water; you must *therefore say* "reflections *on* the water."

Eliza. What is Ann standing opposite the glass for?

George. In order to be convinced how the ray of reflection and that of incidence, *always* form equal angles from the surface on which the object is reflected. You must observe, Ann, that while you are viewing yourself in the glass, the ray of incidence, and that of reflection, are one and the same ray, passing first from your eye to the mirror, and back again to your

eye by the self-same ray: therefore, both are at *equal angles,* that of 90 degrees from the surface of the glass.

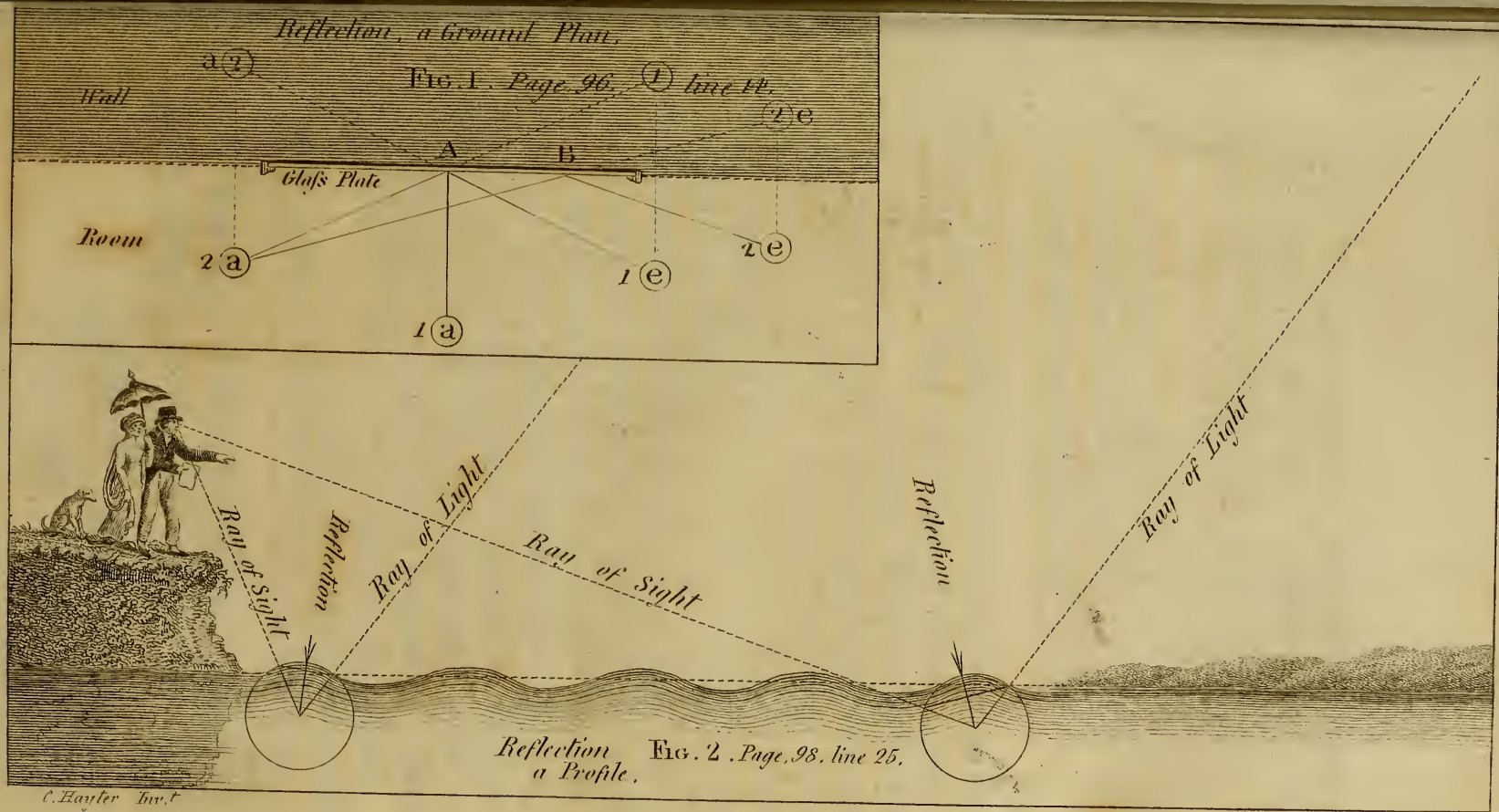
Ann. Then this corresponds with the *central* or *principal* visual ray in perspective.

George. Precisely the same in this particular instance. Now, Ann, take a station so far to the left, as not to see your own reflection on the glass, as at 2 *a;* and Eliza, take a similar opposite station as at 1 *e;* now direct your sights towards the glass, and you will see each other's reflection on the point A, and your rays will be at equal angles from the plate, or surface of the glass.—Now, Eliza, change your station to any other part of the room, so that you can still see Ann's reflection. Suppose you move as to 2 *e,* you will then find the point of mutual reflection removed on to B, but the angles of the visual rays are as equal to each other as when you stood at equal distances from the glass (you may prove it with the protractor).

Ann. I clearly perceive, and doubt not, when we have made *more experiments,* we shall find it a general rule.

John. Now, brother, as you have explained the laws of reflection on flat surfaces, can you shew us how to find the glittering points of waves?—(Surely this will puzzle him.—*Aside.*)

George. I am prepared, master John, at your service, with a gentle *uniform wave,* for the conveniency of making the diagram as intelligible as possible; and we must presume that every wave is a segment of



Publish'd by Black, & Co. 1820.

some circle, which admitted, you have only to study the profile, Plate XVI. Fig. 2.

Eliza. I think I can explain it.

George. Please to proceed, sister.

Eliza. The level *dotted* line is to represent the medium of the surface when perfectly calm, above and below which you produce the curved lines as the waves, and form complete circles out of the two extreme waves.

John. Aye, I know how to do the rest.

Ann. Come, shew us.

John. Please to look to *Le Clerc,* as I have; in his second book, Propositions X. and XI. you may learn to bisect an angle.—I interrupt you, Eliza; go on.

Eliza. Then you draw rays from the centre of the circles to the eye of the figure, and also towards the luminary. These rays form certain angles, which are *bisected,* and where the bisection crosses the wave, is the glittering point of each wave, as supposed to be seen by the figure on the bank.

Ann. And would that certainly be the glittering point in nature?

George. Yes, as a general rule, but there are exceptions which, to demonstrate exactly, would (as regards perspective) give us more trouble than benefit. You may prove the certainty of my scheme by a very simple experiment with a shining cylinder, a lighted candle, and a square table. John's little mug will serve for the cylinder; draw a pencil line correctly across the centre at bottom, and mark each end of the line up

the sides, as a guide to place it diametrically even on a line, which you must make precisely across the middle of the table (this may be done by chalking a strong thread, and snapping it to leave a mark). Place the marks of the mug on this line, and let some one hold a candle to one corner of the table, whilst you place your eye to the other on the same side, which must be that which would have one end of the chalk line between the two corners thus occupied; then direct your eye to the mug, or shining cylinder, and you will find the glittering point exactly over the line it is placed on; then move the mug to any part of the line, making a greater or a less angle between the eye and the candle, and you will still find the glittering point directly over the line.

Ann. Oh, this is very satisfactory: you see, Eliza, if rays were drawn from the two corners of the table to meet in *any* part of the chalked line, they must form equal angles, and we have proved that the glittering point was always on the line—nothing can be clearer.

Eliza. And, as a confirmation, we find that this central line of chalk is the bisecting line of all the angles that the shining part of the mug formed with the two corners of the table, as we moved the centre of the mug along that line.

John. Would not this give a rule for painting the shining parts of columns?

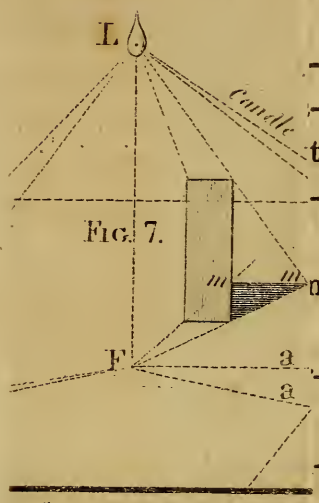
George. 'Tis a very good *general* rule.

XVII. *Page, 101.*

resents the proportio
Earth according to

Fig

000 Miles



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Sun Shadow

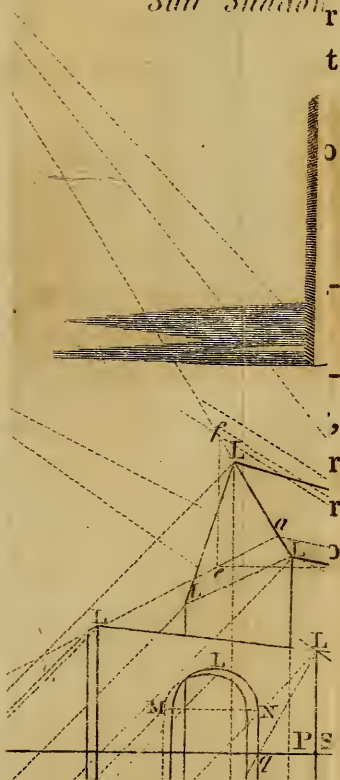

PLATE XVII. *Page, 101.*

This figure represents the proportionate diminution of the Sun's rays towards the Earth according to the Scale presumed.

This Scale presumes
The Earth.....1
The Sun.....100
Their distance asunder 10000

FIG. 1. *Page, 101. line 23.*

12000000 Miles

VP *of Shadow*

PS

Horizon

FIG. 2. *Page, 103. line 10.*

FIG. 3. *Page, 104. line 18.*

FIG. 4. *Page, 105. line 25.*

E G H

Sun Shadows

L

Candle rays

PS

Horizontal line

FIG. 7.

FIG. 6.

FIG. 5.

Page, 106.

Candle Shade

VP *of Roof*

Sun Shadow

VP *of Shed Roof*

FIG. 8.

Pages 107. to 115. line 13.

VP

PS

to VP

The Perspective of Shadows explained.

John. WHAT are the rules for drawing shadows?

George. The rays that determine the shadows produced by the obstruction of *candle, lamp,* or *torch-light,* DIVERGE in right lines from the luminary. But shadows that are produced by the interception of SUN-RAYS are *(treated* as) PARALLEL.

Ann. Is not that the most perfect *treatment* of sun shadow?

George. Yes, sister, on such subjects as ocular perspective can comprehend.

Eliza. Then why did you say "*treated*" as parallel?

George. Because the sun's diameter being computed at about one hundred times that of the earth, nothing but our immense distance from the sun (near 100,000,000 of miles) could make the *parallel* treatment of his shadows produce a true effect.

John. What, brother, a hundred to one, and yet no apparent diminution of shadow!

George. None, John.

John. Come, brother, this cannot be all the explanation you intend to give; we are all attention.

George. Figure 1, Plate XVII. will lead to an explanation. Suppose a round pole to be 50 feet long, and six inches and a quarter diameter at its base, or largest end, and one-sixteenth part of an inch diameter at its smallest end, *this pole* would be near enough to

the proportion of that *cone** of straight rays which is formed in the intermediate space, and by the extreme circumferences of the two bodies — the sun and the earth. Now preserve the proportionate comparison between the gradually-tapering shape of the proposed pole, and the cone of sun-rays; and observe, by the proof given in Fig. 1. Plate XVII. (for that is in the same proportion) how imperceptible the diminution would be. In sawing off half an inch in thickness at the base of the pole, like a wheel, you would not be able to discover the smallest difference between the diameters of the two sides, while the proportionate length of the edge, or thickness of this wheel, would be to the length of the pole, as *four diameters* of the earth to the space between it and the sun. This will surely prove that no visible variation from the parallel appearance of sun shadows can be expressed from any object that can be comprehended within the practical rules of perspective when falling parallel with the horizon; and when they do not, they must be treated as the perspective of any other parallel forms would in the like situation. See Figs. 2, 3, and 4. Plate XVII.

Ann. But I have often seen the sun-beams diverging larger and broader, ascending and descending from the sun, spreading like a fan; could they possibly be parallel, or, in strict fact, smallest at those parts which appeared farthest from the sun and broadest to my view?

* It is rather the *frustrum* alone.

The Effect of Sun Light on solid Objects.

George. Yes, sister, you know the chess-board to be parallel, yet you find its true perspective appearance to be as represented in Plate VI. Fig. 2. (*turn back and look at it*). Now you have only to suppose the point of sight in that diagram to be the sun, and the rows of squares to be sun-beams, and you can instantly see that sun-beams may be as parallel as the retiring lines of the chess-board.

Ann. I am quite convinced, brother, and much obliged to you.

Eliza. Now, if you please, brother, I will draw Fig. 2. The upright pannel marked H, which has its shadow parallel to the horizon.

George. You will first draw the pannel in perspective without regard to its shadow, then draw the base line E. G. S., touching the lowest point of the pannel H.; let fall a perpendicular from the point of sight to this line, forming the point E, and continue this perpendicularly upwards to the point you choose to determine for the sun; from this point draw the first shadow ray *r*, as in the example, touching the top of the hithermost side of the pannel H, and terminating on the line E G S at S; from *this* S draw a line to the point of sight, which will determine the perspective of the shadow of the top of the pannel; now draw the furthest shadow line parallel to E G S, and you will find the second, or under ray *r*, by passing parallel to the first *r* ray, and touching the furthermost corner of the top of the pannel, will terminate at the second S, and complete the work according to the *presumed* position of the sun, which is vertical in the direction of E G S as

perpendicular to E, yet not absolutely vertical to E, but at its proper distance to the *left-hand,* and at the height to which the ray *r* would ascend, were it continued in its present direction, till it reached the sun, and because all perpendiculars that could drop from the ray *r* would fall on the base line E G S, all forming right-angled triangles with the base E G S, and the original ray *r,* proportionate to each other. We shall find our work correct by considering the sun perpendicular to E.

Ann. Why must the end of the shadow tend to the point of sight?

George. Because the top of the pannel being parallel with the surface on which its shadow falls (*both level*), they must *both* converge to one V P; which, in this example, is the P S, and (of course) on the horizontal line.

John. Next comes Figure 3. Shall I draw the post in perspective, for you to explain the shadow?

George. Follow the example, and then observe that the sun is here (*apparently*) perpendicular to the P S (we give up that part of the perpendicular that falls from P S to E in THIS LESSON).

Eliza. And is it not *really* perpendicular to the P S, brother?

George. If it were, the *sun would appear to be directly over the spectator's head,* or *the station of view;* for the distance between that and a *visible* horizon would be too small to make any deviation from such conclusion, when we consider the immense height of the sun; and,

besides, then there could be *no* shadow to the post, whereas the length of shadow exhibited by the example, proves the sun to be but few degrees above the horizon.

John. Then what is the use of the perpendicular line from the sun to the P S.

George. It determines the vanishing point of the shadow of the post, *which* you see is treated as a parallel object, because it is the shadow of one; and such shadows as diverge from the horizon, have the converging point of their parallel sides, at the *foot of the luminary,* in the horizon, when produced on *level* planes; so the perpendicular, which is the object of your question, is let fall from the luminary, in order to find the *foot* (as it is termed) from which the shadow must diverge.

Ann. Then I am to suppose the *sun's real distance,* and to consider the perpendicular line as one, let fall from the direct ray between my eye and the sun, and dropping on the P S in the visible horizon?

George. That is right, sister, for the real sun must be as well understood to be at its real distance in this example as in that of Fig. 2.

Ann. Your explanation of which enabled me to propose the right conclusion here.

Eliza. The fourth figure has its *perspective lines* to the original point of sight, and its shadow converging to the horizon in the direction exhibited in the example. What determines the length of this shadow, brother?

George. The same sun, as a point to draw from, will produce the shadow as you see it in the figure.

John. How is it to be done?

George. First draw the three shadow rays from the post to VP; then a ray from the centre of the sun, through 1, on the top of the post, down to 1, on the hithermost shadow line, will determine the length of the shadow; and having found this point, lay your ruler to it and the P S. and draw the short line from the first line to the second, this exhibits the shadow of the top of post on the left side; then, from the farthest end of this short shadow line, draw a horizontal one to the furthest line of the shadow, and this gives the shadow of the opposite side of the top of the post (the numbers on the points of the post agree with the same on the shadow), which completes the outline.

Eliza. I suppose we are to imagine the sun to be behind us in this lesson?

George. No doubt—and, as I explained before, at its proper distance. This, I think, completes our present remarks on sun shadows of single objects, and we will next proceed to the CANDLE SHADOWS, as in Fig. 5, 6, and 7, which are represented as receiving their light from a *candle* at L, from which let fall a perpendicular to F, (which is termed) the *foot of the luminary;* then draw rays, from the *point* L, through all the uppermost angles of the three pannels, continuing far enough *to meet* the corresponding rays that are drawn from F, through all the lower angles of the pannels, as at *m m,* in each ex-

ample; then lines drawn from *m* to *m* form the ends of the shadows.

Ann. How did you determine F (the foot of the luminary) to be exactly where you have placed it?

George. In order to bring one edge of the shadow of Fig. 5. parallel with the horizon, as F *a m*, the more conveniently to compare the difference between it and the sun shadow, Fig. 2; and F being thus settled, Fig. 6 and 7 become subject to it. Now, I believe, we may go on to Fig. 8.

Eliza. This appears to be very intricate.

George. It will not be found difficult if you proceed methodically, *especially if you have thoroughly understood all that has been previously explained.* The *perspective* of the whole figure may be accomplished by the principles of Plate XII. which is to be completed before we give any consideration to the shadows. Draw it exactly three times larger than the example.

Ann. But here is *no scale*; how are we to proceed?

George. First draw the horizontal line, and place the two V P *three times* the distance asunder of those in the print (observe, the V P on the right hand is not in the plate for want of room, so you must continue the two inclining rays on that side till they meet in the horizon, which will give the proper distance of that V P); then settle the P S by *three times* the original distance from either V P, take all the measures that you may require from the left V P; thus you may first pencil in *all* your perpendicular lines (except 3, 5; 2, 4; and the

perpendicular from Z, which appertain to the shadows), marking the whole of them first on the horizontal line. Then settle their proper lengths above and below the horizon by *triple* measures; first the line L W, from which draw the rays retiring to their respective V P, which will produce the bottom and top lines of the wall, and height of shed L 7, and you will find the point *r* for the angular line of the house L *r* on the ground line; from *r* draw the retiring line *r v s*, and at the L, which is over *r*, draw the line L L, both toward the left hand V P; this gives L S its proper length. Now find the height of the hithermost angle of the shed (all below the horizon, and mark *l;* from *l* draw the retiring lines *l* 3 and *l* A 2 Z, then take the height, and draw the perpendiculars of the right-hand wall at R 1, draw the top R T and the bottom 1 Z to
V.P's their proper V P; so next draw the perpendicular V L its proper length. Now raise a perpendicular line over the left V P, and draw the front slope of the roof L *a* L *f* on till the point *c* is produced on the perpendicular V P *c*; then *c* will be the V P of the other end of the roof, and of the diagonally ascending sides of the chimney, as well as all other ascending lines *that would be parallel* to *the surface of the roof;* such as rows of pantiles, and the ascending sides of slates or tiles, and the visible sides of other roofs *similar* to the example. In like manner find the V P of the shed, by drawing the line L 5, from the top of the hithermost corner of the shed, on, till it touches the perpendicular over the left V P, which (as in the roof above) will be the V P of the

other end of the roof of the shed; now draw the ridge of the house, and the lower edge of the roof, in the direction of the right-hand V P, and the top as well as the bottom *end* of the right-hand wall in the same direction, and pencil the arch of the door according to the example, and the perspective of the whole may be inked in, except the ridge.

John. Aye, *that is* left that the *chimney* may be drawn first.

George. Yes. Now to draw a chimney, we must first draw the line *a b* from *a*, towards the right-hand V P on this line at *d* and 8, erect the two perpendicular lines of the chimney, and mark the height of the line at *g*, from *g* in the retiring direction, to the right V P. Draw the top line of *g* 9, and to the left V P draw *g h*. The appearance of the chimney from the roof is described by drawing from *d* and 8 up the roof, in the direction of *c*, and when you have added the third apparent perpendicular of the chimney, which falls from the ray *g h* at *h*, it will terminate on the ascending ray *d c* at its proper place, *here* draw the inner line of the bottom of the chimney towards the sight V P; you can then erect the fourth perpendicular of the chimney to *i*, whose height is given by drawing the line *h i* from *h*, towards the right-hand V P; then the short line *g i*, towards the left V P, completes the whole outline (independent of the shadows); which, when completely inked in, and all the pencil marks, except the vanish lines of the roofs, are rubbed away, will appear as the *finished example* above before shading.

The Shadows of Fig. 8.

Eliza. Let me draw the *shadow lines,* brother?

George. But first let me give you a general explanation of them, which, if you will deliberately receive, that "*intricacy*" which appears to have impressed your mind will be unravelled. Every marked line of the sun's rays has a capital L near the top; these rays or lines are *all parallel,* agreeably to our explanation in Fig. 1; each L line conducts the shadow of some principal point or angle to its proper station on the plane that receives it, such as the level plane of ground which forms the whole base of the buildings, as also the sloping planes, the roofs, and the L lines determine the sun's altitude; and as the example determines the aspect to be directly on the right-hand, the shadows must consequently all fall directly to the left; by this determination, a level line, drawn from the foot of any perpendicular towards the left till it meets *its corresponding* L line, will there fix the terminal point of shadow for such perpendicular.

Eliza. Will you give me an explanatory instance or two, brother, before I venture to begin?

George. With a great deal of pleasure, sister. Now look to triangles V *v* L, W W L, *t r* L, *u s* L, &c. and you will find the points of shadow produced by the meeting of the horizontal and diagonal sides of the triangles which their proper perpendiculars form. The top of the sloping pole has the base of its perpendicular at Z, from which draw a horizontal line till it meets that L line which passes down to *y* from the top end of the pole, which would make *y* the terminal point of the

shadow of the pole were it not for the interception of the *shed,* which, in this instance, stops the shadow at B, (but of this latter *point* we shall treat in its place) as the triangle Z *y* L to find *y* is the object of this proposition.

Eliza. I think I may begin to draw the shadow lines now; come, brother, you must direct me.

George. You see that the explanatory marks consist of *numbers* and letters, and it is very reasonable to conclude, that the authors of such drawings begin with 1, 2, and 3, or *a*, *b*, and *c*, &c. or the initial of the proper name of the point, as P S for point of sight, &c. and if the work is so full as to exhaust the small alphabet, recourse is generally had to capitals. Will this general information enable you to proceed?

Eliza. I will try: here is the horizontal line 1, 2, 3, I first draw that; then 2, 4; and next 3, 5; and then a line from 4 to 5.

George. Now ink in the lines you have drawn, and observe they cut off as much of the shed as the shadow of the wall would if it were high enough; but you perceive that the shadow of the top corner of the wall reaches no further up the line 4, 5, than the point 6, which is found by——

Eliza. Drawing the L line till it touches the line 4 5 at 6; draw T *x*, *x* 6, and T 7, according to the example, this marks the shadow of the top of the wall.

George. And completes the *whole outline of its shadow;* which you may render more evident by washing, according to the finished example, a tint over the space

that is bounded by 1 2 4 6 7 T and R. Now proceed to draw the outline of the shadow at the *end* of the shed.

Eliza. This begins at *l*, and horizontally on to *m*, the L line finds the point *m*; now I draw from *o* to *n* horizontally, *n* is found by drawing the L line, which descends from the top of that perpendicular of which *o* is the bottom, till it meets the horizontal line from *o* at *n*, then the line from *m* to *n* is the shadow-line for the left-hand end of the roof of shed. But here is a *p* and *q* that you must explain, brother?

George. You will please to observe, that the wall (where the door-way is) prevents the shade of the shed from falling in the line of *o n* (*look to it—see that it is so*). And were there no opening door-way, but a plain wall, the shadow would fall on the wall by the line L *q p*, but because *there is an opening* it is lost at *q*, and the remainder of the shadow unites with that of the end of the house, as seen through the door-way: see the shaded example.

Eliza. O then, I am to fix the point *p* on the line *w r*, where the line *m n* crosses it. Why does the shadow fall on the line L*q*, instead of the direction of the other L lines?

George. Because of the *sloping* position of the shed roof, and the oblique position of the wall it falls on: if you will look to L T 7, you will see that shadow is governed by its L line; and there would be no angle at T on the L line if the wall of the house was not oblique to the view, because the top of the wall represents a geo-

metrical level. Now you may proceed to the shadow of the wall and door-way.

Eliza. I perceive that the horizontal line *w* W gives the direction of the shadow, and the L W line its projection, the short line at W, which shews the thickness of the wall, goes to the left V P, and the line W *t*, to the right V P, the two horizontal lines that mark the open, or unshaded part through the door-way, will be drawn from the inner left side and outermost right sides of the door-way towards the left-hand; and the three lines of light descending from the centre L, and the two sides M and N of the door-arch, will produce the three radical points for the shadow of the arch, which in this very *narrow* space will be sufficient to sketch the curve. But, brother, suppose the sun shone in a direction to shew *more of the arch*, and I would draw the *exact* form of the shadow on the ground, how should I set about it?

George. By making several points on the front curve of the real arch, and letting fall perpendiculars to the ground line of the door-way, and there marking points corresponding with those on the arch, that is, a point on the ground line, perpendicularly under a point on the arch; then from every point on the ground draw *horizontal* lines to the left, and from every point on the arch draw L *lines*, and where each pair of lines would meet would be points through which the curve of the shadow must be traced.

Eliza. Now the lines for the shade at the left-hand end of the house are easily to be done; first, the three

horizontals *r t*, *v* V, and *s u*, and their correspondent diagonals from the three angles of the roof L *t*, L V, and L *u*, uniting at *t*, V, and *u*, form the terminal points of the shadow, and the line that retires from *u*, towards the right-hand V P, marks the shadow of the furthermost eves of the house.

John. Now you must ascend to the chimney, sister.

Eliza. I shall first draw the ray from *a* by *e* to the left-hand V P; then the horizontal line from *d* to *e*, and from *e* I raise the perpendicular *e f*; then the line *d f* will be the shadow line of *d g*, and in order to fix on the vanishing point for the whole shadow of the chimney, the line *d f* must be continued till it touches that perpendicular which is over the left V P, and *that* will be the V P of the *chimney shade*, from which I can draw the line that determines the further edge of the shadow, and the intermediate line, which would be the shadow of the *h* angle of the chimney, if it stood exposed to the sun. Now having these three shadow lines of the chimney in their proper directions, the three L lines, *g*, *h*, and *i*, will meet them at the proper points to determine the length and shape of the shadow of the chimney top. To draw the pole that leans against the corner of the wall, and its shadow, I must first draw the ground line F 1 *z* to the bottom of the wall, and in the same direction, that is, towards the left-hand V P, and then mark the space from 1 to F for the foot of the pole: I then draw the pole (touching R) its proper length, this completes the pole. Now I proceed to the shadow: let fall a perpendicular, the top of the

pole to *z*, from which draw a level line to the left, long enough to receive the L line from the top of the pole down to *y*, which would be the terminal point of the shadow of the pole were it not for the interception of the shed roof, which receives the shadow at B. To find B you must draw the line D parallel to the L 6 ray; and from its lower point, on the shadow line 6 7, draw a line parallel to 5 6, till you find the point B, on the ray L *y;* now draw so much of the shade of the pole as falls on the roof of the shed from B, through 6 to the edge, gives G; then draw the shadow on the ground from F toward *y* till it touches the side of the shed at A, then the shadow from A to G finishes.

Ann. And will these specimens teach us how to draw the shadows of all objects?

George. They comprehend the principles for all: and if you will practise accordingly, you will be convinced of their powers. Should you require more examples, the authors I have mentioned abound in detail; but I have been taught, that endeavour, upon true principles, invigorates genius, whilst an example for every circumstance weakens it. Yet because life is so definite, and art without any apparent conclusion, we must make the most judicious use of those discoveries which time and genius have provided for us, avoiding the prodigal and *vain conceit of inventing our own eminence,* for although the KIND DISPENSER of benefits may have conferred on us faculties of the highest order, we must be as much beholden to those who have gone before us for any *permanent* height, as the upper strata of a building

are to the preceding courses or foundation; and so sensible are great and liberal geniuses of this, that they gratefully and justly acknowledge the *grounds* and *basis* of whatever eminence they arrive at, to have been the LEARNING of their predecessors.

Concluding Dialogue.

Ann. PERMIT me, brother, to call your attention once more to Plate XIV. Fig. 3. As the evident variations of the size of separate objects, according to their distances from the *eye*, inclines me to think that a *single figure* would be affected by the rule you have given us, if one part of it were to be much nearer my eye than another, please to help me *clear* through this idea.

George. Inconsiderate artists, before they have learned from perspective the great importance of its usefulness, fall into great errors for want of the thought you have given the subject (most frequently in portrait painting); although many take a *real* measure of the face and features, which may answer a good purpose when a head, only, is to be painted. But in half lengths, or more, where some variety of attitude should be an object of equal importance with the resemblance, the *perspective, or apparent size* of each part, must supersede the absolute measurement. Attend to the position of Fig. 3. Plate XIV. sitting opposite the *eye* which is represented as viewing her through the aperture of the frame F F, which is to

contain the picture when finished. Suppose the surface to be glass, instead of canvass, the rays from the *eye* to her head must pass through it at *a* and *s*, which would give the proper size the head should be drawn. The same rule will determine the size the hands should be in the picture.

Eliza. But the *right* hand is so near the sectional plane or canvass, and the left equal distance with the head, that there must be considerable difference in their size, when painted by the rule you have given.

John. And would not that make the right-hand look too large for the head and the left-hand?

George. This question passes as a reasonable one, with *larger* artists than you, John, (perhaps you have not observed that the men on horseback, including both, [in Plate XI.] are not higher than the elbow of the military figure in front), and in the chess-board (Plate VI.) the furthermost row of squares is not one-third the width of the front row). You must look back to our conversations on the subject of foreshortening, which, with the other explanations I have given you, will make you the best answer possible: you should all observe, that *one* perfection in a picture demands the society of others. The truth of perspective *alone* would not establish the excellence of the picture—it is of so eminent a class, that all the perfections of art must unite therewith to evince its importance. (What would a scientific general be without an *intelligent*, as well as a brave staff? and what either, without as brave an *army*, *all* subordinate members of one body? and

who would not think instantly of a *Wellington* for its head ?)

Ann. Then we are to consider PERSPECTIVE as the *generalissimo* of painting, I presume ?

George. Whether our comparisons be strictly parallel or not, *this I may repeat,* THAT EVERY MOTION OF THE PENCIL MUST BE LIABLE TO error, unless directed by the *eye;* and as the art of perspective is absolutely necessary to convey a *true* description of what is SEEN, I would seriously advise those who have advanced in the practice of painting, under the flattering and deceiving impulse of "*intuitive infallibility,*" to relinquish the delusion ; and learn, from the *knowledge of perspective,* and her attendant elements, "HOW TO BEGIN A PICTURE."

END OF PERSPECTIVE.

C. Hayter. Inv.t No 1. Page. 129. No 2. 132. No 3. Page. 130. J. Turnbull. Sc

TO FACE THE LETTERS.

Publishd by Black. & Co. 1820.

LETTERS

ON

DRAWING AND PAINTING.

PART THE FIRST.

Epistolary Instruction proposed.

LETTER I.

To Miss B——

MADAM,

When I proposed assisting you in the Art of Drawing and Painting, with the best instruction I could possibly convey, by literary correspondence, I did not expect you would have been so very diffident, as to make your first question so general and comprehensive. Your humility in professing to know nothing, not even "what to ask," and your desire "*to know all I can teach you,*" have involved me in an undertaking, in which my success can only be comparative. The pleasure to be derived from the practice of this most rational and delightful art, must be proportionate to the refinement of that taste and judgment which is founded, or at least matured, by a knowledge of what is good. To possess so great an enjoyment, is well worthy the most earnest and arduous application,—"*a work of merit must always be* a difficult work;" but it is that sort of difficulty which is as opposite to *trouble*, as *pleasure*

is to pain. The difficulty of the work in which I have volunteered my assistance, is greatly increased by your demand for "*all I can tell you,*" because it comprehends a desire to to be informed of "*all that is necessary to be known on the subject:*" to lessen this, will only require due candour on both sides. What I cannot teach you from my own acquired stock, shall be given by *references,* which you may depend on; of which, if you make the use I shall recommend, our success will be equal; and I shall derive considerable confidence from knowing that my best endeavours are addressed to one, who will readily excuse my plain style of writing, while the matters treated of are found to convey the information required. It is not my intention to make any drawings for your imitation, in the course of this undertaking, except explanatory diagrams, because every kind of example you can choose, or require, is in great plenty at most of the print shops (to *begin with)*: and as you advance, *busts, figures,* and good paintings, may be very easily obtained. Thus, by a regular progress, you will acquire the power of imitation, so as to begin to study from nature, and thereby find a sure footing on the direct road to the best aims of art.

Before I begin my manual, it may be proper to give you a general view of what a student in painting should attend to, as indispensably requisite to ensure the means of conveying his thoughts to the tablet with propriety, so as to entitle him to a due proportion of the credit which *a good picture (from whatever source produced)* confers on its author: and it does not occur

to my mind that I can convey those ideas better than by sending you the copy of a letter which I took occasion to write to Miss S. as follows:

MADAM,

In a friendly conversation with your father, on your taste for painting, I endeavoured to prove the necessity of your becoming acquainted with *practical geometry*, perspective, and the *proportions* of the principal antique statues, as also of the *five* orders of architecture, so far as to retain a perfect knowledge of their distinct characters, on account of the frequent introduction of them in landscape and historical painting; and indeed there was not any one elementary branch of the art, that I did not *strongly* recommend to your attention. But he seemed not only unaware of the importance of such attainments, but considered them as so many "*clogs to genius.*" Were you practising as an *amateur* only, the consequences would rest on yourself alone; but as you have taken up the character of an artist, by public exhibition of your works, I feel it a public duty to intrude on a few of your leisure minutes, with some remarks on the subject; as I fear your father's opinion, "that your *great* and *natural genius* is *superior* to the controul of rules," must tend to bias your mind much, with impediments to successful progress.

Believe me, Madam, notwithstanding your acknowledged taste and genius, you will find it difficult to pass the ordeal of true criticism, without an *acquired*

knowledge of what may be termed the mechanism of a picture. I readily admit that your *genius* may attend you *so far* as to sketch a general idea of a subject conveying to one's mind an immediate recollection of some particular person, place, or historical circumstance; but you can go no further—*genius here wants her auxiliaries,* whose names I shall mention as introductory to your further acquaintance with them, (if you ever expect to rise above the humble sphere of a copyist.) The chief of them are, GEOMETRY, PERSPECTIVE, ARCHITECTURE, and LANDSCAPE, for your *scenes;* and the ANTIQUE PROPORTIONS, ANATOMY (both of *human* and *other* animals), CHARACTER, COSTUME, the PASSIONS, LIGHT, SHADE, REFLECTION, and COLOUR, for both *scene* and *actors.* And, in the same degree that you acquire the knowledge of using the aid these will give you, will your powers be increased.

First, without *geometry* (which is the artist's mechanical alphabet), you are incapable of drawing or proving the truth of the parallelogram or oval, which is generally the *boundary line of a picture;* and as for PERSPECTIVE, I have the highest authority, as well as my own positive conviction, to assure you, that the grammatical rules of language are not more essential to writing and speaking correctly, than the rules of perspective are to painting: for, as the most elegant language from the tongue of a scholar conveys clear and simple ideas to the mind of the uneducated, by the natural power of the ear, yet, while the subject is so comprehensibly conveyed to the hearer, he hears, understands, and

wonders; but cannot repeat what he has heard, for want of a rudimental acquaintance with the mechanism of the language which conveyed it: so the various objects of nature and art are conveyed to the mind, through the organ of sight, but cannot be scientifically described, without the mechanism of perspective, *without* which you are liable to make as many *errors* as *touches;* as much so when the subject of study is an animal, or a group of flowers, as when it is from geometrical forms. Next, how can you sketch any design, where *architecture* is required, unless you know its general characters at least; and if your subject should be landscape, sketch you may, but it will be impossible to finish without a thorough acquaintance with the detail of natural scenery, by study of its characters. Now, Madam, we come to the *actors,* or animated part of the picture, which (do not think me severe) *shall be all* crippled, and disproportionate, by the *best aid of mere genius,* unassisted by *practical* knowledge of *proportion,* and *anatomy*; and without that *expression* and *character,* which can only be acquired by studying the *physiognomy of the passions,* nothing worth the labour can be *expected. Costume,* well attended to, strengthens the great end of historic painting, and is indispensable. *These* will call on the embodying powers of LIGHT, SHADE, and REFLECTION, and the science of COLOURS, to determinate into PICTURE.

Now, to prevent delay on the merits of your proposed *auxiliaries,* or *elementary* help-mates, let us suppose you to obtain a speedy *off-tract,* or *tracing,* from a

masterly picture, whereby you would become possessed of a *perfect* outline: then let us set aside the *original picture,* and see what you will make of the pure outline *thus* obtained, proceeding entirely on your own skill, in the department of *light, shade, reflection,* and *colour:* even aided by a recollection of what you saw of *this* in the original, and from all I have ever seen of the *genuine* productions of *unelementary* amateurs, I should expect this picture when finished, notwithstanding its fine correct outline, to be, in all other respects, *one entire mass of errors!*

You are pleased, no doubt, with the compliments paid to your *genius, taste,* and (what your fond father so mistakenly doats on) your *intuitive knowledge,* of whatever you undertake. This is worse than the severest criticisms in its effects, tending to lull you into an indifference to those *aids,* without which the works of genius can only rank with the *wild* productions of nature, without her consistency; because nature is always competent, but the utmost efforts of art are often deficient.

It will be well for you to inquire into the natural cause, associations, and effects of *colour,* called *aërial,* or that which is produced by light, on the various masses of atmospheric matter; according to the circumstances of *situation* and *quantity,* of both one and the other. A studious investigator will find the *iris,* or *rainbow,* a kind of gamut (if I may be allowed the comparison), which will much advance attainment in this department. There are instructive theories, accompanied by

illustrative diagrams, on the subject; (some of the most useful of which I have simplified and explained in my sixteenth and seventeenth Letters), with which, if you have perseverance to become acquainted, you will regret that *waste* of *time, canvass,* and paint, which is occasioned by the blind and conceited attempts of *mere genius,* or rather the *fantastic* invasion of its province, without *science;* but when elements are practically united by progressive application, they will form a clue of *such an extent,* that genius may proceed without danger of being lost in the disappointing mazes of ignorance and conceit. You can never stretch to the utmost limits of elementary ground, while you are content to range the ample space of *possibility, consistency,* and *beauty* : and your clue will never tighten till you wander into the wild regions of *absurdity.*

Were you to content yourself with *copying* only, which, in a moral point of view, may be blameless ; and must certainly be considered as an amiable and elegant, as well as rational occupation, when chosen as a means of innocent and honest livelihood, in humble preference to any other *trade* or calling; (unaccompanied with the presumption of claiming the consideration due only to the *few,* who, blessed with talents, " scorn delights and live laborious days," in hope of obtaining that only genuine fame which has *perfection for its basis.)* A correct eye, and practical command of hand in the use of the materials, would be almost all that a copyist could require ; because forms, characters, lights, shades, and colours, would be all before him, demanding only at-

tentive imitation. And I am not backward to allow, that a *very correct* copyist must be considered as a genius of that class, and, by sufficient application, may seem to ascend a *step higher* on the scale of merit. For if such an artist has a *good memory,* and *some taste,* he will draw or paint what he *believes* to be *original;* taking a *new* subject, and treating it according to what he has copied from or observed in others. It is surely to *such* artists the proverbial conclusion is applicable, that "*those who follow must go behind;*" taking example upon trust, and rather shunning, than seeking the reasons and causes of effects; or, if by misconstruction alarmed at the above predicament of "*those who follow,*" blunder on in their own uncultivated conceits, as if hastening to the summit of perfection, dreading, alike, precept, system, and example; and fondly hoping, that by the vehemence of an effort, the palm of originality and of fame must certainly be ensured. Too many *young masters* are content with this degree of originality; but it can only obtain that sort of rank as artists, that musical geniuses acquire by ear; who, for want of scientific knowledge, must remain ignorant of the art to which nature particularly qualified them.

You will plainly perceive the course I think you should adopt, that of studying, to qualify your mind with *clear* and *decisive reasons* for your proceedings, observing always, that bad examples may be blamed as the cause of your errors, but are never to be admitted as *good* reasons; and you will make but slow advances in what is requisite to be known by those who are am-

bitious of *improving* the fine arts, while you sit down contented with the example set before you (however highly esteemed), without investigating the primitive causes, which must have directed the mind and hand of its author. For *rare*, very *rare indeed*, has it happened, that genius has been so great as to arrive at eminence, without scientific aid; or to perform a work, according *with* rules, without an acquired knowledge of them.

Sir Joshua Reynolds has said, that rules are not the fetters of genius, but "*fetters* only to those who have *no genius*," admitted, that there have been such geniuses as first "bisected the angle," found "the centre and two diameters of an ellipsis," and "discovered the trammel," &c. &c.; but it is still uncertain, whether these, and such like steps in science, were the gifts of accident, to *intuitive genius*, or the regular fruits of scientific application; be this as it may, we are now by various means in possession of such excellent rules for most of the fine arts, that, instead of "*a genius*," he must be "*a blockhead*" who will not try to avail himself of them. I hope you will, therefore, agree *with* the conclusion which must follow, that scientific rules are the only *sure and easy*, though deliberate, conductors of true genius to the TEMPLE OF FAME.

LETTER II.

Proper Materials and Habits.

MADAM,

It gives me great satisfaction to find that you are resolved to follow the strictest discipline of rudimental inquiry, and by such means alone can your genius receive a fair trial. "*Perseverance*" be your motto, and you *shall* have "*Success*" for your *crest*. As you have required the whole of my system, you will of course permit me to tell you what you already know—That you will only have occasion for a good black-lead pencil, a *sharp* pen-knife, and some drawing-paper, or a *drawing-paper book* to begin with; and your first attention *must* be, to the proper manner of holding your pencil, which, when you have *cut to a good point*, you will handle precisely as you would a pen, except a constant regard to preserving a much greater distance from the point, which will soon become habitual. Take care never to hold it too tight, but handle it with ease and freedom, using little more of muscular exertion than is sufficient to keep it from falling from between your fingers. It is of considerable importance to observe this ease and freedom, for those who do not suffer severely, even to nervous debility; sitting *locked* in all their joints, in sympathy with this *apparently* trifling error. You should, for the above reasons, make an easy, graceful *position* while engaged in study, an object of the *greatest importance*, for many have neglected *this*, to

the injury of their health, as well as the natural beauty of their persons.

I shall endeavour to impress on your mind, *my* opinion of an improper attitude while drawing, by the satirical observation of a witty old teacher, who, seeing a tall lady stooping over her drawing till her nose almost touched the paper, said, "Why do you allow her to sit in such a posture?—is she near-sighted?—one would think she was drawing with her nose!" This awkward habit commences in *eagerness,* which is very detrimental to success in all works of art: do not hereby mistake my meaning, by imagining that I recommend the opposite feeling—*indifference,* being the very worst sensation that the mind of an artist can have to combat—a placid and collected attention, always intending the best; not by a miraculous hit-off, but patient, yet active investigation, will prove most conducive to success.

You will find it proper to set whatever you undertake to copy, *nearly* upright, and *directly before you;* a good reason for which, you will find fully explained in my Dialogues on *Perspective;* where you will be convinced of the absurdity of having, either your own drawing, or a copy, in such a direction, as to look *obliquely* on their surfaces: see pages 51, 52, 53, and 54, on foreshortening. You must therefore have a desk, or easel (see No. 1, frontispiece to these Letters), which you may elevate, or lower, to a proper direction, by placing it before you on a table, and raising the desk-lid, till your eye is as near the top edge as the bottom; that is,

suppose a perpendicular wire was to be set up in the centre of the lid, then raise it till the wire, thus fixed, would point to your eye, as you sit in the easy position recommended; or, you will find it very convenient to take a light port-folio, or plain board (made for the purpose), on your lap (see No. 3, frontispiece to these letters), and rest it against the table where your copy is (properly set up), till by inclining your head easily forward, *not stooping*, you find your *eye* fall nearly perpendicular to its surface. Thus, Madam, you may be properly prepared to begin drawing; and the best observations in my power shall be the subject of my next letter: in the mean time, please to provide yourself with the materials required, and some Indian rubber; and, as it will be proper that you give early attention to the Perspective Dialogues, you will there find what other instruments are wanting.

See sizes of drawing-papers at the end of the last Letter.

LETTER III.

Rudimental Information.

MADAM,

The first efforts of your pencil must be, to draw perpendicular *straight* lines, parallel and equi-distant one from the other, beginning with lines about one inch long, and (strictly observing the *ease* before advised) practise till you find you can draw a row cor-

rectly, and as fast as you could very deliberately count double the number, as 1, 2, 3, 4, while *drawing* two lines; then increase the length of the pencil point from your fingers' end, and make the like experiment on lines two inches long; and practise till you can easily draw *perpendicular* lines, equal distance asunder, three inches in length; then repeat the above process with level, or horizontal lines. After this, you must proceed to *oblique* lines, both to the right and left; and to complete this command of the pencil, you must draw curved lines, according with the above system, till you can draw a good circle; (these are the *radical lines.*) This seemingly tedious and unentertaining beginning, will be amply rewarded in the very next stage of your study.

First exercises are *generally* done in *copy-books;* and the only disadvantage arising from the using such, is, that a very important part of the commencement is too often neglected, that of a proper manner of holding the pencil, and placing the paper to be drawn on; as also your own position, which should continue your *chief* care, till habit has made it natural to you. *Then* you may draw on the *copy-book,* if you please, while you recollect that you are not *writing* in it.

I much recommend the habit of *standing,* both to *draw* and *paint,* as most conducive to health: the arrangement necessary to such, requires no further direction than to observe the rule I have given; placing every thing at a suitable height, which, if you have not ingenuity enough to contrive, and that in a *completely*

convenient manner, you may assure yourself that you have not *yet* equalled Raphael, as a painter—or Archimedes, as a contriver. Indeed, it is all contrived to your hands in a frame called an "*easle,*" to be had at any of the colour-shops (see No. 2, frontispiece to these Letters): but the contrivance I alluded to was, that the *desk* might be very conveniently raised to a proper height by a box, or the like, when you have no easle. There cannot be a greater proof of *unfitness* for the *fine arts,* than aspiring to the end, without due attention to the means: I therefore seriously advise you never to begin till you are *well provided, and prepared with* SUITABLE MATERIALS, IN ALL RESPECTS. Here observe, that a *dull-edged* knife will waste both time and pencil, and is a certain proof of great laziness, or some equally improper disposition for the pursuit of excellence. If you pay due attention to preliminaries, you will study with much greater chance of improvement, than by any irregular mode, and by practice you will almost forget that any system has been required; the proper manual of the art will become natural to you; *then* you will feel the *benefit* of *that liberty,* which some shallow thinkers *imagine* should be granted from the first: but, perhaps, I can convince you of *their mistake* by the following observation:—

Suppose two, *equally* natural geniuses, were to commence the study of *instrumental music* at the same time; one with the best theoretic explanation of the science that could be written; and I would also grant *full* and clear methods for the application of the music to the

instrument, but *no* master. To the other *genius,* I would admit, and recommend *all the above,* under the government and tuition of the most judicious performer, *strictly* enforcing and explaining all the nice punctilios of time, air, chords, tones, half-tones, &c. &c. Can it be a question, which would be the *best performer?*

It may not be irrelevant to the subject, if I assure you, that the dexterous art of "*rolling on a drum*" cannot be acquired without a manual of some weeks' hard exercise; and *easily* as it *appears* to be performed, is only attainable by one certain method: it is the same with dancing, be the taste for that accomplishment ever so great. And, indeed, *rudimental tuition* is submitted to, on almost all occasions, more readily and patiently than by ("self-accomplished") *natural* geniuses in drawing and painting.

Impatience for fame among their friends, with *amateur copyists, brings about* many productions, which, when handsomely framed, become handsome furniture, independent of the peculiar value they hold in the minds of those who have been honoured with the possession, as pledges of gratitude, love, or friendship.

Thus elevated, complaisance becomes almost a sacred obligation, and that sort of criticism which might be given with the utmost advantage to the ingenious *labourer* of such pieces must never be advanced.

Mortification, mixed with a degree of astonishment, affects the mind of an artist, on seeing an excellent copy *produced* by a person who knows nothing of rudimental principles.

The absolute merit of such works is on a parallel with that which might be fairly allowed to a copy of an *Italian poem,* or work in any language, by one who did not understand the original.

How painful must it be to the feelings of an artist, to be under the necessity of *restraining* his real judgment at the vanity and blindness of amateurs of *this* description; who boast of the only or *chief* cause of the absurdity of their productions, as a *great merit!* The first remark one generally hears, is, "*I never learnt*"—"I have taken it entirely of myself:" then follows, "What do you think of the work?" which, after all, was perhaps *traced off at the window.* Here is a predicament for an honest mind! but *Politeness* is a *deity who grants absolution to all her votaries*—some sort of compliment is indispensable, or the man who would give an opinion according to *his judgment* will be metamorphosed into a *bear,* and most probably may be treated as such, where this sort of foible is indulged.

LETTER IV.

Command of Hand explained.

I HOPE, Madam, my last convinced you of the necessity of obtaining a *command of hand* by the *most simple* essays; for while you were engaged in attention to your position, and that of your *pencil, paper,* and

example, an endeavour to amuse your fancy, by even the slightest association of lines which could divert the mind from this first object, would have been premature.

I now wish to impress on your mind what I mean by *command of hand.*

When you can easily mark the form you previously intended, not by putting your pencil to the paper, and *letting it fly promiscuously,* almost where it might happen; but a governing, steady, easy hand, *obedient in every part* of the whole line to your *well*-convinced mind as to what is requisite, so that you may take off your pencil precisely where you intended; and slope, or curve, to the right or left, whenever the original dictates. If you will recollect the labour of your first essays, in forming the *writing alphabet,* and consider the ease with which you now express your thoughts by good writing, you may depend on *equal* success by *equal* attention; and it would be unreasonable to expect that good drawing might be acquired by *less* study and application than good writing; for which, there are few children allowed to be wanting a capacity.

Do not make a *compound* line by one motion of the pencil until you have full command of it: suppose two lines forming a figure like the letter A or V, draw one side, then take your pencil off, and draw the other.

Take great care that *all* lines which are *perpendicular,* or level, in the original, are *strictly so* in those particulars in your copy, as otherwise your representations

of buildings will appear in danger of falling down: *this must be studiously observed.*

I have proved it to be a very good gradation of practice to make *simple compositions* with the *radical lines,* as the first advance towards the great object, and at the same time continuing the exercise of the pencil more than that of the mind. It will be a pleasing and very easy undertaking (see Plate XVIII. Fig. 1.) to draw two or three horizontal lines, one above another, as so many steps to an intended door-way, termed (in architecture) a "frontispiece," diminishing in length at each end; then, *near* the end of the top line, or step, draw perpendiculars, about the proportionate length of a column; and for the inner sides of the columns, draw two more lines; these must be *all* of one height; at the top of which draw two level lines near together, the whole length of the top step, and a little projecting over the outside perpendicular lines; these will represent steps, columns, and the level part of a pediment; then place the point of your pencil a little above the top line, in the centre, and draw oblique lines, from this point, down to the ends of the top parallel of the level parts of the pediment; and you will have the figure of a frontispiece to an entrance. Now, if you choose to have an arched door-way within it, draw a half circle, the top a little distance from the lower line of the pediment, and the two lower points, the same distance from the columns, and continue the lines down to the top step.

Figure 2. is to be drawn according to the manner of

PLATE XVIII. *Page, 136.*

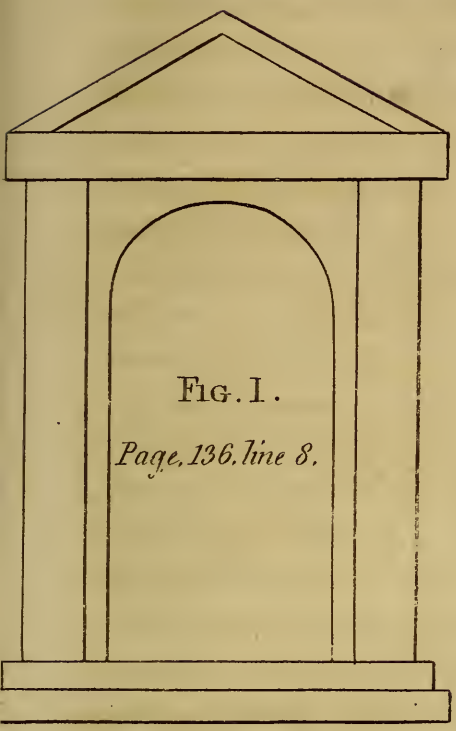

FIG. 1.

Page, 136. line 8.

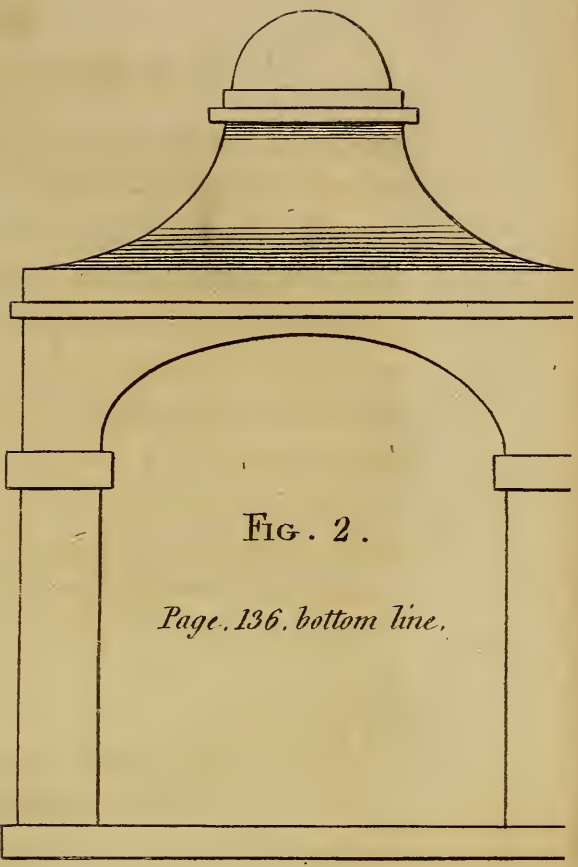

FIG. 2.

Page, 136. bottom line.

Letter IV. Early Compositions of Radical lines.

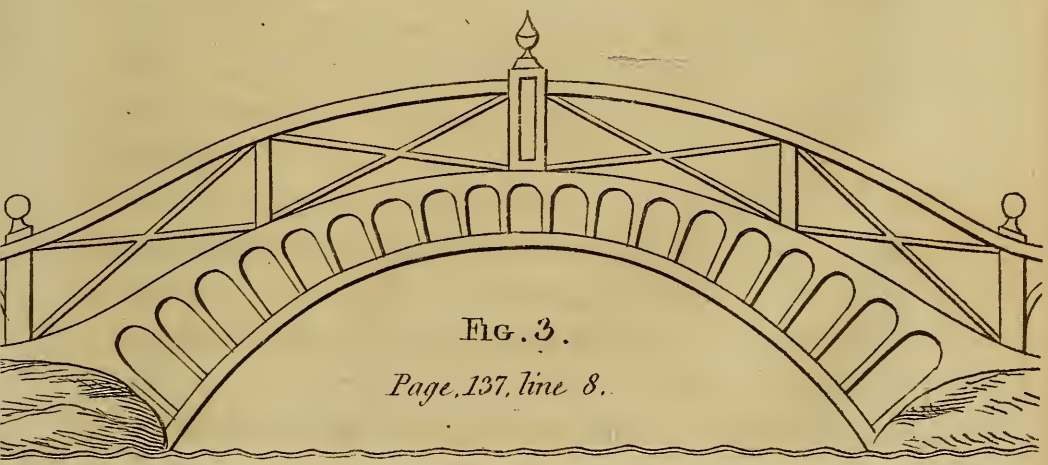

FIG. 3.

Page, 137. line 8.

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the foregoing, only it will be proper to sketch a central perpendicular line, (faintly) as a guide to the uniformity of the curves, and equality of the sides: this must all be done by the balance of eye, as measurements in *this* stage of study would impede the improvement intended.

Figure 3.—The Bridge.—First draw the water-line *straight* and *level* (faintly), then a central perpendicular line, as a guide to equality; then touch on the water-line for the span or width of the arch, and on the central perpendicular for its height, and draw the curve of the arch; then sketch the lines of the two banks, and draw the second curve of the arch; the top line of the bridge which rises from each bank, must be set off with care and taste, and drawn firm and free, so as to appear to have been geometrically produced; you must then finish the *centre* post, and draw the rails parallel to the top curve of the bridge—the arcade must be as equally divided as is possible to be done without compasses, and the sides all to point to the same centre, that would have struck the arch of the bridge: this is all to be done without geometrical aid, in order to exercise the eye and hand in the accomplishment of uniformity.

Thus you may easily invent, or copy, many lessons, proper for the accomplishment of handling the pencil freely, such as *outlines* of alcoves, bridges, temples, or any *uniform* figure, which may tend to produce a correct eye and good taste while the *hand* is forming; taking caution not to enter too deeply on very full sub-

jects, till your pencil will readily obey your ideas, as well in drawing oblique or curved lines, as perpendiculars and levels: for (speaking figuratively) you must agree that genius should first learn to *walk* before it takes wings.

The *curve* is that which will occur throughout the whole of animal drawing; indeed, it is considered the *radical source of beauty* in general, and must claim that share of your attention which its importance demands.

I would advise you now to purchase a few of the best rudimental specimens of such subjects as you find the particular objects of your choice. Guided by the judgment of a good connoisseur in this matter, your own choice may, in a due degree, be consulted, taking care not to suffer your enthusiasm, or want of judgment, to overstep your tender experience. A little practice, *every day*, will give your powers increasing strength; and the finest subject you can desire, may be either purchased or *hired*, to put your ambition to the test.

Whatever you undertake, perform with *deliberate care* and PERSEVERANCE; and when you have chosen a piece to copy, do not, on any *unnecessary* excuse, leave it until completed. This may lead to a proper caution not to undertake any great work at the first: a simple cottage, or plain building, with the little accompaniments natural to them, will be sufficient. Trees will require study in the detail, so that you may learn the various *touches* and *forms* peculiar to their characteristic distinctions; and rely on it, nothing but practice, and

its consequence—*experience,* can render these matters easy to you.

Those whose taste inclines to the study of the human, and other animals, should be aware that such figures must always be represented, both in and on *some suitable ground;* so that it is absolutely requisite they should learn to draw a *landscape,* or an *architectural interior,* by the *strict laws of perspective,* as the only means of making their work complete: unless the too frequent subterfuge of *clouds, smoke,* and other *such* indeterminate matters, be resorted to, as a set-off or relievo, to the figures: and, even then, a statue, or bust, must have *a pedestal;* which, if introduced in the drawing, must be done *truly*—and it cannot, without *perspective,* be understood.

LETTER V.

Directions for Copying.

MADAM,

It is the most grateful reward to my endeavours to find that you so fully approve of my methods and remarks, and I shall detain you no longer in the confined walk of an entire novice, but immediately proceed to that stage of the art, where my observations may be more particularly serviceable. Let us suppose you seated before a clear intelligible subject, a print, or drawing (landscape perhaps), *completely pro-*

vided according to the instruction already given. You must first make the boundary line of your drawing, and then take a general and deliberate observation, to determine the relative situations of the *principal objects;* such as the height of the horizon; the nearest angle of the *most* conspicuous building; the whole width of a building; its height; the height of the largest trees, and their relative distance and inclinations from the first or principal object; as also from the margin of the drawing.

Take care to begin all objects the right distance from the base line, which is the bottom line of the picture: those parts touched lightly will be sufficient to direct your eye to the situations of other subordinate parts of your drawing, until the whole becomes *lightly,* but correctly, hinted at; regarding, first, the relative *situations* of all the conspicuous parts of your subject.

You will find it good to determine the situation of those leading points, by observing whether they are at *half,* one-*third,* or one-*fourth* part, more or less, of the whole length or breadth of the picture; or between any two principal points: for example, examine what portion of the picture the land takes, from the base line to the horizon, and you may very probably find it about *one-third* the whole height. Remark any variation to this with care, and that point may be settled to a geometrical certainty almost; and, in the same deliberate way, find all the other remarkable objects. If you pay due attention to the above, you may make your copy of a different size to that of the original, provided you preserve the same proportion, to obtain which, see

(the diagram) the last page. The touches you will make to obtain the leading points of your drawing will not require very nice attention to forms, although the more correct the better, as they are only so many points through which your pencil will pass when you proceed to the minute outline, in doing which, you must have constant regard to the proportion of one part to another; observing always what part is perpendicular, parallel, or on a level with some other part, which, it is presumed, you have already noticed by a studied touch.

Precision can never be carried to too great an extreme, in the execution of any SUBJECT worthy the pencil: technical propriety will always merit so much of your attention, as to secure you from the critical censure of the mechanic: suffer not the "cobbler to find fault with your shoe." Many objects in landscape are of fixed dimensions, and should never be given contrary to their proportion; for instance—a brick, and its stratum of mortar, always measures three inches; this must make four courses in the height of one foot, or twenty-eight to the height of a seven-feet door frame.—Pantiles cover about seven inches in width; therefore, in a roof sixteen feet long, twenty-seven rows of tiles, at least, will be requisite.—Steps are generally between the height of five and eight inches each; then three eight-inch steps would rise to the height of eight courses of bricks.—Sheds and out-houses are covered with boards (called weather-boards), which are seldom above ten inches wide, from the edge of one board to

the next; and more frequently six or seven inches, which should have due attention, when finishing, from memory, sketches which might have been hastily outlined from nature, or when composing from fancy.—It would be inexcusably dull to give any further explanation of particular measurements of this familiar kind; and had I not very frequently seen instances of the ill effect arising from a total disregard to the truth, where the artist *evidently* proved that *a proper representation* of the above-mentioned "*trifles*" were intended, I should find it proper to apologize for supposing it necessary to engage your attention to them at all: because a good *general* effect is the necessary aim of such as endeavour after the great style of art; yet the minute proportions here insisted on are to be rendered properly subordinate by *art* and *attention;* not by sketching and careless intimation. The subordination of those parts and objects, which form the secondary and retiring space of the picture, must be suited to their station by the finest considerations in the art: by a scientific appeal to the governing principles (mechanically considered) of LIGHT and VISION, and not by a neglectful or affected degradation of the object, or any careless miscalculation of its proportions and properties. *Study* WILKIE for this, he is *excellent* in *this one* of *his* MANY *excellences.* I might have quoted more ancient names of high estimation, but am proud to find one of my own time and country worthy of the compliment.

You must accustom yourself to touch lightly and

tenderly, that you may, the more conveniently, correct any error in the disposition of the parts.

As soon as you have marked all the general outline, rub the drawing over lightly with some crumb of bread (not damp or too new), leaving the whole barely visible. Having thus, by previous application, determined every thing to be properly situated, your whole attention must now be given to correcting and completing the *form* of each part, touching with due spirit on shades near the foreground of your drawing, and receding towards the horizon with a tender hand, and the eye of *perspective,* strictly observing your example. Begin this stage of your work by drawing the *principal* objects, *first;* as at the commencement; observing here the ease with which you may descend to the detail, after having thus secured all the principal points, there will be nothing too wide or too narrow, too high or low, too much curved nor inclined either way: all proportions and positions will agree with the original; and now the more attention you pay to every part, the more certain will be the effect of the whole.

By the outline, you are to understand every mark requisite to determine the form; not only of the extreme edge, or outside line of the whole figure, but of *all discernible marks* which have any share in constituting the expression and character of the piece, of which I shall have occasion to say more in due course.

There are two extremes, which should be avoided, in finishing an *outline;* the one is an *uniform line, like* thread or wire; the other is too much like penmanship,

dashing all the parts which incline to shade with a bold dark touch: this looks tasty enough, but is not the right style of preparation for a subject that is to be finished with full attention to the light shade and reflection of the model.

This may have no other disadvantage, when in pencil or charcoal, than that of producing a *manner*, because all may be softened down by rubbing with crumb-bread. But the most convenient method of preparing the general outline is, to sketch the figure fully broad enough where it is opposed to shade, and rather within its final size on those parts that are opposed by light; this gives opportunity to finish clear, without discovering any of the first sketching, as the improving the dark parts will, in both instances, leave the figure perfect.

When *copying*, you cannot have an outline too correct, as the expedition which is requisite in *sketching from life* is not here necessary. It is a very bad practice for young students to sketch hastily, and proceed to shading and tinting, hoping to make a *great show* of their progress in a little time: *disproportion, blunders,* and *oversight,* will torment, and tend to disgust those who proceed in such a manner. Yet there are some fertile fancies which (although unacquainted with the means of producing a correct design) should not be too much confined, when a happy *thought* presents itself; as the spirit of composition might evaporate under the care and endeavour, which is unaccompanied with any other knowledge than that, *it ought to be cor-*

rect; such a mind will improve in this essential in good time, and has *my* humble opinion in favour of early compositions; and that you may sketch your *own ideas* as free, and as rapid as your imagination may dictate, as *memorandums* for FUTURE STUDY; recollecting that this licence given to your genius, in invention and composition, is only allowed as a stimulative to the exercise of deliberative judgment, and mechanical accuracy: without which your *thoughts* must remain in their original state, as they can never become *works,* until you are possessed of, and use, the means to make them such.

It must be granted, that there is no material object without its *particular form; this form* being a *substance,* will produce its consequent *lights* and *shades,* and furthermore must have *some local* colour peculiar to each part, besides that which may compound with it by reflection from the tint of the sky, the colour of a room, or the influence of some neighbouring object, or perhaps altogether. As this must be generally admitted, it of course follows, that whatever you choose to study the imitation of, should be considered as demanding your utmost attention *in systematic order;* first, of form, or *outline,* which will comprehend a considerable degree of the expression and character; secondly, of light, shade, and reflection, which will produce substantial appearances; and thirdly, of colour; that the *whole* may be accomplished according to nature.

Now, as all works of art will, of necessity, be pro-

gressive, a *good* system of *beginning, proceeding,* and *finishing,* must be desirable.

First, as every thing has a *certain* form, *that* must be the earliest object of attention, according to *the methods just before mentioned,* which, when obtained, releases you, in a great degree, from a very considerable share of attention, with liberty to advance all your thoughts to the *Second* part of the subject; which is, the modelling or relievo, by means of *light* and *shade;* thus *completing form* and *projection,* or substantial appearances: then follows *colour,* of *which* I shall treat in *due course,* as we shall not yet arrive at occasion to explain more on that head.

What lights and shades can correct bad drawing? or what is the use of colour to either? *None.*

First *draw* correctly; then study light, shade, and reflection; which, when you have accomplished, *colours remain a vast* test of genius for your future investigation. But, perhaps, you will be pleased to know, that when you have acquired proficiency in the *two first* parts of your progress, and can proceed to finishing (in *oil-colours*), you will *then* draw and shade with your colour, in a certain proper degree, performing the whole, except the *first sketch,* by and under the comprehensive term "*painting,*" in its *manual* acceptation.

Before I close this part of our subject, it will be proper to advise you to study a *second* copy of what you have in hand, *entirely from memory:* never look at the

concluded.

original for *this,* but trust to your recollection, and try the strength of your critical powers, and you will find the *utmost advantage* from such practice, by the improvement of every faculty requisite to an artist.

LETTER VI.

The Human Figure considered.

MADAM,

I TRUST the substance of the foregoing Letters will conduct you through the outline of *any* plain *subject;* and, when practice has confirmed you sufficiently courageous, you will attend to the following observations on drawing *animated figures,* which are as essential to a picture, as *actors* to a *stage;* and, indeed, after the rudimental progress already pointed out, is the primary object of study, and the *best,* as well as the *shortest,* road to eminence, in the whole art of the design.

It is the beauty and superiority of the *human figure* over all other animals, which constitutes it the chief object of a painter's study; and so vast is the *variety* of *forms, attitudes,* and *expressions,* accompanied by an equal variety of light, shade, reflection, and colour, which are continually changing, according to the infinity of incidents to which all are liable, that *few, very* few indeed, have arrived at so great a degree of eminence, in the imitative art, as to do justice to the no-

ble character under which man should, according to his high rank amongst created beings, be described.

We are humbly to recollect, that it is his mental character which determines him to be "the NOBLEST WORK OF GOD;" from which it consequently follows, that to imitate the *mere animal man,* as we too generally find him, is not the greatest end of the art: under whatever character we may find occasion to make the *human figure the object* of our study, the *primitive* superiority of our subject, over *all others,* must be constantly kept in view. We have the highest written authority for our conclusions on this point—"LET US MAKE MAN IN OUR OWN IMAGE;" which must undoubtedly apply to the mental resemblance, when we consider the *confined* form of the *creature* and the *boundless* extent of the *mind.*

It is a subject demanding *serious* reflection, to observe the wonderful perfection of the ancient Greeks, who, in their dignity of thought and purity of design, were unassisted by the REVEALED *history* of man's origin; yet they seem to have been inspired by the most exalted ideas possible for human intellect to have formed.

By what association of means they arrived at this *summit of perfection,* is a secret divulged, with a very sparing hand, to all who have succeeded them; yet some few glimmering, but very distant lights, united with the most rational conclusions of inquiring writers, have given us sufficient assistance, by their laborious investigations, to proceed, as circumstances may chance

to bring forth any additional evidence of antique sublimity; and enough of the works of antiquity have been protected from the power of *all*-devouring time, to shew us, that the perfection of art must depend on the imitation of the *most perfect* forms in *nature,* in *all* her *various species* and *characters;* insomuch, that in addition to the *truth* and beauty of animated forms, the appropriate expression so wonderfully associates, that a lively imagination would almost conclude *" a Grecian statue has a soul."* And it is no less worthy observation, that throughout the whole of their works (at least those on which the *eminence* of the ancients is founded), they have uniformly adhered to what is particularly understood by the word *" beauty;"* so that, notwithstanding the agony, and consequent contortions, so exquisitely expressed in those wonderful specimens of the perfection of art, the group of Laocoon and his sons—the representation of the melancholy fate of the Niobe family, and the terrible energy of the Gladiator repellens; their personal superiority over ordinary beings, is, perhaps, heightened by the successful appropriation of expression.

The decline of the *pure* and *great* style, may have originated in descending too minutely to detail when working after imperfect models, and substituting distortion and deformity, as the representatives of the inferior characters in their groups, as a corrupt means, perhaps, of producing a contrast to the advantage of the hero of a group.

Although it may be frequently, if not generally, re-

quisite, in obedience to the truth of a subject, to describe the effects of passions, depravities, and other accidental circumstances, with physiognomic punctuality; yet due attention to what our great predecessors have been able so happily to accomplish, without treating absurdity absurdly, should influence all your endeavours; as there can be no means of success so certain as the acquiring a thorough knowledge of whatever you undertake, that you may be enabled thereby to distinguish between perfect and imperfect conclusions; taking care, in the pursuit of your present subject, to give to virtue and beauty the best attributes; and never endeavour to render vice or deformity agreeable, by the misapplication of your knowledge or abilities.

It is impossible for you to conceive too exalted an idea of this main object of a painter's study. For, without a competent and just conception of its importance, nothing *great* can be expected; and it shall be my utmost study to give, and recommend, such methods of beginning, in the mechanical department of this subject, as will enable you to proceed with due advantage.

Beauty, *grace, expression,* and *character,* are in the province of genius, "or right-mindedness," and depend much thereon; for this you must apply to *all* the means required; taking every opportunity of cultivating and improving your *taste* and *judgment,* that nothing may be wanting to constitute the *perfect* amateur.

LETTER VII.

General Proportions of the Figure.

MADAM,

THIS is that stage of the student's progress which is the greatest test of his *patience* and *perseverance.* A very considerable majority of those who employ a drawing-master, entertain a mistaken notion of his powers, and expect to advance in fame among their friends according to the *sum* they pay him; *instead* of the *attentions* so requisite to success, which *they* should *unremittingly* pay to *his directions* and *their studies.* If you heartily determine to proceed properly, you must relinquish the most *distant desire* of praise, except a fair compliment to progressive improvement; and, in the same degree that you have patience to lay a good foundation of *practical* and scientific knowledge of the art, will your ultimate accomplishment be ensured.

Your certain test will be your sketch-book. Try from time to time what you *can do*—you will thereby perceive wherein you are deficient.

Do not expect that habit will teach the pencil to move the right way, without you direct it by right ideas; *all success* depends on the means. The painter, who, by accident, produced the foam at a horse's mouth by throwing his brush on the picture in despair, could not claim the merit of the effect produced: accident too seldom succeeds to place reliance on it; and, as I have before had occasion to observe, the *means only* are security for the end.

Proportion recommended.

The following *general* proportions are only given as good memorandums, to *begin* your sketch; and a thorough recollection of them will be of great advantage in your first thoughts of composition; but you cannot proceed to the more minute articulations, and nice divisions of the figure, without you acquire a familiar acquaintance with the "*antique proportions;*" so as to have all the principal measurements perfectly in your memory, without which, the correctness of your eye, aided by ever so competent a knowledge of anatomy, will still leave you liable to the unpardonable error of disproportion; and as such measurements and proportions bring the human figure under what may be termed geometrical consideration; a proper application of the rules of *perspective* must be observed.

Perhaps *impatient genius* may sigh on hearing of so much rudimental hinderance at 15 years old, and laugh at 20; and wherever this may occur, vanity and superficial success may support them for a season, but *groans* of disappointed ambition, accompanied by all its train of mortifying predicaments, will, when perhaps too late, awaken such from their dream of fame. A book of antique proportions may be had of Laurie and Whittle, Fleet-street, or Carrington and Bowles, St. Paul's Church-yard, folio; where, at the same time, you will do well to get Le Brun's Passions. A General View of Anatomy, by Tinney, may be had there, tolerably correct, *as respects* the matter; but the figures are not equal to those of *Albinus*, which is a very complete but expensive book. The pocket volume, by Innis, is good;

Bell's Anatomy of the Bones and Muscles, is a book also worth your attention.

All these you will have time to study, at intervals most convenient to yourself, while you are forming a *good taste*, and improving your hand, after *good* specimens of heads, hands, and feet, which should be well understood before you attempt to draw the whole figure, as a regular study: yet I think it proper to have a sketch-book always at hand, and to accustom yourself to sketch your best ideas of historical and other subjects. Raphael, Le Brun, and Lavater, for character, may be of great assistance in these juvenile exercises; which should be accompanied by a proportionate study of scenery, with perspective.

GENERAL PROPORTIONS OF THE HUMAN FIGURE.

The whole height of the figure is, for tall figures, eight heads.

Figures more robust are divided by seven heads and a-half in height, which is equal to 10 faces.

It will be worth your recollection to know, that if the figure of eight heads be six feet high, the figure of 10 faces will measure five feet seven inches and a-half in height: perhaps all the various characters you need design for proportion and *anatomical* information, may be found between *these two extremes: genius* and *good* judgment will, however, have *discretionary liberty* on *this* point.

General Proportions of the Figure.

The inside line of the legs and thighs of a figure to the beginning of the body, measures half its height: in tall figures they are above one-half, and in shorter not one-half the figure—4 heads, or 5 faces.

The quarter parts of the heights are from the top of the head to the arm-pits—2 heads, or $2\frac{1}{2}$ faces.

From the arm-pits to the bottom of the body, or middle of the figure—2 heads, or $2\frac{1}{2}$ faces.

From the lower part of the body to the joint of the knee—2 heads, or $2\frac{1}{2}$ faces.

From the knee to the sole of the foot—2 heads, or $2\frac{1}{2}$ faces.

The length of the foot is about one-sixth of the figure.

To the figure of eight heads it is one-twelfth part of a head more than $1\frac{1}{4}$ head.

To the figure of 10 faces it is exactly $1\frac{1}{4}$ head.

When both arms are extended, the measure from the ends of the middle fingers is equal to the height of the figure—as 8 heads, or 10 faces.

The breadth of a man, when his arms are placed close to his sides, as viewed in front, is one-fourth his height —2 heads, or $2\frac{1}{2}$ faces.

From the top of the shoulders to the elbow—$1\frac{1}{2}$ head, or 2 faces.

From the elbow to the wrist is $1\frac{1}{4}$ head.

The hand is in length equal to the length of a face, or $\frac{3}{4}$ of a head.

The breadth of the hand is equal to half its length, and is also half the width of the face.

The Figure continued.

The thumb is in its length $\frac{1}{4}$ of a head, or the length of a nose.

When the arm hangs straight by the side, the joint of the wrist is at half the height of the figure, or on a line with it.

The diagonal, or longest measure of a head in profile, is about a head and a quarter from the lowermost extremity of the chin to the uppermost part of the back of the head; or nearly *the length* of the foot, and also of the lower arm-bones from elbow to wrist.

When the arms and legs of a figure are extended so as to represent the four points of a square, the navel will be the centre.

I shall not here give any general measure for the breadth or thickness of the limbs, because they vary much in these respects according to character. You will find them in a manner you may rely on as a standard, from the book I have recommended on antique proportions. I have here given you sufficient to enable you to practise *composition*, which is one of the best stimulas to further inquiry.

We can now proceed to the proportionate divisions of the head and features, which you must learn to recollect perfectly before you *can* expect to draw the whole figure, even in a sketch; and you will presently observe that this cannot be accomplished without separate and due attention to each part of the face, for it would be folly to attempt to draw a whole head, until you are perfect in each feature.

General Divisions of the Head.

The drawing of the front of the human head is mechanically begun, by an outline nearly resembling the shape of an egg, or somewhat of an elliptical form, in the proportion of about four in length to three at the greatest breadth; as thus, if you draw an egg form four full inches long, draw the width nearly three inches; let the upper half be a half circle, and the lower *parabolic;* this figure must be divided in half by a perpendicular line, which divide into four equal parts, horizontally; give one to the top of the head, one to the forehead, one to the length of the nose, and the lower part divide into three equal portions; the first part, next to the nose, is the upper lip, finishing at the opening of the mouth,—the second, the under lip to the beginning of the chin,—and the lower third contains the chin.—Touch with your pencil to mark for the top of the forehead, at the uppermost division; then sketch a faint line across the oval at the top of the nose, as the *bottom* of the forehead; another at the third division, for the bottom of the nose; another for the meeting of the lips, and a mark for the top of the chin. Next divide the length of the nose into four equal parts; giving one part for the height of the wing of the nostril, and one from the top of the nose for the line on which the eyes are to be situated, and there will remain two parts, or half the length of the nose, between the eye and the top of the nostril. Then draw the line for the eyes parallel to the centre horizontal division, which crosses the face at the bottom of the forehead and top of the nose, and divide it into five equal parts. One part is

the length of an eye, and you thereby have the exact length of an eye between the eyes: divide this space into three, and the middle division will be the breadth of the bridge of the nose. The width of the nose, including the wings of the nostrils, is the length of an eye: the mouth is a little more. The eyes open to about *one-third their* length. The iris of the eye is a circle of one-third the length of an eye; the inner dark circle the pupil (or sight of the eye) is *full* one-third of the iris. The eye-brow is the length of the eye, and is about the third, or opening above the upper eye-lid. The *bottom* of the ear is situated on a level with the *bottom* of the nose, and the *top* is level with the *eye*.

In profile, the *back* of the ear, the *top* of the forehead, and the *point* of the chin, form an equilateral triangle.

With this arangement, you might sketch a good situation of all the features, which you should practise as soon as you have learnt the drawing of *eyes, nose, mouth,* and *ears,* separately.

Perhaps there are few heads that are precisely to the above proportion; and in what is denominated a *long* face, the eyes will be on the central horizontal line of the face, and the eyebrows, then, will be placed one-third, or the opening of the eye, *above* the eye. It is not the business of this stage of study to diverge from given rules into the various exceptions, which the influence of passions and expressions may suggest; nor, on the contrary, to consider these

rudimental truths as the ultimate end of your study.—The best means of commencement possible, are often very unlike the end—for instance, the *getting into a coach* at Bath, is very unlike getting into London; yet a traveller from thence for London, would find it one of the most expedient means of obtaining such end.

You must study from the *very best* examples.—Raphael, Morgan's Antiques, and Cipriani's Drawing-book, are of this class. There are many other elementary books of extremities of the human figure; many of which, although pleasing to the eye and the fancy, are too incorrect.

In your own studies, habituate yourself to the most severe criticism, and you will so correct your work as to render other criticism more approving than severe: it is a weakness to say, "There is *something amiss* in my work, but I cannot tell what." This *may* be; but it is *too* often a dread of the trouble that would follow the discovery, which thus blinds you to your own errors.

And admitting that you do discover the imperfections of your work, you may still be unable to correct them. It is very easy to discover the error of a *time-piece,* so far as to say positively that it does not go well, when, perhaps, to correct it, would require the utmost skill of the mechanic. You must, therefore, practise and study patiently for the accomplishment here required: therefore, I think it unreasonable to check those who find out the faulty parts of any work, by the too common remark, "that those are not qualified to find faults, who do not possess the abilities to correct them."

Conclusion on the Figure.

Take care to avoid the partial (and perhaps ignorant) encomiums of your acquaintances, as much as *possible:* indeed, the *bits* or *parts* you may have as yet studied being no pictures, few besides an artist will be qualified to pass a genuine opinion of them.

LETTER VIII.

Directions for Chalk-drawing.

MADAM,

If you have duly attended to my advice, I may fairly conclude that you can now manage your pencil freely: and I hope the rules for beginning a copy, and an acquaintance with the proportions, have enabled you to make some correct outlines. When you find yourself thus qualified, it will be proper for you to enlarge your style, and use chalks.

There are three sorts of native chalk—*black, red,* and *white;* and of the first there are two natural sorts—the one is hard, and is called Italian chalk; the other is softer, and is French chalk.* They are generally used on coloured paper manufactured for the purpose, which is known by the name of silk paper. The most agreeable colour is French grey, it being a sociable tint to both the black and white chalks. Charcoal, to sketch

* There are black *compounds* of the chalk kind, but the pastile known by the name of "Cont's chalk," is by far the best for blackness. Pether's chalk pencils are also in great estimation, working very compact and clear.

with, is necessary in this sort of drawing; and paper, or leather stumps, may be found of use: they are generally provided along with the other materials I have mentioned; as also a port-crayon or two, to fix the chalk into: *these are indispensable.*

The manners of using the chalk are various, each draftsman forming some peculiar method of his own.

The best system I can give you, is to draw a *correctly-proportioned* outline with the *charcoal;* and, as you find your outline improves, continue to touch bolder, noticing the breadth and form of shadows, and the most conspicuous markings of features, limbs, or draperies. The certainty that this can easily be cleared off with crumb of bread, must not lead you into a *careless, dirty* method of using charcoal; for, with a little attention to its soft texture, and a mind properly intent on the success of your drawing, you may acquire a tender elegant touch, and produce nearly as fine a drawing as with any other material.

Design with your charcoal almost as cautiously as though it could not be rubbed out: this must make slow progress at first; but be assured if you make a hasty, erroneous outline with the charcoal, you will have double the trouble with the chalks: besides, if a *true line must be* obtained before your drawing can be considered worth rendering more durable by the chalks, can any material answer the purpose so well as charcoal, which can all be cleared off so easily? You cannot begin your sketch better than by attending to the rules I have given you for *beginning in general,* as *far as respects the leading*

points of the figure; (see Letter IV.) observing *first* the *inclination* of the head, which, being drawn tolerably correct, will serve as a point from which all the other situations may be easily determined; taking due measure (with your eye) of the whole field or surface which is to contain the figure or figures, it being the heedless fault of *many* to *dash* away, without ever considering where the feet and hands may extend.

As a figure may be *eight* heads in height, never begin the head of a standing figure larger than one-ninth or tenth part the length of the paper, and nearly a full head from the top. Observe at the same time the extent of the limbs, right and left, to determine well what situation between the two sides will best bring in all the figure: this (which may be termed surveying your field, and calculating your extent) will save the unnecessary trouble and disagreeable effect of pasting and patching, to accommodate such want of forecast.

[I know there are those who *value* themselves for such irregularities, mistakingly thinking ardour a sign of genius. Permit me to inform *them,* that genius, truly so, must be a composition of excellencies; in which the elements of science must unite their powers, *performing* a work *equal* to the thought. I *refer to the examples of the great only,* whose patient perseverance in the execution of their works was equal to the greatness of their conceptions.

Were the wonderful statues of the Gladiator, Apollo, or the group of the Laocoon and Sons, produced by a flash of thought? Or was St. Peter's at Rome *com-*

pleted by an accidental hit? No: neither had Genius done her part, when Raphael had determined the composition of his cartoons.—*Such works!* can only be perfected when genius is *genuine;* beginning with deliberate inquiry, proceeding with knowledge, and finishing with certainty.]

Proceed, by carefully observing what parts of the *original* are on a level with each other; what point another may be perpendicular to; or, which way the lines curve, or incline; what *parallels* are to be found; or how much they deviate from such geometrical forms. In this you will have the assistance, and must be chiefly under the guidance and government, of your *knowledge* of the *general proportions* of the *human figure,* as given before, for the purpose of helping you in your *first* contours and compositions.

As soon as you have completed the charcoal outline, and entirely decided that every part is right, so far as regards *right situation* and general proportion, you should mark the highest lights with white chalk, with *nice attention,* because the truth of your drawing, *as a model,* depends much on the right *situation,* form, and force, of these touches; and the earlier they are correct, the better.

This completes the charcoal, or first process, and you should then whisk off the charcoal with your handkerchief, or a feather, so as just to leave a visible trait of your design; (take care *not* to use *crumb of bread,* for this would take off too much, and thereby give you the unnecessary trouble of studying the situa-

tions over again :) the charcoal marks which still remain, may give you the unpleasant idea that your drawing will not look clear; but you will be relieved from this doubt, as soon as you have completed your next stage of study with the chalk, which, I advise, should be *the French;* now, although a light hand, and neat correct line, is always to be studied, you need not be alarmed at finding this second outline rather too black in some parts, because after rubbing the whole over lightly, with crumb of bread, it clears away all the remaining marks of the charcoal, and leaves this improved outline quite clear, and just visible enough to relieve you from the first degree of concern, which was to settle contours and proportions.

Now take the Italian chalk, (or Pether's chalk-pencils) and begin with the head, to draw, improve, and shade, according to your example. It is a good way to lay all your breadths of strongest shades first, and the more tender shades in succession, rather under their full depth, by regular strokes, forming masses, and increase their force by crossing them in an *oblique direction, never* straight on the human figure, nor *directly* across, as that would produce a very ungraceful effect.*

Look to *good* examples, and practise with due atten-

* There is a plate in Sir John Evlyn's History of Engraving, which explains a good method of arranging the strokes properly, for an engraving; which is, to strain threads parallel and equidistant, tightly, on a deal frame, and place it before a bust, in a horizontal direction; so that the sun may cast the shadow of the threads on the bust. Genius will perceive that this sort of radical expedients requires cultivation, before its advantages can appear.

tion, and a graceful *manner* will be the result. If you think *too* much of the arrangement of your strokes, you had better practise in this department of study upon the *most simple* subjects, until a good style of touch will flow naturally from your hand; because, a *true* imitation being your ultimate aim, the mind should be freed from all concern, in what may be termed *manual exercise*, (before you undertake a work of much importance) which, *once attained*, the hand will never go wrong, but will obey the *truth* and *beauty* of your conceptions to their utmost extent.

The black chalk should never mix with the white, when used on coloured paper, because the colour is always a medium *between* black and white, and should be left clear as far as its tint answers the purpose.

The *stumps* may be useful in diffusing a breadth of shade to gain a speedy effect of back-ground, or any other broad mass: take care that the use of them does not give you a *hasty manner*. The Italian chalk, (and Pether's chalk-pencils) being very compact, flows best from rather a firm *light touch*, than by pressing too hard: practice and attention will accomplish you in the proper use of it. Always cut your chalk *from* the point, directly the contrary manner of cutting a black-lead pencil.

Crumb of bread is preferable to India-rubber, to clear off any error on this sort of paper.

I may now venture to hope that you will require no further instructions respecting the nature of chalks. Good examples may be of material service: there are

very good academy figures, particularly as specimens of the use of the chalks, after West, Flaxman, and other masters, to be had at the principal print-shops.

While studying, rudimentally, for a correct eye, let no conceit of systematic knowledge seduce you into a deviation from your subject, which should be *imperious,* because it is not probable that the small portion of critical determination yet acquired, can be sufficient to enable you to deviate from your example with *advantage;* indeed, if it be *judiciously* chosen, you will have attained a *glorious height* indeed, when you *can* deviate from a *proper example* successfully; let this bind you to your subject, till you have attained knowledge, and the *right use of it, by practice.* And, while you thus attend strictly to your example, great care should be taken not to suffer yourself to be led into a very common error, *that of overstepping extremes;* as thus, it may be *extremely* adapted, by a broad, square, and bold, decisive marking, for its original purpose; (perhaps, that of a great height, or distance) and notwithstanding the forcible manner this may affect your mind, as to the extreme, you must be *much on your guard,* at first, to avoid destroying the whole beauty of your copy, by seizing (I may say) on those very extreme points with too bold a hand. You will have great occasion for this precaution, when copying from the Cartoons of Raphael; and much greater still, in copying Dorigny's prints of them: and perhaps, the nicest precaution that can be observed, without a *familiar* acquaintance with the anatomy of the human head, and

a knowledge of its subordination to the various expressions of the passions, will leave a proof on your copies, that such knowledge is requisite.

I may be considered bold in giving the names of Michael Angelo and Rubens, as *negligent* of the "*charming* grace" and "*elegant medium*," while aiming at that ideal greatness and splendour, which is so imposing in their works—*youth* might as well take a *sublime epic poem* for a rudimental lesson in language, as *begin* the art by studying them.

If, in taking a portrait, you find any feature extremely large, or wanting in beauty, you surely would not be so unfavourably punctual as rather to increase than diminish disproportion. It may be useful to some, to mention a few more instances where this sort of precaution may be of great service. The book of heads expressing the passions, after Le Brun, may best serve this purpose, as it is likely to be in the possession of most students; in almost every attitude, expression, and feature of which, you will find that sort of extreme, beyond which, error would increase, and the character be thereby lost;—and if you should study from the outlines by Cuzzens, called "*Elements of Beauty*," you will have to avoid the opposite extreme, as they are put forth as such, with a view to shew how much expression may be given without that forcible marking which Le Brun has thought proper to his purpose.

It would be presumptuous in me to depart from the sphere of my humble pretensions, *(that of directing the hand)* by borrowing the language of my predecessors

and superiors, on the right formation of a painter's taste and judgment; while I can refer him to the writings of Leonardo da Vinci, Algarotti, Du Fresnoy, Richardson, Sir Joshua Reynolds, Barry, Fuseli, Opie, Shee, &c. &c., whose writings have most *ably* exonerated me from a task I should otherwise rather have endeavoured to perform, than suffer the incongruous fancies of youth and inexperience to proceed in error and uncertainty.

LETTER IX.

On Application and Pencil Drawing.

MADAM,

PERHAPS it may now be necessary to caution you against too much, or rather too long, application at a time, until you are constitutionally habituated to the practice of the art: nothing can be more hurtful to the mind than *anxiety*. Ambition is often the parent of overstrained endeavour, eagerly *wishing* to attain the end, instead of a *deliberate investigation* of the means, which is generally repaid by disappointment.

There is a proverbial remark established against the English, that "they cannot let well enough alone;" or, in other words "they know not when to leave off." This may be most applicable to those who know not how to begin, proceed, or finish, by the scientific principles of the work they engage in; but dashing or

groping on with blind ambition, taking chance for their guide, exhaust their powers in endless and fruitless labour.

Never suffer yourself to fall into such errors; but study with a cool mind, and consider well the effect you ought to produce, having patience with the process, being anxious only in an inquiry after the *right means* of success. *This,* although according to the most *salutary* proceeding, will exhaust the faculties of *young* students, and should be *seasonably* relieved by *recreation, exercise,* and *refreshment,* but never to total neglect: "the pencil should engage your entire attention some considerable part of *every day.*"

The fine arts depending on an *ingenious power* of advancing directly against the general current of common necessities, propensities, and depravities, cannot expect to proceed up *such* a stream, without vigilant exercise of *this power.* And no further relaxation is meant, than sufficient to preserve it unimpaired, which may be *properly* regulated by a prudent attention to your own constitution, and the general rules of health.

You desire to know my method of *finishing* black-lead pencil drawings; it is thus—I generally have made my *pencil portraits* without any other back-ground than the clear paper; and to obtain a similar effect with my subject, I place up a large sheet of white paper, or a napkin, a little distance from the head; in such an aspect as to form a white back-ground; which shews me the force required. I then proceed to make

my whole outline as correct as possible, and then lay all the breadths of shade by tender hatchings or strokes, which I blend and soften a little with a *hard stump*, made of writing-paper: it is a very nice point gained when you are able to make *this stump properly*. The *middle must* be rolled *close:* if there be the smallest hole up the centre, it will not answer the purpose. A thick card cut to a point is a good substitute.

I pay great attention to the model while stumping, so as to preserve all the lights, and leave the shades tender enough to require finishing with the pencil. This must be done with very compact lead: Brookman and Langdon's pencils, marked H H, are the most suited to *my practice*, which, after cutting to a tolerable point, should be rubbed on paper, to produce that *fine smooth point* which is often required in the minute marking of a small drawing. I draw on Whatman's (or *others* as good) *thick* wove post paper, *hot-pressed*, and to prevent the paper from being indented by the strong markings of the pencil, I lay a piece of glass under it while drawing, which preserves the surface of the paper quite smooth, a well *burnished piece* of wove card is equally suited to this, and is more portable. The less rubbing out the *better* in these minute works. If you choose to give up the smoothness of the paper, you may fix the pencilling, by soaking it in *skim* milk for a quarter of an hour; then *draw* it *carefully* out of the milk, and let it lay *aslant*, to dry *gradually*, moving it sometimes to prevent its sticking to the surface you dry it on: this must *not* be *hot*-pressed again, as in that case the

pencilling will again be liable to rub out. You will find it require *practice* and *study* to make this information of much service. One cannot write a recipe for producing a *fine picture,* although it is easy enough to explain a process: (METHODS ARE LIKE KEYS, THEY SERVE TO OPEN DOORS, AND GO NO FURTHER.) Be attentive, and have sufficient patience with yourself, and remember *your motto, "Perseverance."*

LETTER X.

Indian Ink, and Rules for Light and Shade.

MADAM,

WE have hitherto confined our proceeding to the *black-lead pencil,* and to *chalks,* but as your studies produce good drawings, they will deserve to be finished with more permanent materials.

The most *common,* and perhaps the most useful, of the water-colour class, is *Indian ink*—a fine deep black, which can be varied with water, through every degree of shade, till it falls imperceptibly into light: there is not any composition equal to it, for the general purpose of shading. It is *much counterfeited,* but may be detected. The *true China ink* will break to almost a polished surface, and is *moderately* scented with musk. The counterfeits generally overdo this; and others neglect it altogether. The true ink is the

blackest when brought to a *deep* shade; but in the fainter shades inclines to *brown*. The counterfeits have more substance towards the deep shades than the genuine. The *true*, preserves a greater degree of transparency than the other.

To use Indian ink conveniently, you should provide yourself with a slab of earthenware, or marble, with several dells, to hold the various tints: the largest is to contain pure water (never begin to shade a drawing without having a vessel or two of clear water, besides what is contained in the slab, and a *sponge* to clear the slab when requisite); there is, generally, one long dell to rub the ink in, the other three are for three gradations of shade, which you should prepare with nice attention, making the quantity of each fully sufficient to serve throughout one season of your study. These three degrees of shade, with the portion you first rub up (which should be as *strong* a black as the ink *can* produce), will give you four distinct shades; which, with that ingenuity requisite for a hope of success, you may, by *due practice*, adapt to all the shades attainable from this material. They may be compared with the four strings of a violin, and the gradations they are capable of, will bear equal comparison with the various tones of a musical instrument, each under the management of a skilful hand, producing THE MOST CHARMING EFFECT. The mechanical means of softening and uniting gradations into a broad and natural appearance, is to compare the *depth* of the tint in your pencil, with the depth required in

the drawing, carefully avoiding too full or too dark a pencil (but this depends on the extent of space that you have to cover, and on the depth of the tint): but rather have to touch thrice, than touch once too dark, using *various sized camel,* or sables-*hair pencils,* according to the breadths you have to lay. The too common practice of putting the hair pencils into the mouth must arise from *absence of mind:* because so disagreeable and unwholesome a practice will not bear a thought—use *trying* paper to prove your tint, and to bring the pencil to a proper point and fulness.

GENERAL RULES TO BE OBSERVED IN SHADING WHEN DESIGNING PREPARATORY STUDIES CONSONANT WITH NATURAL EFFECT.

Rule 1.

The greatest distance in an *open scene,* with a *clear* sky, will always be the *palest,* or lightest; both sky, land, and water.

2.

The greatest distance, in an enclosed scene, will always be the *darkest.*

3.

The *nearest objects,* or those in the *foreground* of an open scene, will have the darkest shades, and purest lights.

General Rules for Shading.

4.

Objects in the foreground of an enclosed scene, such as the entrance of a cavern, or *any other* recess from the open light, will have the same degree of dark shade, as objects in the foreground of an entire open scene: because the dark distance, or back-ground, is accidental, and will not affect them; although they will appear (on *slight* observation) to have fainter shades than objects opposed to an open scene.

5.

To adapt the picture to the power and properties of the eye, you must, on all occasions, lay as tender, gradual, and *imperceptible* a shading tint as possible, at each corner of a square, or oblong drawing, blending it sweetly off towards the point of sight, so as to give the surface *a concave appearance.* The same should be done towards the margin of a circular, or any other shaped drawing; *always* securing this *natural concave effect,* before you commence your work on the detail of the absolute scenery; after which you may proceed in the same manner you would have done, had you not been aware of this optical preparation.

6.

Always begin the sky and distant masses of shade with the pale tint; and, as you approach the foreground, increase the depth of the tint, observing to be light enough at first.

7.

When a shade requires additional depth, do not take a darker tint for that purpose, but repeat the use of the original tint; deepening the shades of all the various degrees of distance with its own tint, or the object will press too forward. (See the first section of the last paragraph before these general rules.)

8.

When first laying on the broad masses of shade, pay no attention to the *reflected lights,* which always fall on such parts as are out of the influence of the principal light, as the first lays should not be darker than those reflections: if this is properly observed, you will produce all the reflected lights by your next process; that of increasing the shade of those parts which are more remote from the influence of both light and reflection (in all their various degrees of distance); recollecting, that although no light falls on them, they must not be made darker than suits the distance in which they lie; because the law of the 1st rule given, remains in force.

It is the property of light (when considered only as the means of illuminating objects) to continue so at all distances, and in appearance to prevail over all such shades as are occasioned by unevenness of surfaces, in proportion to the distance of such surfaces from the eye; so that the cavities, or various cause of shades, lose their force, while the smooth and projecting parts

continue their local lightness, and are (in effect) united by distance into one mass, or (apparently) smooth surface; and, inasmuch as such mass is composed of *shining* materials, will the reflection of sky, at its *proper angle of reflection,* be apparent (whatever its tincture), instead of the known and local colour of the mass. This, with the intermediate atmospheric matter, and the decreasing power of sight, according to distance, prevents your seeing the dark parts as dark as in the foreground, and accounts for the colour of distant land. (See Letter XVII. page 223.)

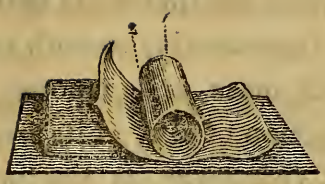
9.

Your next regard must be to those shades where *light* and *particular reflection* are absent; but where some general reflecting power has influence enough to render the part lighter than those *entirely* void of light. This, with rule 8, produces the reflections by leaving them.

10.

Parts which are strongly reflected on are very deceiving to young copyists; they generally mistake such reflections for lights, and leave them much too strong; for there is a *great difference* between such parts as receive the pure light, and those which are only reflected on by a surface which receives its light from the first cause: to prove this ☞

Reflection and Transparency.



Make a cylinder of white card, or paper, and lay one side towards the light, on a sheet of white paper; then raise the sheet of paper on the shaded side of the cylinder till it makes the strongest reflection possible (fix the sheet of paper up by a book, or the like, while you proceed on your experiment), according to the annexed print: you must then take a card, or piece of smooth paper, the colour of the cylinder, and hold its surface fair to the light, in a line with the lightest part of one end of the cylinder, and you will find them exactly alike; then keeping the surface of the card in the same direction, move it back to the reflected shade of the cylinder, and you will see, notwithstanding the force of the *reflection,* that it will be many degrees *darker* than the card with which you conducted the light (which you had proved to be *equal to the light* of the cylinder) to this shaded side: take care to place the cylinder not quite parallel to the light, and make your experiment on that end which lies nearest to the window or light.

11.

Transparent bodies have the strength of their shadows in exact proportion to their degrees of transparency, and are liable to as much reflection as their opaque parts will contain; as thus: the threads of fine muslin will receive reflection; but the reflection will of course pass through the *apertures* between each

thread, which occasions the general effect of transparency, and in *that degree,* the reflected light will be weakened ; but with thin paper, leaves of plants, and of flowers, there being no apparent apertures, the reflection will be as strong as on opaque bodies ; but not so distinguishable *as reflection* on account of the transparency.

To be able to discriminate between reflection and transparency, according to their true properties, will be found a very great accomplishment, when engaged on such subjects as require it : it may be some source of refinement in your work, to be only *aware* of the distinction.

Transparent cylinders and globular bodies, such as the stalks of some plants—the white currant, and grapes; receive a strong light through their bodies, which settles visible to our sight, on the concave or inner surface of that part which, but for their transparency, would be found the darkest, if not reflected on by some neighbouring surface; this is often mistaken for reflection, and as often liable to the instruction given in the tenth rule: for, notwithstanding the rich glow seen on the remote side, the breadth of light on the originally illuminated surface, must always govern in true degree, and will always contain a much superior light, except when the cylinder or globe be of colourless glass, containing colourless matter, such as spirits or pure water.

12.

Shadows of solid objects on level planes, when the light falls in the direction of about 45 degrees, are generally about the same degree of depth with the shaded side of the object, except varied by some accidental reflection (or difference of the local colour between the object and the surface its shadow falls on); but this latter part of the exception must not be admitted under the head to which the rule is applicable, namely, *light* and *shadow independent of colour;* but it being a necessary point of consideration, in distinguishing between shadow and colour, it may be of due service to have made the remark.

13.

Respecting objects as they appear in the open air, without immediate sunshine: observe, that although there will be one lightest side, yet the general influence of surrounding light, which is reflection, *may* render the shading (that is, the *breadths* of shade) very tender; however, sufficient force will not be wanting to make a good and natural effect, if the rules 8, 9, and 10, are truly followed: much experiment and observation must accompany them all. YOUTH *is* the time for this.

[It would be an informing experiment *on the effects of the different degrees of light,* to separate the influences of the two opposite halves of the hemisphere by a thin partition of sufficient height and breadth, fixing

one side directly towards the sun, and place a figure or object close enough to each side, that when the student takes a station at the edge of the partition, he may see both figures at one time, provided the reflections which might arise from the power of the sun, on the shaded side, could be properly prevented. This might be practised on a small scale, by setting up a sheet of pasteboard (or the like) between two small figures; but it should be done in the *open air*, because the second, or reflected light, within a room, is too feeble; and the one figure would be too much in entire shade, instead of a second light.]

14.

White surfaces, fronting the eye, as to *colour*, will be white in every part of your drawing, with the general exception of the influence of the 5th rule, and those parts of the white object which are in any degree overshadowed.

P. S. Compare these rules with the effects you will find in good engravings, after the best masters, particularly Claude, Lorraine, Rembrandt, and Teniers; but as we are not *yet* making any calculation on the effects produced by engravers when their works are designed to represent colour (in effect), it may be better for you to make the comparison on very good prints that are engraved from *white marble* sculpture.

The sum and substance of the foregoing rules comprise this final principle—*Light your subject to the most*

picturesque WHOLE EFFECT, and *then copy the whole* with *undeviating obedience to that light;* this will produce what is so much admired by the judicious connoisseur, when he says—"There is air in the picture." GENIUS, with the *utmost aid of scientific* theory, must submit to practical application *from absolute models*, as rudimentally necessary to accomplishment in the practical and mechanical department of painting.

LETTER XI.

To Draw from Solid Objects.

MADAM,

IN the foregoing Letter you have such general rules of light, shade, and reflection, as will tend towards forming the basis of *practical* criticism in your mind; and, as you now desire to study from statues, or what is termed "studying from the round," my next endeavour shall be to give you such information as will accelerate your progress.

Let your first essay (in this department) be to imitate a *perfect sphere*, or globe. Your model for this may be any plain globular form, perfectly white, and the larger the better. You will perceive only one point of white, for light; and from that a tender gradation of increasing shade, till you arrive at that extreme of shade, where the light loses all power, except what is

found from general reflection, or some particular reflection which may arise beyond this shade: if you make several studies from the globe, in different lights and distances, it will confirm an acquaintance with the rules I have before given you.

As you proceed on your study after the antique, you must cultivate the best acquaintance with their distinguished pre-eminence over all modern examples, for which I must refer you to critical application, and the highly-qualified pens of those authors I have mentioned in my eighth Letter.

The best point of view that an object can be placed in, for the most harmonious relievo, is, when about "a quarter part of the whole is seen light, a quarter part dark, and the remaining half middle tint." This rule is given for *whole pictures,* as well as a single figure. You will find it improving enough to set your figures in various lights, till it agrees with the rule. Proceed to study, in every stage of your work, precisely according to the first information: with the additional help of the *rules* for shading. They, although given under the head of *Indian ink* shading, will be found sure guides when using any other material. Various circumstances may render it necessary to deviate from the above proportion of light, shade, and middle tint, "which genius can only dictate;" taking due care to be fully convinced, when you depart from a rule, that it is an improvement according to REASON; *fancy* being too inconsiderate to assume this power, because conviction, as to the most perfect effect, can only arise

out of deliberate conclusions. Let *beauty require,* and NATURE as well as TRUTH and POSSIBILITY, admit of every *article, form, character, light, shade, reflection, and colour,* in your picture; for the artist who takes a sudden spring at "a grace, beyond the reach of his knowledge," is as liable to disappointment, as a gamester who *risks his success on chance:* and, perhaps, it may be no difficulty to discover that such disappointments are more frequently occasioned by *ignorant impatience,* than ingenious energy.

LETTER XII.

The True *and False Shadow distinguished.*

MADAM,

I SHALL accomplish a most important point if I succeed in explaining clearly, the proper means of treating such accidental *overshadowings* as affect original light and shade by transposition, inasmuch as to change that which was *reflected light* into the appearance of *original light,* as it is a subject requiring all your attention.

Suppose you set a figure fair to the light, according to the directions given for that purpose in my last Letter, and finish a successful study from it. The table you thus set your figure on, should be covered with white, and your back-ground should be the same, as well as the figure, for this experiment; that light,

shade, and reflection, may not be compounded with the various local colours of objects, which would otherwise, most probably, surround and certainly affect it; and a true imitation could not then be made without a very competent acquaintance with the effects of colours. Perhaps, when you *have made your drawing completely to the model,* you may imagine that a shadow over the lower part of it might improve the effect of the whole, as a picture; and so proceed, as *too many have,* to lay one *uniform tint* over the part thus appointed for shadow. But the truth cannot be produced by this transparent tint, for *it does not operate as a shade would;* it only changes the complexion of the part it covers; the original lights and shades all retaining their force proportionate to one another, precisely as the untinted parts, having more the effect of the dirty parts of a half-cleaned specimen, such as is exhibited by picture cleaners, than of the truth, which cannot be produced by such a *trick* as the *true effect,* on any part of a drawing, or picture, which had been *previously finished to an unintercepted light.*

If you would proceed according to the truth, you must overshadow your *subject* at the commencement of your study, and copy all the changes of the effect thus produced. You will do well to study the difference of such effects, by experimental proofs. Set up some plain object, or a figure fair to the light, and copy it completely as you see it, according to the above directions; then *shade* over part of this copy with *one tint,* or according to what I shall henceforth term the *false shade;* then, without moving the

original object of your study, set up something which will cast as much shadow on it as your *false shade* pretends to have done on your first drawing. Copy this correctly, and then compare the overshadowed parts of both drawings with this last effect produced by your model, and you will have satisfactory proof why I termed the first a *false shade*; and, inasmuch as you become convinced of the error of such thoughtless dispatch, will your critical judgment be improved. You will then see one of the great causes of deficiency in the works of many of our contemporaries, whose eminence, in many other parts of painting, might vie with the painters of any age.

I will venture to affirm, that the term *false shade*, would not be improperly applied to much of the work that is done to an oil picture under the term "*glazing*." All the effect you wish to produce by *glazing*, should be really produced *on the object of your study* by appropriate overshadowing, and reflecting *materials* previously set for the purpose.—I speak this to *young essayists* in historic composition *chiefly*, but the *principle* must be strictly understood and observed by *all* who are ambitious of advancing the arts, and to such only can scientific consideration be useful. Those who are content with the maintenance to be obtained by smearing canvasses *pretty much like* pictures, are safe on their *sunken rocks* (PRIDE, IGNORANCE, or AVARICE,) from all other considerations; but as their trash floats on the surface of the general stream, it is surely prudent to point it out in general terms for the benefit of true genius and industry, and their liberal encouragers.

True and False Shadow explained.

You should remark, that in *absolute shade*, or the *entire* absence of light and reflection, there could be no variety of light and shade; and whatever beauty and variety of folds or articulations, may be found in the light, will almost suddenly discontinue, where *such* a shade meets them, and the shaded side would be a *flat breadth*. I have made this remark to an extreme that will *seldom* happen; but it is to warn you of the error of shading, and marking folds or muscles, &c. too distinctly, when *light*, which is the distinguishing power, or *reflection*, which is its auxiliary, are *materially* absent: this you *should prove by experimental conviction*, which is absolutely necessary to your rightly comprehending the force of my advice.

Now to return to the real *object*, which I have advised you to overshadow: observe that those parts, which were originally in shade, are not sensibly darkened by this *second*, or *real overshadowing* experiment, while all the originally light parts are; in the same degree as the power of the original light is prevented, and those parts of the original, or first folds, &c. which were then the darkest, will, in many instances, become the lightest, *by reflection*.

Whereas an *uniform tint*, such as I hope is proved to produce a *false shade*, would increase the strength of the shades in the same degree as it shaded the light parts (precisely as I said before like the dirty part of a picture cleaner's specimen); it could never produce the transposed effect of an overshadowed part upon any drawing or painting *previously finished* without having

overshadowed your object at the commencement; for all such shades and reflections, should begin and proceed according to an example properly set for the purpose.

If the *overshadowed* muscular forms, folds, and articulations, were left *as flat* in a picture, both with regard to colour as well as shade, as they would positively appear in such overshadowed situations, the beauty and force of the whole might prove, that much of the learned *markings* of some artists is employed to the disadvantage of their pictures, through a too tenacious endeavour to display *their knowledge of the form*, rather than their faithful submission to the effect produced on it by the supreme power of *light;* for if all the *conspicuous parts* are to be strictly conformable to nature, with regard to light, shade, reflection, and colour, it follows (in my mind) that all the subordinate parts should be studied through all their gradations, according with the same conformity, *as they would appear* under their respective shades, when associated with the leading figures and circumstances of the same subject, and under the influence of the same light, shade, and reflection; instead of which it too often happens, that after studying a model of the principal parts of a picture, the remainder is made out by unscientific recollections and suppositions, expecting to combine one great and pleasing effect without the mechanical drudgery of inquiring the integrity of cause, through too great a conceit of competency. This pernicious sort of self-sufficiency, being the offspring of pride, laziness, or impatience, if not of avarice; should be considered with the

most impartial self-examination, or the beauty of your compositions may be robbed of half their worth, by *thus* substituting facts with unskilful ideas and unharmonizing fallacies.

Genius, imagination, and science, with *thorough comprehension* of all that is requisite to a whole composition, may express the *idea* of a picture most forcibly, and perhaps beautifully, in what is termed the *sketch* of the design, which (I think) may be compared with a well-digested architectural design for an intended edifice, the *absolute work* of which must be the result of the *accomplished* mechanic. And to this sort of mechanical accuracy must that artist submit who proposes to advance in painting beyond the reputation to be gained by a good *sketch* of a subject.

LETTER XIII.

On the arbitrary Power of Light.

MADAM,

With regard to the licences to be allowed in painting, I shall give you my opinion as an adventurer on high ground, liable to the investigation of others; but if such are only *speculative critics,* my opinion will remain unanswered.

Should philosophical *demonstration prove* me to be either *entirely* mistaken, or too confined in my observations, I shall not regret the result, because truth ought always to triumph over error; and I shall have this

apology for what I advance, that my remarks arise from cool and deliberate experiment, amounting to the conclusion that life is too short for one to *spend time* in *systematically* endeavouring to make *wings*, because of the certainty there is of the inutility of such artificial invasions of nature. And as Archimedes saw the limits to mechanical power by a rational declaration of the "*want of further means*," I feel in like manner supported in my decision on the objections I am induced to make against any *serious* endeavour to affect the *representation of light within* the picture as a CAUSE of the other lighted parts of it.

And it is proper that the limits of possibility should be scientifically ascertained, that we may be enabled to distinguish clearly between the seductive flights of proud conceits, and the sober pursuits of truth.

First, that absolute *dominion*, which is the natural property of LIGHT, must on no consideration whatever be invaded by what is termed "poetical *licence*." For truth cannot be advanced by false means; and as regarding the "*great style*," or what may be considered the *sublime*, I believe "perfection" to be one of its principal constituents; and it surely must be admitted that *truth* is indispensable in the pursuit of it: still a painter's licence, or liberty, is amply sufficient for the successful accomplishment of the *possible* aims of genius.

The unbounded fields of imagination and invention, history, poetry, and nature, are all dedicated to his use: he is at liberty to choose the most interesting subject, and introduce such an association of objects as may

best suit his purpose; in doing which, should he commit himself to the censure of critics of this department, I leave the case between them, and abide by my subject; namely, a rational objection to the liberties taken with *light*.

After a painter has designed his whole subject to his satisfaction,—the liberty of *choosing freely* both scene and season as to *light*, and its operations and consequences, must be granted; *which, once determined*, and genius having hereby prescribed to herself laws, must, throughout the whole work, remain subject to them; and, notwithstanding the magical and harmonious powers of those who have succeeded in *rendering error pleasing*, still *light* and its consequences *(shade* and *reflection)* should never be tampered with, but on all occasions should be implicitly obeyed.

This may be sufficiently proved by modelling your subject, and placing it in a *suitable* light.

It is worthy serious attention, to consider how very different the light, shade, reflection, and colours of an object would appear in an open *landscape*, or on the clouds, or water, to what it must in an artist's painting-room; yet how common it is for them to make the design, whatever be the intended scene, or back-ground, and then set figures, draperies, &c. to the light of* a

* The glass of the painting-room window should be as clear as possible *(the very best German sheet at least)*, for the common window-glass is so green, that it lowers the brilliancy of colours; and care should be taken to obtain a northern aspect, in order to avoid the glare of sunshine, or the necessity of covering the glass with a thin opaque wash, for such covering must

small high window; copying too faithfully to stand a chance of unity with (perhaps) the heavenly scene chosen for the subject. They do well who endeavour to remedy these unsociable circumstances, by placing such lights and colours round about the object as may best tend to produce the desired effect: this ensures a *certain degree* of concordance, which, if they are happy enough to imitate, they will be amply rewarded for their obedience to THAT POWER which is superior to all control, and its effects are as much above improvement as its cause surpasses the power of comprehension. Let it be recollected, that there is no objection to a painter's choosing an appropriate light, or even lights, to paint *by (not to paint,* because he is not possessed of any material *light enough);* and modifying their powers and shades, by harmonizing reflections (with *appropriate materials,* really set up for the purpose; at least, while a novice in the art), according with his idea of what is best adapted to his subject. It is his rebellion against, or inattention to, the *power* of light, after having placed himself under its dominion, proceeding under the random impulses of fancy and vanity, without any allegiance to the causes of successful ef-

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diminish the light; the pernicious consequence of which, *on colours,* must be obvious; and, as *clear light* is of so much importance to the brilliancy and *truth* of colouring, it would be well to have *two* sliding sashes, when the painter's aspect is liable to sunshine; the *one clear,* and the other adapted, by ground glass, or thin wash, to soften the strong power of sunshine, so that all the light obtainable might be had by using the most suitable medium.

fects. *This* is the objectionable point, in *which*, should he persevere, his designs, compositions, and expressions, his contours, characters, and costumes, may be admirable; but his effect will be *wrong*, and as wanting in sublimity as of truth and unity.

There is always something pleasing, and often surprising, in a natural effect: the vulgar are delighted they know not why, while the accomplished connoisseur pays the willing tribute *of encomiums due to intrinsic merit.*

Reflection, and its effects, (by which is meant, the appearance of objects when under the influence of a certain LIGHT) *may be* imitated: LIGHT ITSELF *cannot.* It is a vain fancy, and an amusing delusion, to endeavour to represent that LIGHT which causes the lights and shades of the scene or subject of your study; such as a *moon*-light, *candle*, or *torch*-light: and, chiefly, the *sun* above the horizon, which, at best, can only be termed the *pantomime* of painting, or the *sportive* essay of genius—which laying above the powers of *painting materials* (excepting by the aid of transparencies) should not be treated as claiming *rudimental* aid, while the *more solid* and *possible* branches of the art are neglected.

When I consider what Claude, Rembrandt, Rubens, Vernet, Vanderneer, Schalken, Wright (of Derby), Turner, &c. &c. have attempted, and how completely they have succeeded in gaining the *admiration* of the most professed connoisseurs, I should hesitate to advance these remarks, although founded on, and derived from

truth, were not they supported by the MORE SUCCESSFUL examples of the very SAME masters; insomuch as to embolden me to assure you, that much as the spirit of *such enterprize* may fascinate; a truly successful result can never be accomplished, while the powers of a painter are confined within the humble limits of WHITE and BLACK pigments.

Yet the works I have alluded to are charming!—they are captivating! Cool judgment is arrested by the glowing harmony of Claude, the vigour of Rembrandt, and the surprising effects produced by many other masters on similar subjects. Should it be asked, Are their *effects true*? it may be answered by a question,—Who can exceed them? The answer to this may safely be—"No one can surpass what has been produced by those great men in this department;" but all this does not overturn my dogma, "It is only an eagle's flight *towards* the moon."

It requires but little science to prove that *white* is not light, but it is an effect produced on a colourless object by light; and, if you go to the other extreme of the painter's gamut, you will find that black is not the utmost depth of darkness, but only the greatest possible opposite to whiteness that can be produced on any substance, when exposed to the light; and between the limits of these MODERATE EXTREMES a sincere artist will confine his efforts, and never use the seductive art of gaining fame by *a splendid error*. The licence necessary for allegory, or symbolic painting, may be submitted to: some intimation of lights may often

be found proper to the theme, and answer the painter's purpose completely as to the point of illustration, but very little further.

There is another great licence taken, which, in my opinion, is practised through a preference for gaiety rather than truth, which is the introducing *two opposite* effects in *one picture.*

There are pictures representing the sun setting, or near that position, generally and judiciously kept by rich tinted clouds delightful to the eye: this, of itself, is as fine as genius and art could produce. But this fine effect is often opposed by *another:* a *portrait,* or *group,* perhaps historical, or poetic, is introduced in the fore-ground; with a *broad* and *pure light* on the *parts towards us.*

Now it is to be considered that there is no power in the east, when the *only* sun we have is setting in the *west,* to enable a painter to produce the light which is *so often* found on what you will understand to be *this side* of his figures, when the sole cause of all the light there is in the hemisphere is fast retiring on the *other side:* whereas, notwithstanding the strong reflection which you may imagine from bright clouds in the west, the eastern side of all the objects in *such* a scene *must* and *would* be the darkest side.

It has been argued, that by intercepting the western influence by a wall, curtain, trunk, or branches of a tree, or the like, the eastern part of the hemisphere would convey sufficient light on the object; granted, if the western superior power be *entirely shut out.* But

the smallest admission of the immediate and primitive cause of ALL the light which is in the whole hemisphere will, in *truth,* render all the opposite lights nothing more than reflection, and the *lights* produced by this reflection, on *even a white object,* must be much darker than the sun-set tints in the back ground.

Some paint a portrait by a light above the angle of 45 degrees, and make some advance towards unity, by giving that sort of colouring to their back grounds, which the sun, near his setting, may give to the opposite part of the hemisphere: this certainly does suppose the figure and its back ground to receive their light from the same quarter; but it should be considered still, that the figure will tell you plainly (if well painted) that it received its light from a power 45 degrees above the horizon, when the back ground will at least "whisper" to the contrary: these jarring conversations in one party cannot be harmonious.

The liberty taken with regard to the *horizontal line* of a picture, is generally the result of ignorance, which I shall endeavour to remove by stating, that whoever takes a portrait *with his eye on a level with the eye of his subject* (which is frequently done), and afterwards paints the *horizontal line* of the picture considerably *lower* than the head *which he had painted* on a *level* with his own eye *(which must be the horizon height),* is either a stranger to, or a rebel against, the rules of perspective; and takes a pernicious, as well as an erroneous licence. If one of the proper uses be made of

the *platform and high chair,* which is to *set* standing whole length figures on, while painting the *head,* to prevent their fatigue of standing the whole required time: the figure might then be in unison with such geometrical lines of steps, pedestals, &c. as should certainly vanish in the horizontal line (See Dialogue on the Principles of Perspective, page 25).

Neither can I bring my reasoning power to allow, in painting, light as a *cause* and its *effect,* both in one picture, with the *effect brighter* than the *cause.* I may here commit myself to the severity of all those who take excellence upon trust, and only look for a great name at the corner of a picture, to render candid investigation *almost* a sin: I have before objected, in general terms, to the introduction of any sort of *immediate* light, as a *cause* for any other lights in the same picture. "The flame of a candle, for instance, and the face of an old woman supposed to be lighted by this candle," in so brilliant a manner, as to give the *flame* the effect of any light-coloured matter, rather than that which is introduced as the *sole cause* of all the light in the picture.

The glittering on water is often painted liable to critical exception. This at least requires thought, or the numerous examples of the *fanciful* and undeliberating will infect their numerous successors by the practice of such pernicious errors, as must bring on a decline of the arts.

LETTER XIV.

Blackness as Shade considered.

MADAM,

I SHALL now beg your attention to the concluding observations on what belongs to the department of *mere* light and shade, or that which can be effected by black (in various degrees) on white; or black and white, on a middle tint, which, in effect, is the same.

The difference between the imitation of a white statue, and a figure in colours, by the simple materials, *black* on *white,* requires the following thought:—The *first* will only have the pure shades and reflections (which is to be considered as the province and limits of the neutral tint): the engraving after PAINTINGS must have an additional tint, equal in depth with the various local colours on the figure. It constitutes one great perfection in engraving, when engravers have a just eye to colour, so as to produce accurately that degree of depth which they term *colour;* because it represents the quality of light which is exhibited by the colour on the objects of their imitation, and a surprising effect is produced: this requires nice attention, and great practice. If you should choose to copy a few *very good* prints (perhaps after Woollett, Strange, and Bartolozzi), you will experience a proof of the advantage of comprehending this matter clearly, espe-

cially if you can compare them with the original painting.

It may be proper to caution you against too black a manner in shading; weighing the whole subject between the two scales of black and white; and, although the corners of the fore-ground cannot, (in obedience to optical economy,) be light (see Letter X. Rule 5.), they must never be so dark as to represent black, unless the objects are absolutely so, in their own local colour.

I have observed the works of some artists of acknowledged merit, wherein the *force of* shade was exhausted at too great a distance from the fore-ground; the consequence of which is, they are obliged to submit to a pale, tame fore-ground; persuading themselves, perhaps (from a misconstruction of an observation by Sir Joshua), "that nature, in her vast variety of changes and effects, *might* appear to sanction the circumstance." But light, and vision, have prescribed laws to the contrary; even partial masses of shade, produced by the interception of *sunshine*-light, will not controvert this law as applicable to a whole picture; for it would *unexceptionably* happen, that if your whole scene were composed of colourless objects, their strongest shades would be on the objects nearest the fore-ground,—and, whether coloured or not, the radical law of *light*, and the effects of its *absence, must continue the same*, according to the *aspects* of all the various surfaces in the subject.

The *deep* blackness of *clouds*, as a set-off to a portrait, *must* be absurd; for were you to add a black hat to the

head, you would find a difficulty in procuring a shade strong enough to detach the cloud to its reasonable distance. I have no objection to dark back-grounds to heads, but I think BLACK AIR by DAY-light irreconcileable with reason: yet, fully admitting when a figure is set very high, the head might, and certainly would, fall in contact with a very deep tint of sky, if such were the back-ground of the picture, when painted by a high opposite window, or, indeed, if painted in the open air: a very simple experiment might ascertain the proper depth of the back-ground, especially if set in the open air, according to the purposed representation, by placing a *black* hat on the head of the subject, and comparing it with the *blackest cloud that day-light* could produce.

Perhaps it may be well to repeat another remark respecting the darkness of objects in the fore-ground. It seldom happens in the open air, that any of the local colours of nature's productions are entirely black; yet we too often see fore-grounds so black, that a painter would find great difficulty in introducing, and properly distinguishing, a *black object* on them: to guard against this error, paint or sketch a black object near the base-line, as a kind of key note, to govern the local colour of other objects, whenever you are studying from idea.

When you have either black or white to imitate, such as the local colour of drapery, you must consider that *black* drapery has its folds, and, consequently, shades, which can only be produced *with blackness;* you

must, therefore, in conformity to the power of light, make the general colour considerably lighter than black, that you may be enabled to make out the forms you wish, by shading with *black*.

With regard to *white*, if you can have only white for the high lights of white drapery, you must, of course, lower the mass of whatever you would represent white with a neutral clear greyish tint, so as to preserve the whole according to the true effect of white drapery; as then it is in a state to receive those additional shadings, which *model* the form, the points of lace, or the hems of white drapery, and these only when the light is full on them, being all that can admit the touch of pure white.

It will be proper for you to habituate yourself to study after nature, entirely regardless of colour, till you find yourself familiar with the art of drawing, and the integrity of light, *shade*, and reflection; in the practice of which you will never have occasion to deviate from the principles of the few rules I have given you; and that, in the strictest acceptation of the term, as the *fruits* of all you do must depend, on that general construction of system, which *true genius* only can define by practice.

Often call to mind, and as constantly practise according to the instruction I have given you in my fifth letter, ensuring the *right situation* of every thing you would study, or you will waste both time and labour: consider how mortifying it would be to you, after having taken great pains, and finely succeeded in drawing

some *considerable part* of a picture, to find it out of its proper place, or one part disproportionate to another.

It must be remembered, as your first consideration of colour, that all reflections are of a warmish hue; and all parts which retire obliquely from your eye, and from the light, are of a bluer, or colder hue, than the general shade: a careful attention to this in finishing drawings from plaster-of-Paris figures, or white marble, will add greatly to the effect—either in chalk, water, or oil; indeed, there should be no allowance made for different materials, a *true effect* being always required.

LETTER XV.

On Manner, Forecast, and Memory.

MADAM,

I HOPE you are *now well* aware of the necessity of *practice*—the hand must be made familiarly acquainted with the part which a scientific mind will continually require it to act. How painful has it often been to me to see a pencil in the hand of an enlightened amateur, totally incapable of obeying the dictates of refined taste and first-rate judgment for want of this. Theory may accomplish the mind, but much practical application is requisite to make knowledge and prac-

tice go hand in hand; for nothing can be produced without the equal union of the mental and mechanical means.

Decide on what is proper to be the subjects of your study from the most beautiful and interesting productions of Nature and Art, or the more accurate the imitation the greater may be the error; for, an ugly subject or circumstance, if truly imitated, may produce credit to the artist, but the picture must be ugly; yet those who paint for praise may be still gratified. Vulgar approbation is certain on the point of true resemblance. This misapplication of talents should be seriously considered, because *time,* and the honour of the art, are too precious to waste on unworthy subjects, (the antiquarian and natural history painter cannot be supposed to be subjects of this observation).

Acquire a certainty of hand by deliberate attention to the natural but best characteristic properties of each *individual* object: this will prevent that sort of conclusion which is the parent of 'MANNER.' Let every thing that is peculiarly good have its own *peculiarity,* that there may be no *room for your's,* and make it appear that *Nature made the picture.* This will require all your powers, fully disciplined; and be assured, any hasty advance without them, presents no better a figure to my imagination, than a "blind man running a race."

A modern writer has said, "There is no great *modern artist,* whose pictures exhibit so much incorrectness as Rubens;" and a little after adds, "I do not know any painter who exercises so *lawless* a dominion."

Beauty not definable by Quantity.

It is not my province to enter into all the argument that might arise from such remarks, nor shall I endeavour to turn faults into beauties, by proving that an *ill-painted* giant *would rush upon* the *imagination with more force,* than a well-painted cockleshell, because there are some *few very rare proofs* that there is no allowable apology for an *ill-painted giant,* when *publicly* exhibited as the production of *a master.* It is yet very just to make due allowance for the rudimental essays of the student if *exhibited as such.* But I would recommend the writer I have just quoted, and all such as are of his mind on the subject, to read Mr. Shee's Preface to his "Rhymes on Art."

Govern your progress, by advancing with collected deliberation, that you may not have occasion to retreat for want of assistance.

The MEMORY is an inexhaustible resource; it may, however, be a fair excuse with some to plead a bad memory, and it would not only be too severe, but untrue to say, all have equal powers to cultivate and improve their natural faculties, so as to become qualified to perform works of distinguished merit. Yet the memory is too often blamed for suffering that to have escaped her, *which in truth she was never properly put in possession of:* and most frequently by a class of impromptu beings, who are too often mistaken for *great* geniuses: admitted they may be geniuses, but cannot be *great,* unless accident happens to awaken them to a conviction of the necessity of acquiring knowledge correspondent with their ambition. And how vainly

the idle take shelter under a very pretty conclusion of "Pope's," that

> "Where beams of *warm imagination play*,
> "The *Memory's* soft figures melt away."

Those who are blessed with clear intellects, and with the virtue of cultivating the knowledge requisite to their particular pursuit, will not have occasion to accuse their memories, but will readily refer to each element as occasion may demand their aid.

> Let then the *memory* be *well supplied*,
> As nought can flow where nothing swells the tide!

There is a degree of impiety in pleading a want of faculties, when the real want is proper industry to make right use of them. The well-received materials most proper for the furniture of the memory, may be compared with the well-disciplined *reserve* of an army, which, although unemployed while the powers appointed are in action, do not retreat or melt away, but are ever ready to advance to their object, and are therefore alike unfairly censured as deficient, because unemployed.

Some allow themselves to imagine it good to undertake *great* and difficult works, as *stimulatives* to investigation; I must compare such, to "one who jumps into the sea, that he may be under the necessity of trying to swim;" or who launches out on a voyage, without the theory of navigation, and the other requisites, for such an undertaking.

I knew a country *builder*, who began a house on a considerable scale, and when he was asked his plan of the whole, he answered, "I cannot tell how to settle so much in my mind at once, we shall see how to dispose of matters as we go on." This may succeed with a certain singularity of genius, but must not be considered a *proper system.*

I have ventured these *trite* comparisons, on points of the *utmost consequence,* with a view to fix them on your memory, by their singularity, for it is the height of absurdity to begin a work unless you know how you should proceed.

Besides those books I have referred you to, for the accomplishment of your *mind* as a painter, you will find it absolutely necessary to have a good treatise on the Grecian orders of architecture. I think Mr. P. Nicholson's work, in 3 vols. 8vo, on this subject, completely adapted to your purpose; and his explanations of the projection of shadows will give you great improvement *(as a painter).*

Genius cannot supply the want of a competent knowledge of architecture. So far at least should be learnt as to know the just proportions of each order, and their distinguishing properties and qualities, that when either of them becomes the subject of study, a good composition may be *sketched* without reference to book. Any student resident in London, or any opulent city, might facilitate his accomplishment in this great essential, by ocular demonstration while under a course of architectural study, when viewing the best public edi-

fices attentively, so as to establish in his memory sufficient to enable him to think, speak, and sketch on the subject with consistency.

The Dialogues I have given on Perspective, *may* be all you will require on that subject. Should you feel inclination, or occasion, for further knowledge, Malton (sen.)'rs is a *complete body* of the science, both in theory and example. Mr. P. Nicholson (the accomplished author of the *Perspective* already given to the world in two Encyclopedias, and in his own Architectural Dictionary.) The *Jesuit's Perspective*, and Kerby's Doctor Brook Taylor's, are also good, and will not only confirm you in the science, but convince you of the truth of my introduction.

We shall next ascend to the study of colours; but I cannot encourage you to advance till you feel yourself sufficiently conversant in the knowledge and reason, for both the *natural, geometrical,* and *perspective appearances of objects,* not only as regards their shape or outline, but also their *shades* and *reflections,* according with the peculiar influence of *the light and distance,* in which they present themselves to your eye, which, the more you understand, the greater will be your qualification to proceed. But it is neither expected, nor required, that *an entire* accomplishment in each rudimental department, should retard and fetter the lively and eager imagination of genius, as long as the whole proceeds together. Evidences of the *absolute utility* of *all,* must too frequently occur to suffer a judicious student to neglect any.

HINTS ON COMPOSITION.

I HAVE found the following rules for designing historic groups to have been of considerable utility, in a young sketching party; who meet alternately at each other's residences, to compose *historic subjects.*

Deliberate on a subject of importance, so as to comprehend the whole composition to a finished effect; that the imagination, or "mind's eye," may have determined (in a very considerable degree), on the success of the work, before you begin to sketch the design: and, although the first trait of the subject is not required to exhibit that perfection of outline, which *must be found* in every good picture, when finished, I would not be understood to encourage any one, who is not proficient in good drawing, to begin pictures under this licence of the master; because, the finishing of such a one's work must be, like the beginning, incorrect.

Let the *sketch-book suffice, as a* tablet of memory, until you have qualified yourself, by elementary study, sufficient for the undertaking. The knowledge of your qualifications will not remain a secret to you, provided you apply the advice of Pope properly;

> "Trust not yourself; but, your defects to know,
> "Make use of every friend, and every foe."

Experience has informed me why I advise *young* painters to deliberate *to some decision,* before they begin to sketch the subject—it is this: The minds of

those who have not been furnished with an ample stock of knowledge and practice suited to so important an undertaking as the painting a *subject* worthily, are too soon exhausted. The very first essay of the pencil conveys the matter to the corporeal eye, with that sort of self-applause, which too often blinds the critical eye of the mind; and (what youth is, in general, too fond of,) dismisses *that further* consideration, which might be amply rewarded with success. And when you have determined to sketch a subject, you will find your genius carried on with a degree of certainty, if you arrange the process methodically, in something near the following manner:

First—Consider the place, or scene of the circumstance; whether proper to be composed of landscape, architecture, or any other objects suitable to the story; as also, how light may be *obeyed,* to the most picturesque advantage; for it must be *obeyed.*

Secondly—The climate, season, and time of day, should have due consideration.

Thirdly—The costume of the whole, as strictly as possible, agreeing with the date of the circumstance, in all respects.

Fourthly—The dramatis personæ.

Fifthly—Their characters and proper situations, with regard to judicious grouping; so as to make the principal appear accidentally, and naturally so, rather than designedly, or by palpable contrivance (like a group of comedians in the last scene of a play).

Sixthly—Take care to be so well acquainted with the

collateral circumstances, as to lose none of the advantages which often tend to illustrate a subject; and as frequently serve as very useful machinery in a picture.

Seventhly—Truth of design is indispensable; including architecture, perspective, &c. &c. as well as the truth of *proportion,* and anatomy of the animal part of the work.

Eighthly—Harmony, and truth of light, shade and reflection, as regards the picturesque, will now require a union of genius and element of the first qualities; because, while the whole must form a good picture, all its parts must be represented with punctual attention to nature; agreeable to the law prescribed by these rules, and by the light under which you may have determined to produce the work.

END OF THE FIRST PART.

PLATE XIX. *Page, 209.*

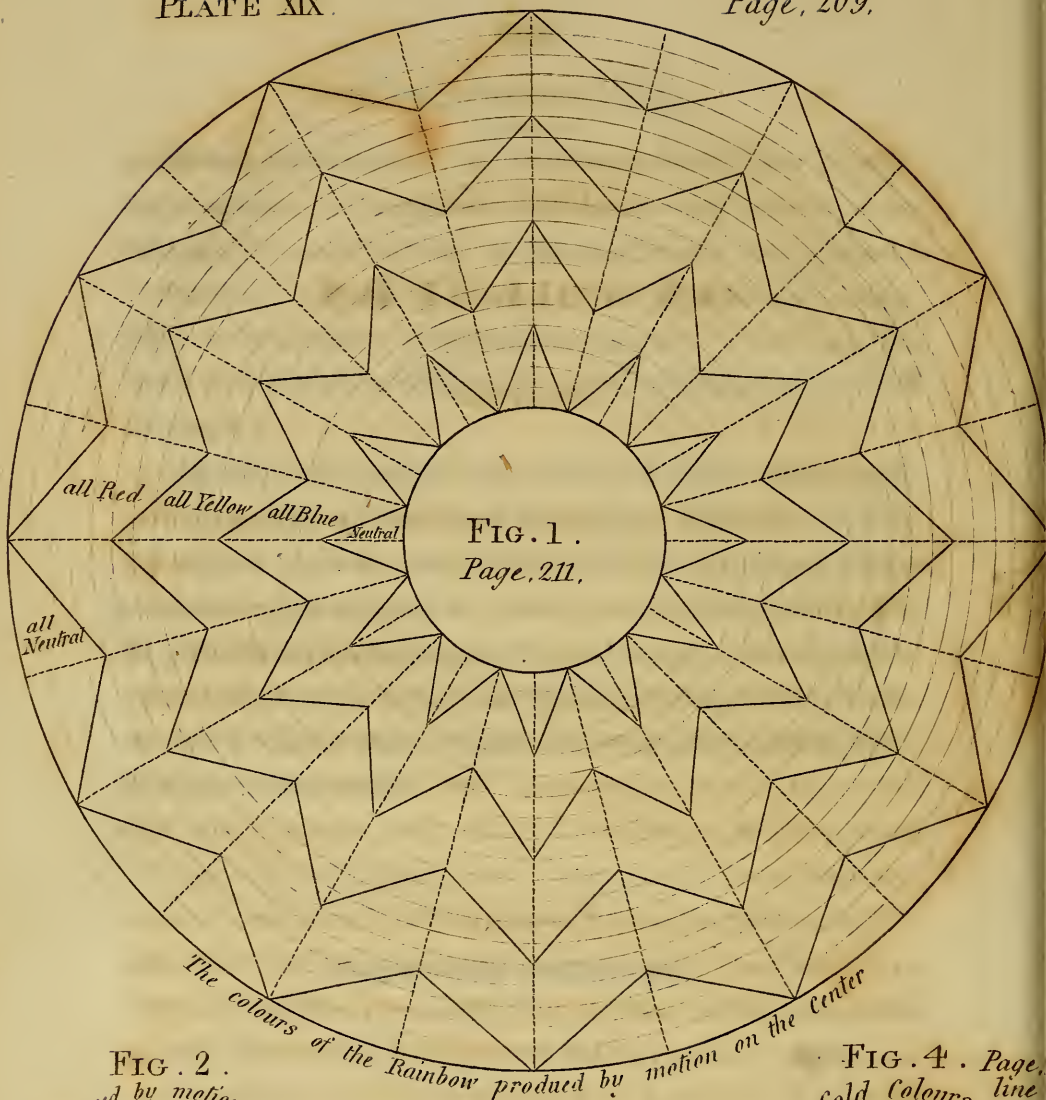
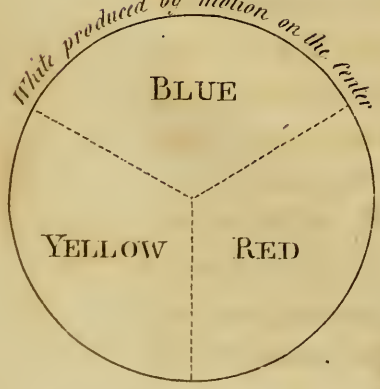


FIG. 2.



Page, 210. line 17.

FIG. 3.
Page, 212. line 3.

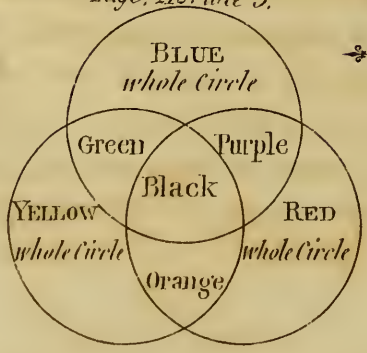
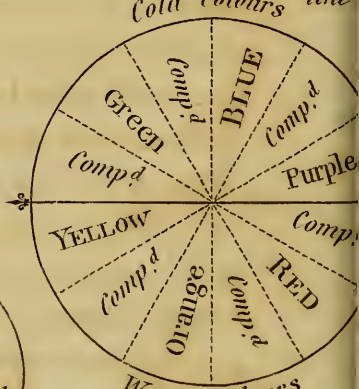


FIG. 4. *Page,*
Cold Colours line



Warm Colours
& Page. 218. line 5.

C. Hayter Inv.t *Turnbull Sc.*

Publish'd by Black, & Co. 1820.

LETTER XVI.

ON COLOURS.

MADAM,

THERE are many treatises on using paint, which may help you to mix your tints with readiness, and assist in the enlargement of your stock of knowledge, perhaps more than in the usefulness of it. If what I shall communicate on the subject should help to form your judgment, so that you may take a scientific view of those systems, and decide for yourself respecting their utility, I shall have succeeded to my utmost wish.

There are but THREE (PRIMITIVE) COLOURS—RED, YELLOW, and BLUE—which, by mixing half of each two colours together, will produce *three more—purple, orange,* and *green:* these are also considered COLOURS, but it must be recollected they are not PRIMITIVE, being *produced* by *mixture,* and incapable of producing *any* tint but what must be a further remove from the purity and brilliancy of the *primitive,* (see *my own* diagram, Plate XIX. Fig. 3. as explained in page 212, line 3.)

A proper quantity of each of the three first colours will compose BLACK (by the mutual destruction of each other's power) when mixed; which, notwithstanding the prismatic conclusions to the contrary, must, in my

opinion, be admitted by PAINTERS, as their *seventh material,* or colour; which with the six before mentioned, by properly applying separately, or variously mixing and tempering to the light or shade required, all the gradations of colour to be found in nature (*below* white) may be truly imitated.

The first great proof of the purity and seniority of the three *radical* or *primitive colours,* is, that they cannot possibly be re-produced by any compound of their own.

The second sign of their originality is, that, although a *palpable* mixture of the three will produce *black,* an *impalpable* mixture will produce *whiteness,* which can be proved by dividing the area of a circle (Plate XIX. Fig. 2) into three equal * portions, by right lines from the centre to the circumferent line, and colour each portion of the circle, thus divided with one of the *primitive colours,* each of *equal depth* of tint. The top of a whipping or humming-top, is an excellent means of working this problem, for on spinning one *thus coloured,* the appearance will be nearly WHITE.

* Sir Isaac Newton has divided the iris into 360 equal parts: giving *red* 45 parts, *orange* 27, *yellow* 48, *green* 60, *blue* 60, *indigo* 40, *and violet* 80 parts. My diagram is divided *equally,* for the purpose of an easy experiment to young students; but those who would subdivide a rainbow according to Sir Isaac Newton's scheme may, *when painting,* take the following compendious method: Let the red fill one-eighth of the whole width of the bow, the orange one-thirteenth and one-ninth of a one-thirteenth, the yellow one-seventh and a full half, the green one-sixth, blue one-sixth, indigo one-ninth, and violet one-fourth and half. This will be correct, and much sooner subdivided than by making 365 parts.

360.

The Rainbow.

The *iris* might have been mentioned as the first and greatest evidence of the super-eminent powers of the THREE *principal* colours, as they evidently produce all the others by graduating and mixing in various degrees of either one or the other of the *three,* in the spaces between them, and on the outside extremities of both the red and the blue, by vanishing into the neutral. To prove this, draw the following figure, on a large sheet of card, (Plate XIX. Fig. 1.) Make first the largest circle the card will admit; and another, at about three inches distance, so much nearer the centre, and divide this space into 19 equal parts.—The circle must be divided into 24 equal parts, by right lines from the centre to the circumference: by these divisions you will have a geometrical guide to draw zigzag lines, as boundaries for the *three colours,* taking care to leave a fifth part on the middle space for each colour uncrossed, that each colour may shew itself pure, as in the diagram, given for your guide. The reason for making the spaces for the three colours in this *zigzag form,* is, that thereby they intersect or mix with each other, *when put in very* QUICK *motion on its centre,* and produce the green and orange tints on each side the yellow; and the red will descend into the neutral by a purple tint, which will sufficiently appear on experiment; the centre, and outer part of this diagram, must be neutral colour. The whole should be drawn with *pencil only,* that the lines may be rubbed away after it is coloured, as ink lines would destroy much of the effect intended by this experiment.

You may try another experiment in proof of the primitive superiority of Red, Yellow, and Blue, over all other colours, (Plate XIX. Fig. 3. *This scheme* is my own): First draw a circle: then, with the same opening of the compasses, set one foot on the circumferent line, and draw a second circle; and again, with one foot of the compasses on the point where the two circles bisect, draw a third; cover one whole circle with yellow, another red, and the other with blue (letting each dry before you lay the next); the colours intermixing by the equilateral intersection of the three circles, will produce green, orange, and purple; and the centre portion, taking all the three colours, will be neutral of the black class, and nearly black, according to the strength of the three separate lays of the primitive colours. By this diagram you will have a certain proof of the colours which are most adapted to oppose each other, from which the knowledge of their harmonizing properties may be derived. You will find a primitive colour always opposite to a compound one; as, BLUE will be opposite *orange*, RED opposite *green*, and YELLOW opposite *purple;* which must determine them to be the natural opposites: this is highly useful for a painter to understand.

If you strike a circle, Plate XIX. Fig. 4, and divide it into twelve equal portions, by drawing lines from the centre to the circumference, you will have a very full scale of gradations, laying the three first COLOURS at equilateral distances, and the three first *mixtures* in their proper intermediate spaces: then fill the remaining di-

visions by tints, composed equally of those two colours which you find on each side the space. Thus you have a *regular compass* of all the major colours and tints, whereby you may see their dependence on one another, as also the gradations by which they become opposite in their qualities of tone.

The radical properties of the three primitive colours are also confirmed by this established fact, that they mix in the *same order*, in the compounds of palpable colours, as in the iris, through all the gradations of any two together.

It is almost impossible to carry instruction beyond the basis laid down in this diagram, without a risk of confining *a diffident* student too much within system; but as one *general instance* may awaken the right mode of application, I shall advance it, thus:

Either of the three principal colours, will *stand forward* in a picture, by being opposed with compounds of the *other two*, agreeable to the order they are found in the *third* and *fourth* diagram; and when either *black* or *white* is required to form the *principal mass* in a picture, (such as the black or white drapery of a single figure) they may be supported, or held conspicuous, by subordinate masses of all the three colours, ingeniously and naturally arranged; either pure and separate, or compounded, agreeable to the light, shade, reflection, and distance, of the objects on which they may be adopted. And as another *eminent example*, suppose you have occasion to paint a group of figures all uniformly dressed in white, or pale buff colour,

(as in the picture of St. Romaldo, of Andrea Sacchi), *say quite white.* The greatest success of such a picture, must rest on judicious composition, character, and disposition of figures and draperies, so as to secure an agreeable balance of light, shade, and reflection, with proper expression of the subject *of course.*—The next consideration must be upon that scientific balance of colouring, which would produce it a natural and harmonious picture, according with the natural powers and properties of the three colours, thus: white, which is the *absence* of the three primitive colours, being the object of *forestanding* or *principal,* will be successfully brought forward, by the *presence* of the three *primitive* colours, *judiciously* harmonized by light and shade.

It is a common question with amateurs, to ask what colour is proper for the shading another. The plain and direct answer to such inquiry, is—*no colour:* for *shadow,* in its *greatest* degree is, entire *darkness;* and every gradation of *colour* out of darkness towards light, will in the same degree regain its original hue; which effect may be very fairly proved only by colouring on India-ink shading; when the mere light and shadow of an uneven surface *(of any colour)* is considered. But when shadows are reflected on by any strong colour, the simplicity of the shadow is overpowered by such reflection, and must be treated accordingly; as thus—the reflection, and counter reflection of red rose-leaves, when full blown, continues and contains the colour, even in deep shades, to a greater degree, than the radical principle just advanced would seem to allow.—

On the Shadows of Colour.

Paint some plain stripes of various colours, on a slip of drawing-paper, leaving some uncoloured space between each, and you will find, by bending the paper, that the shade produced by the bending is NO colour, but precisely the *same tincture of shadow* on the *coloured parts* as on *the plain,* for colour is *never increased* by shadow.

From the certainty of what has been advanced, it appears reasonable that those who use colours without a scientific conformity to, or even an apprehension of *a system,* must depend solely on the harmony of the eye, knowing and feeling when they are right, but unacquainted with that which would ensure them against a risk of the contrary, and a great waste of time.

It may be asked, If such is the extensive power of THREE COLOURS only, why are we furnished with such a great variety of paints? The answer to this question, satisfactorily, would give the inquirer some considerable study. "The book which explains the nature of *substances used in painting,*" is sold at Taylor's *Architectural* Library, Holborn.

It may suffice if I give the general information on the subject as a general answer.

The three substances (except ultramarine) that produce the primitive colours, (*water-colours* are meant) which mix so prolific to all tints whatsoever, are not so strong and durable (when mixed) as many natural and artificial productions of various colours; these, therefore, are preferred, both as to their strength, and as they save the trouble of compounding. Another great

reason is, the inferior colours are cheaper than the primitive.

It will be worth the study, if you inquire attentively into the nature of your materials, by the means above referred to, or as much deeper into the art of chemistry as may suit your taste for such study; as the compass of my undertaking will not admit of room to launch into all the information necessary for an accomplished artist; besides, where a book is already extant, *equal to the purpose, "I fulfil my engagement"* by directing you *how to obtain it;* for it would require a complete Encyclopedia of Art, to bring all that is requisite on the subject into one book.

LETTER XVII.

Causes of various Effects in various Aspects.

MADAM,

THEORY can only shew the entrance to that vast and varied field of the art which comes under the dominion of colour; or perhaps point out some few of the main roads which are most likely to forward the student on his way towards the attainment of a rational system.

To paint in water-colours, you must begin by shading, or (in effect) modelling* the whole with a *neutral tint,*

* Which, I presume, you now understand to be the producing an appearance of the *substances,* supposing your whole subject to be composed of *white objects,* entirely disregarding colours.

composed of indigo and Indian red, which produce a charming cool retiring colour; more generally adapted to receive the various local colours than any other.

Whatever you can conceive to be, in any degree, shadow, may be done with this tint, not regarding the colour of the object; and using this neutral tint only, as the proper *representative* of shade, which, you understand, means all the various degrees of the absence of light, independent of the additional force or depth which the local colour must give when added: this will be sufficient caution to you against doing too much of the picture with this tint; for, when the effect of a colourless object is produced, with all its proper force of light and shade (such as a finished white marble statue, or any other *white* object), this neutral tint has completed its part, except as a *local tint*, it may often suit the colour as well as the form; as in clouds, water, and distance, (in cloudy scenes) which makes it superior to India ink for the purpose of dead colouring, as this first lay may be termed.

The method of preparing and using this tint is precisely according with the direction given you for shading with Indian ink, (see Letter X.) calculating on a sufficient quantity of each tint to be mixed in separate saucers, before you begin to colour. Now, as the instruction for adding the various colours of each object in the picture, and also the general hue or tone of it, must depend on circumstances, I can only proceed to general information, which, if properly digested by practice and observation, will, I hope, introduce you

to a good system of reflection, and lead you towards a true imitation of nature.

The first general distinction of colours, is by dividing the circular diagram (which might not improperly be named the "*painter's compass,*" as explained in the sixteenth letter, Plate XIX. Fig. 4), into two equal parts, upon that line which includes the yellow and excludes the purple. And you will find all the *warm* colours on the red and yellow half of the "*compass,*" and the *cold* on the other.

The warm colours are adapted to advance, and the cold are considered as retiring colours, when viewed with the light, yet they all will suit a forward position, when pure, and properly supported (according to the illustration of the fourth diagram, of Plate XIX. in page 213, line 18), but will retire in *various* degrees towards the distant ground, when used pale on the neutral tint, suited to the intended distance; and in *oil,* by mixing white and neutral enough to carry the colour off. This will be confined to flat surfaces only, in a due degree of light, without glittering or reflection, producing this general rule,—That the greatest warmth, or evidence of local colour, will always be found on the illuminated side of the object; and, as far as a general rule can accompany genius, in views of natural scenery, you will find that, when looking *towards the light* (as for instance, a SUN-SETTING effect), the distance, and sky, will possess most of the gaiety and warmth of your pallet, with all the *light* possible; and the fore-ground will be cool and se-

date, and advance with increase of shade, owing to the shady side of all objects being towards you; and in all broad masses, which lay entirely out of the immediate influence of the principal light, this will be *strictly* the case, on account of their sole dependance on the cool, secondary light of the opposite part of the hemisphere, excepting from *local* reflections; blades of grass, and leaves of some trees, being transparent, must be treated accordingly. See Letter X. Rule 12, page 178.

It will be impossible to tell you what gradation of tints will best accomplish sun-setting effects; they must be seen and seized at the *instant,* owing to the rapid changes of the cause : for *yellow* changes quickly to *orange,* and *will* become *pink;* and then *purple,* in a short space of time deepening into indigo, on to the total absence of all idea of colour: this gradation will be found on the *edges of clouds,* according to their apparent distance from, and strength of the CAUSE of the light on them; and the plain atmosphere, or *space* seen behind such clouds, will graduate from colourless brightness near the horizon, to yellow, then pale green, on to blue, till it falls in with the indigo, and, like the gradation just mentioned, will at last retire upwards into colourless shade, as night advances; so that the mass of *space,* or plain sky, will derive its colours and gradations of them, from the horizon to the zenith, according to the arrangement found in the *blue half* of the rainbow; and the *clouds* will be illuminated with the colours of the *red* half, including half the centre, or yellow portion; in both instances, beginning with the

lightest yellow possible on the horizon, and ascending gradually to the deepest colour of *each* extreme of the bow: the *one* for sky, the other clouds, as under.

The Colours as they appear in the Rainbow.

Purple,	*Red,*	*Orange,*	*Yellow,*	*Green,*	*Blue,*	*Indigo.*
Colours of the lighted parts of clouds.				Gradation of the colours on the space or clear atmosphere.		

A Sun-Setting Effect.

Zenith, or Top of the Picture.

Colours of the lights on the clouds, as correspondent with the warm half of the iris.	Purple,	Indigo,
	Red,	Blue,
	Orange,	Green,
	Yellow.	Yellow.

Gradations of the colour of the sky, as correspondent with the cold half of the iris.

Horizon.

Let it be recollected, that this systematic association of colours, can only be found under *one particular circumstance of light* and *aërial medium combined;* and is given as a theme of study in the department of rudimental research, under the full conviction, that the more *causes* can be ascertained by *such* as are possessed of *adequate talent,* the more free and powerful will their effects be displayed.

Sun-setting Effects in various Aspects.

I shall, therefore, advance my further observations on systematic effects of light, aspect, and consequent colour, as they appear to rest on any practical basis, from which genius may take flight upwards with *some* increase of certainty, that there is a way towards the radiant realms of perfection, without "*groping through chaos.*"

Permit me now to call your attention to the effect which would present itself to your study, by turning you back towards the SUN: then you will find the greatest distance to be the coolest; and every object will brighten as it approaches the foreground, and will have their local colours heightened by the power of the light directly on them, exhibiting all the spirit and warmth of colour, as well as strength of shade, on the nearest objects, according strictly with the rule I have just before given. You must recollect what has been said on the subject of light, shade, and reflection, as they are *general rules*, and must bear their parts as much in a painting as in a mere drawing without colour. You must also conclude it reasonable, and will prove it in nature, that as the two contrary effects I have noticed, arise from a direct contrariety of cause, namely, the *warmest* and the coldest light possible in one hemisphere, any view to the right or left of either the one or the other, will have their warm and bright parts towards *the light*, and the *shades*, in quantity and tone, will be proportionate to the degrees *of its absence.*

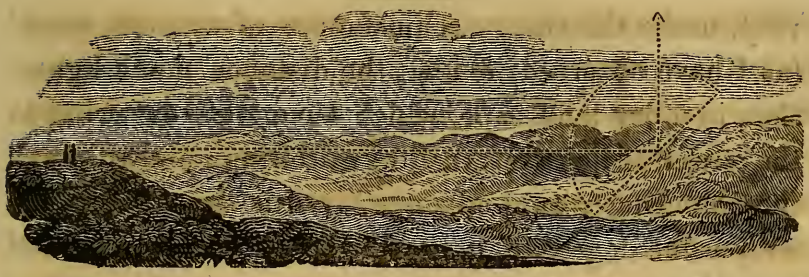
The Colour of Distance considered.

With regard to the particular colours proper to each part of your scene under those aspects, the circumstance *alone* can dictate: if the objects are free from moisture, you will have much more of their local colour than when wet with dew or rain, because moisture gives a glassy surface, which returns reflections of the sky, &c. to your eye, instead of the colour of the object.* "All substantial bodies resign their local appearances according to the proportion of their distance, and their evidences of unevenness soften, through the perspective diminution of the parts into *apparent smoothness,* and consequent glossiness, until, finally, in the extreme distance, a mountain would assume the apparent substance of a cloud, as well as its colour, according to the degree of glossiness on its surface; which glossiness is not solely to be attributed to the smoothness and moisture of the snow, as found on the continental mountains, but to that effect of smoothness which is produced by *distance,* becoming thereby an effectual mirror, and conveying the colour of the sky, or clouds, to the eye of a spectator by *reflection.* (The softening effect, produced by density of atmosphere, must be considered according to its degree, *along with,* and not *in opposition to,* this radical cause of distant colours.)

According to the above conclusion, the extreme blueness, and various other aëriel effects of colour on the distant mountains seen on the continent, may be clearly accounted for. *Suppose the general slope of the*

* Extract of a letter to my eldest son, during his journey to Rome.

Why distant Mountains appear Blue.



side of a mountain lay at an *angle of* 45 degrees from the level, the spectator of this would find it reflected on by that colour which would be in the sky at a right angle to his visual ray; and the same sort of calculation will in all cases confirm the conclusion, (see Dialogue on Reflection, p. 96, line 10, Plate XV. No. 5, and Fig. 1. Plate XVI.); the whole effect, heightened of course according to the general moisture of surface. Therefore, in an effect looking towards sunsetting with a *wet* landscape, you will find the colours of the sky reflected strongly on the various distances, according with the angle under which they come.—The most distant would almost assume the colours of the sky nearest the horizon; and as your eye would advance nearer objects to your attention, the reflection of clouds or sky, at an equal angle with that which your ray of sight would make on the surface of them, would give *their* colour instead of the local,* and consequently would increase in cold and dark colours, until you arrive at the base line of the picture; the absolute glitterings of wet excepted. The effect you would have when viewing the opposite as-

* Dialogue on Reflection, page 95, ninth line from the bottom.

pect, under the same circumstances of wetness, would (as I have observed) render the distance much lighter than in a dry landscape, which I conclude is owing to the power of light returned by glittering; and although the colouring would advance towards the foreground, with a due degree of general warmth and increase of local discrimination, yet the moisture would have that general cooling influence which the incidental clouds would convey at their proper angle of reflections.

The remarks I have made are rather to lead you into a proper train of observation when studying nature, than a presumption to give a law for colouring without. To become an accomplished imitator of the beauty and harmony of the natural effects of colour; you will find it proper to apply, frequently and studiously, to every picturesque circumstance, which may tend to the improvement of your powers, seizing *whole* effects; and subdividing your masses into as few gradations as possible when COLOUR is the main object of inquiry. The various *seasons of the year, and times of the day—the storm, and calm*—all have their characteristic beauties and peculiarities, of equal importance in the choice of a subject.

(Those who make landscape the chief object of their study, would find great advantage in getting correct outlines drawn of the most picturesque subjects that offer themselves to their *frequent* observation; these should be in their *pocket* sketch-book, and such artists should never be without the *pocket water-colour box*, &c. then, when any interesting effect of colouring hap-

pened to occur opportunely, they might be prepared to arrange the various tints on the outline without loss of that *very precious time* which the study of aërial colour offers, and on which a *whole picture* most materially depends for that unity of effect, which no theory can explain, beyond the general scientific principles that evince the correspondence between causes and their effects, enabling the artist to be his own interpreter.*

LETTER XVIII.

On Outline, Profile, and Painting Room.

MADAM,

I HAVE hitherto treated of drawing (or outline), light, shade, reflection, and colour, *separately*, for the sake of progression, that you may be the better enabled to collect the whole under one idea—*that of complete picture.*

The *outside line*, correctly understood, is a most important point to accomplish; and light, shade, and reflection, are only the general continuation of it.

What the *outside* line is to the apparent extreme edge of the object, lights and shades are to all the parts which lay between them; evincing, by their judiciously

* Howard, on Clouds, is an ingenious and very useful book to landscape painters, but more particularly to the skies of historical pictures, because artists, professedly in this department, may not have drawn these general conclusions from nature, which are indispensably necessary to the unity of circumstantial history.

arranged degrees of force or tenderness, all the projections or recedings, as perfectly as the *outside* line, *insomuch,* that a sculptor might make a *perfect model therefrom;* and thereby proving, that the outline of the whole of every part is as necessary to be conceived and expressed as the *outside* line; and, if perfectly accomplished by a successful combination of the means, an universal outline will be as evident as in that complete statue, or model, which *it ought to be correct enough to produce;* and the *local colour* must so *unite* with all other circumstances of shade, reflection, &c. in *this,* as rather to *improve* the effect than confuse it.

I may surely venture to hope, that what I have communicated (of each part in its place) will assist you in the pursuit of your studies, and lead you to seek a *good reason* for all the effects you would attempt; when I say *good reason,* I wish you to understand that the *name* only of the greatest master may not be sufficient reason for you to copy him. If you are asked why you oppose purple to yellow, I hope you will have a much more scientific answer than saying, "Because Vandyke did so." Although it will be proper to caution you against doubting, while you do not possess the science requisite, rather inquire why they did so or so? to obtain the same good reason for copying them, which they had for copying nature to that perfection some few have attained.

To say more on the combination of all the separate parts, or means by which the whole may be best produced, would be *binding* you to that systematic found-

ation on, and from which genius *should rise* with certainty. Look to *Nature* with the eye of *Art*, or you can never hope to imitate her beauties.

P. S. In answer to your query respecting profiles: (I must first remind you, that it is not within the province of my undertaking to treat on matters that depend on taste, and it is with some diffidence that I range out of my sphere). Persons who think their *profile outline* to be irregular, or overmarked, have a great objection to having their portraits thus painted, thinking that a front view may give a more favourable picture, which you must perceive cannot be a true one if the profile projections are not quite as evident in the front view as when you see it in a direct profile: to prove this, study the bust of our noble hero Wellington. What point of view could soften or take off the evidence of his having strong-marked features, if all the parts and articulations of the other forms of the face, as seen in the model, were strictly attended to? You may take it for granted, that the above prejudice against *profiles* originates, and belongs to *black-shade profiles only*; for without the preference due to the antiques, the beautiful profile models of the *present time* will hardly allow one to imagine that any other view of the subject could have been a more advantageous representation; and, for my own judgment, I must declare, I conceive that strong-marked features, *viewed*, and closely imitated *in front*, especially under a proper angle of light and shade, may produce a less pleasing effect than profile, particularly in female faces, in conse-

quence of the *bold shadows* of their projections, while the profile may be so placed, *broad to the light,* as to render the effect as agreeable as the form could possibly admit. However, I only offer my particular opinion on this, as a theme rather than as a law: and if that captivating expression which charms the soul could be as instantaneously portrayed as it is given when directed to the sympathizing feelings of love or friendship, I should give up my arguments for profiles, and all distinguishing remarks on features, and decidedly recommend a preference to taking the whole soul full in front, which conclusion leaves you to cultivate acquaintance with those ideas which will qualify you to judge for yourself on the most advantageous representation of a subject.

Those involuntary expressions of affection which flow from the soul, and convey so much intelligible felicity to the fond parent, the sympathizing friend, and the faithful lover; that energetic vehemence which characterizes valorous actions, that firm and deliberate mind which sustains the arduous senator, the solid look of justice, the depraved hardiness of unconscionable villany, the timorousness of fear, the awkward expression of bashfulness, the lovely and unconscious triumph of innocence, and the various expressions of joy and of sorrow, all will impress the feelings of an acute observer with a deciding and very powerful effect. But as most of the characterizing expressions of the passions are transient, the most happy and well-cultivated genius can only seize *the ideas* of

what is required to be conveyed to the canvass, or wrought out on the marble, and digest them in his mind according to the rudimental information he has acquired. The gradual progress of performing a work of such importance, requires the mutual attention, spirit, and patient perseverance, of both subject and artist, wherever those extraordinary felicities are expected from that effect, which is erroneously imagined to be within the miraculous powers of the artist, by means of a happy *glance,* or a fortunate *touch.*

What danger of error must the self-endeavouring tyro be in, when a friendly adviser, (who is fond enough of works of art, and the endeavours of genius, to insist on the title of a connoisseur) who will tell him "*one happy touch*" will *perfect* the work, and that he has been *so fortunate* as to point out *such* to the completion of a portrait, which had no resemblance before.

Many ask a portrait painter, why he paints with so high and confined a light, and that only from *one* window, or aperture? Its *height* is intended to give a sufficient quantity of shadow, to produce not only a more practical, but powerful effect on the object of study. And why but *one* window? because the integrity of light and shade, is not only more substantial in effect, but much less difficult to imitate. For an experimental proof—set a decanter of water on the table, and study it from a *painter's light,* and the operation would be as simple, and as perfect, as the nature of the object would admit. Then open two or more windows, in addition to the painting window, and try another study from the decanter, and you will find such a multiplication of lights,

shades, and reflections, as to increase the labour proportionate to the number of windows; and after all, it would *only be the picture of the decanter,* with no improvement of effect for your trouble.

Here observe as a *lesson,* that the *depth* of shadow so necessary to the best effect, must be studied with the *nicest attention to nature,* as (perhaps I may say) ninety-nine out of a hundred fail in the advantage offered them by an appropriate situation of their model, through incorrectness of shade and colour, and *that* which should appear one of the greatest merits of their work, becomes the ridicule of the vulgar, as well as a just object of criticism to the connoisseur, who expressing his condemnation in a vein of severe ridicule, compares the dark shadow under a nose to the stain of *black rappee;* this sort of severity may be some punishment to a careless artist, and points out the necessity of attention.

LETTER XIX.

On Miniature Painting.

MADAM,

I SHALL now give you the copies I promised of the two letters I wrote to my much-respected friend, Miss W., on the subject of miniature painting; in which you must submit to some repetition of many points, with which my foregoing communication must have made you thoroughly acquainted. I have sometimes thought of abridging them of what they contain of

matters previously explained; but have concluded that it will be more to the purpose to repeat the whole as originally written, with a design of giving my system as completely as possible.

A very *tolerable* painting in miniature has been produced by an amateur (from an attentive application to the *following letters*) who had *never before* used a *colour*, and in the specimen alluded to, had no other guide than a black and white print; and since the *first* publication of them, I have received many other evidences of the success of my communications on the subject.

LETTER XX.

Instructions on Painting in Miniature, containing much Rudimental Information necessary to General Accomplishment IN THE OTHER DEPARTMENTS OF THE ART.

IN LETTERS TO MISS W.

"MADAM,

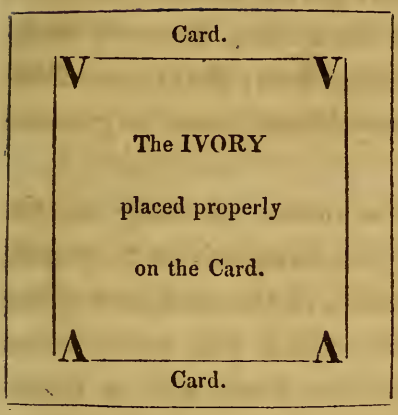
"I CONSIDER it due to your great attention, and the honour you have done me by your improvement, to give you the following general memorandum of the whole process, that you may not be at a loss in any material point, when you will have finished your course of lessons on miniature painting, and can practise without a master.

"The sheet ivory for miniature painting is to be had at most of the water-colour shops, and of ivory turn-

ers: the best for the purpose is clear, free from seams and *white marks* (somewhat like what is called a mackarel sky): they can be had any size within the diameter of an elephant's tooth, seldom more than five or six inches *wide.* It is best to bleach the sheets gradually for a month in the sun; some boil them. They may be brought to a good state to paint on in half an hour by placing them at a small distance from the fire. When a sheet of ivory is sufficiently white, it will become in a certain degree opaque, losing that *oily transparency* which is its natural property. You must then scrape it with a sharp *smooth*-edged knife or scraper, till the saw marks are cleared off, and the surface perfectly smooth. Rub it with cuttle-fish, or very finely-sifted pummis-stone powder, till the polish, produced by scraping, is flattened, and with a large pencil-full of clear water, wash the surface, and wipe it off quickly with a very clean piece of linen or cotton; or rubbing it with very clean India-rubber will answer the same purpose: it is then fit to paint on.* Take great care not to touch the surface afterwards with your fingers, as it might possibly impede the work by rendering the part you touch (perhaps) in some degree greasy. Even the imperceptible perspiration of the cleanest hand must come under this character, and the caution must be strictly observed, for *no other reason* than the one given, although an ill compliment to *such a hand* as I am endeavouring to guide.

* Mr. Vincent, stationer, of Berwick Street, Soho, and ivory merchant, *prepares ivory for miniature painting completely.*

Miniature Painting.



When your ivory is prepared, cut a card about one inch longer and wider, to put it on, which you may fix in a temporary manner, thus:—Lay the ivory even on the card; make a pencil mark at each end of it; and then cut four teeth, or angular points, in the form of a V, at the *corners near the* ends of this pencil mark, quite through the card, pointing inwards, and finishing at the pencil line. Slide the ivory under these four points of the card, and that will hold it secure till you have made your drawing, which should be done on a piece of wove paper the size of the ivory. I generally lay it over the ivory by sliding it under the same teeth which holds it to the card, it is thus secure enough to sketch on.

"If you only wish to draw a bust or head, divide the length of the ivory into three equal parts, and let the length of the head be one of those parts; and to a person of middling stature, place the chin or bottom of the face in the centre: this gives half a head clear above the head, and the length of a head and one-half below, which you will find to fill your ivory very proportionately, being careful to place the chin higher or lower on the drawing, according to the stature of your subject, observing that it *is always* wrong to have the

face too *low down.* One-eight part of the length of the head, either above or below the centre, is nearly sufficient for the tallest or shortest person; that is, one 24th part of your ivory : *discretionary* liberty must be granted in this.

"When you have made a *correct* drawing on the paper, and *completely settled* your composition in pencil, *marked strongly,* raise the corners of the card, and place the drawing under the ivory, which will serve as an outline for your painting, as the ivory will be transparent enough for that purpose. Here you will have an advantage you would not have had, if your first sketch had been made on the ivory—if, by incaution, you may not have begun in the centre, that of moving the paper drawing, to that part of the ivory you may wish.

"To obtain the proper *handling* in miniature, it will be good practice to copy in Indian ink, a few of the *very best* engravings, (after such noble and reputable characters as may be worthy a place in your portfolio) that you may not be perplexed with colours till you can feel your ivory ground; and as soon as that is acquired, you may begin painting *in miniature!* but I should not advise studying from the life, until you have made some copies after good *life-size paintings;* for copying *miniatures* will give you a *little* style, especially as there are very few of much value but what are too highly esteemed by their owners to admit of their being copied, except as to identity of resemblance: and as to the manner of putting *on the paint,* it is only worthy

your attention to know, that it should be done with great care and delicacy, which practice and conviction of *what you have to do* will best produce. It may be proper here to assure you, that there should be but *one* distinction between large and small pictures, namely, "*the difference of their* size;" to prove which I have only to refer you to Mr. Bone's enamels, and *other well-painted miniature copies*, after *large pictures*, are generally superior to any originals of their dimensions: and as far as regards the *size* of a picture, I will ask what small original pictures, "generally considered," are to be compared with the engravings (after some of the largest pictures in the world) by Sir R. Strange, Bartolozzi, Woollett, Sharp, Heath, Cardon, &c. &c. which, *for size*, must be classed with miniatures?—Teniers, Ostade, Wouvermann, Rottenhammer, Wilkie, &c. prove, that the small dimensions of a work ought not to lessen its importance; for a *good* miniature must contain all that a *good* life-size picture should, except *quantity*, which I hope will settle your mind as to *style*, that you may proceed to the *manner* by which a good miniature may be produced—if you can compose and *draw equal to such an undertaking;* for which I hope my eight first Letters have prepared you, for it would be uncandid in me to proceed, without assuring you that all I can teach you, respecting the progress of miniature painting, will not enable you to produce a good picture, in any degree beyond your abilities for *correct drawing*. There is no power in colours that can compensate the defects of *bad drawing;* it must not only

be well drawn, but well characterized; which cannot be accomplished without a competent knowledge of forms and the reasons for light, shades, and reflection, united with a happy taste to arrange the whole to the greatest advantage. It is not expected that these accomplishments will shine out in perfect splendour in your first essays, but they must ever be the ruling principles of your progress. The mind must be bent on perfection; and you must not turn your beginnings off with disgust, continually entering on something new; but studiously and patiently correct and complete whatever you begin, to the very best of your abilities, which must not depend on your BEST WISHES for a *lucky hit;* but *acquired ability,* through elementary application, whereon alone conviction of *certainty* depends. Please to understand, my objection to your making many beginnings, does *not* extend to your *sketch*-book, which may not improperly be classed with the accountant's *waste book,* wherein you should not neglect to sketch any thought, or circumstance, worthy a second consideration. Your sketch-book will be the sincerest critic, if you make candid reflections and observations on its contents; shewing what you can do, and proving wherein you are deficient, thereby directing you in the clearest manner, to which of the elements you should apply for improvement.

"*Now* ADMITTING *you qualified,* use fresh soft water, and the gum water should also be fresh, (about one-eighth part gum, and seven-eights of soft water, is a very good proportion for gum water).

Miniature Painting.

"The finest water-colour cakes you can purchase, may be much improved by re-grinding, for which you should be provided with a glass, or rather porphyry slab, and muller, or levigator. Rub the cake on the slab with *thin* gum water, till you have discharged as much colour from it as you choose; then grind it with the muller for ten minutes, (the strong-bodied paints will require more grinding than the lakes); take the colours off the slab with a pallet-knife, and place them on your pallet in the following order, or any other you may choose to adopt with better reason:

Brown madder lake.	Pink ditto.	Carmine-lake.	Vermilion.	Light red.	Indian red.
Sippia.	Vandyke brown.	Burnt terra de sienna.	Raw ditto.	Gamboge.	Yellow ochre.
Black.	White.	Nap. Yell.	Ultramarine.	Pruss. blue.	Indigo.

"Begin your painting on the *ivory* with the utmost attention to correctness, not entirely relying on the sketch you have behind; but reviewing and improving the whole to a perfect likeness in this new outline, by tender touches and masses of shadow: do not work too wet, but bring the whole forward by *hatching*, (which is making light clear strokes with the pencil, somewhat in the manner of line engraving); and *stippling*, which (is dotting, and) is generally practised most towards the finish of the work. You must never let the pencil *stop* on the ivory, unless you would leave a solid spot of paint, which is seldom required, because all the colour should be more like a tincture, or dye,

than an evidence of substantial paint. This first part is to be *done* with a neutral tint, mixed of Indian red and indigo; but for *flesh,* ultramarine blue, and the madder lakes, will be finer. You may draw and paint with this tint, till the whole of that which you can consider shade is completed, paying very little attention to the local colour or complexion of any part, but aim at the likeness with the effect of a plaister-of-Paris bust; observing, as you proceed, that the reflected parts may have a thin warm tint of yellowish hue: *raw* terra de sienna is a good *general* colour for this. This must be done with the eye to nature, and a hand of caution; and all retiring parts, or those surfaces which are seen in an oblique direction, will be colder than the other parts of the shading; that is to say, bluer, when you have the light side of your subject *towards* you, which is generally the case in portraiture.

"The neutral tint is a retiring colour: take care to use it sparingly and tenderly, recollecting that the local colour, or proper complexion of the part, when added, will decrease the light in a considerable degree.

"In marking the forms of features and muscles, the neutral tint should have more of red than blue, especially the lips; for, if you model them too much with a *cold tint,* you will not recover the coral of the lips; indeed it will be absolutely necessary to observe if, when *modelling,* that is, when you endeavour to express any part of the *formation,* which is the department of light, shade, and reflection, with a colour foreign to the real purpose of colouring: however strong the

likeness may become in expression, through correctness of form, the colouring must be still imperfect. The greatest geniuses for portraiture, being such through a sort of impulsive sympathy, are most liable to the effects of this error: while young in observation, dashing on at the expression, just when it strikes them, without due regard to the colour they are going to use: it is this class of picture that appears better in print than in the original. The nose and ears, being transparent, will, in *some points* of *light*, have their shadows of a deep red: this depends on the circumstances of light and reflection, by which you must also be governed in the hue of your retiring tints.

"As soon as you have produced a good likeness, as to the *model* or dead colouring, begin to cover the whole with the complexion, both lights and shades, proceeding in a careful tender manner, producing that delicate smoothness, and uniting effect, which are requisite in such minute attempts. This may be facilitated by taking care to have the tint you are using, *pale enough* to prevent your touch from appearing a dark speck. You will find light red (which is yellow ochre burnt), pink madder, well-ground good vermilion, and raw terra de sienna, equal to almost all the local complexion you can conceive, when variously applied as your subject dictates.

"In very fair complexions the ultramarine will be found necessary near the inner corners of the eyes, on the sides of the nose, on the temples, and about the mouth, and in all *retiring* parts that are not under the influence of reflection, which will have been attended

to in the modelling, or first process, if my previous directions have been rightly given and received.

"Indian red (when fine) is a very useful and durable colour, but, like vermilion, requires a delicate touch, it being an embodied heavy colour, and should be used with very little gum. Now begin to find your deeper shades with a mixture of Indian red, lake, and Indian ink, attending at the same time to brown or warm shade, and increase the local colour, especially the darkest or deepest, and settle all your high lights by delicate touches of "fine white," as prepared from "Hume's, of Long Acre," and to be had at most of the colour shops, ready for use, like the other cakes of colour. Observe to keep and use this colour very clean, and, indeed, all of them: use the purest water you can obtain, and have a little thin clear gum, rather using it sparingly, as it is liable to injury from damp. I have habituated myself to forward the background and draperies immediately after this *first stage* of the likeness, or subject, is in a *satisfactory* state, which you will understand to be when *the whole appears* tolerably correct as to design, light, and shade, but faint, like a very pale impression of a slightly-coloured print.

"*Backgrounds* should not be indefinite breadths of colour, with no other effect on one's mind than that of *background,* for a portrait will not only appear lonesome, but unnatural, when the background is not some intelligible description of a place or space, suitable, and properly subordinate, to the principal object of the picture. Much consideration is always due to this

point, but it would carry me out of the sphere, within which I presume to be useful, were I to anticipate the province of genius, taste, and judicious observation, by advancing any further information *on this* point.

"When you have completed your design, the ivory may be easily cut to a proper size and shape with scissors, beginning at the sides, and cutting *with* the grain towards the ends; then gum the *back* near enough the edge to prevent it from running under the flesh, as that would give a cold tinge. Place it on a *clean* card the instant it is gummed, and put it between two *very smooth* flat surfaces, in clean paper, under a sufficient weight to press it until it is dry. Professors have a small screw press for the purpose. When your painting is completed, you should fasten it to the glass with goldbeaters' skin, or court-plaister, cut in long slips: the goldbeaters' skin must be used as soon as it is wet, for, when dry again, its adhesive quality is gone. You must lay the skin on a table to wet it, and let it lay just while you place the picture and glass together *quite even,* and holding them close between your thumb and finger, place the edges on the middle of the slip of wet skin, and it will stick to the glass by rolling: make it adhere closely to the glass and picture, and leave it to dry, when the superfluous skin on the glass can be easily scraped away. The glass should always be the width of a down-stroke in writing larger than the picture, that its edge may take the skin.

"Take care, *when painting from the* LIFE, or any absolute model, to have some surface of a proper degree of

shade and colour, *placed* behind as a background, to give the best relief possible to your subject; *some compound tint,* approaching to neutral, is (in my opinion) most suitable; but on this point, *genius* takes a free commission, only observing, that if you paint a background to your picture, *darker* than that which is really opposed to your view, and *then* study the flesh tint from the life, while sitting as first proposed, you are liable to *colour* and *shade* it as much darker than nature, as your *painted* background is darker than the one set up.

"Now, consider how little of any *round object* presents itself full to the light and to your eye, at the same time *that space* is all which will require the pure local colour; and the extreme points of projection in these, will shine in some degree, and approach to whiteness: this is easily produced by scraping the colour off. The true and peculiar form of these lights must be as nicely observed as the shape of any of the features or shadows—under *this consideration,* that perhaps after the picture is finished, a sculptor may be employed to make a model of the same subject; and your picture may happen to be the *only means* he can obtain for that purpose; but a greater reason for correctness should govern your study—*truth* and *excellence* demand your best on all occasions.

"The true brilliancy, or natural effect of colours, depends much on a judicious subordination to that light which illuminates your subject.

"Every gradation to shade is a gradation *from* the purity of colour: this may intimate to you, that car-

mine, and red or yellow lakes, will not be found necessary in those parts; which enables you to ensure a greater certainty of durability in the colouring of your picture, "because the less brilliant colours are much more permanent than those of the lake kind," and often form the tint required.

"I have seen a very natural effect of flesh colour in a miniature, declared (by the painter) to be entirely painted with Indian red, yellow ochre, and indigo only; but yellow ochre does not work pleasant, yet I have experienced that much may be done with those colours, enough indeed to secure a durable vivacity of colour, when the more delicate tints have faded.

A great degree of critical judgment, the most correct taste, and much experience, are required, to determine on *natural colouring*, in true distinction from the showy composition of paints with which some (not ill-drawn) pictures are emblazoned. For, as a finely engraven portrait, if happy in the expression of character, with a toe nicely correspondent with flesh colour, does convey so much satisfaction as some have, with only the simple material black or white. A painter, with the *engraver's eye*, might produce all the engraver's effect with *any* colour, and, with *some* approach to the general tints of flesh, would produce a very satisfactory performance to the *general* judgment, *while those* who have been so happy as to learn the cause of Titian's superiority in colouring, would feel a very contrary opinion, with a conviction that could only be communicated to their equals in the knowledge of the means.

Miniature Painting.

"A speedy way of laying a colour for a dark cloth coat is, to mix white enough with the colour you would use, to make it dry to the lightest part of that colour; as thus, for dark blue mix Prussian blue and Indian red, with white, till it will flow like cream: there must not be any gum in the water with which you dilute those mixtures: lay this over the space you intend for cloth, and it will dry light enough to shade on, with indigo, lake, and Indian ink: (the Indian red is requisite to counteract the coldness of the blue). Blue and white mixed will make a good body colour for blue cloth, if enriched afterwards with a wash of red lake, which must be done with nice dexterity, touching broad, and *but once* in every part, joining each course of the pencil so as to make but one uniform tint. Indigo, Indian red, and yellow ochre, will mix to a good black, which will take some shadow by Indian ink, used without gum-water, and afterwards deepened with gum-water only. But the most genuine way is to *paint* the whole in the transparent manner of painting flesh, for the very important advantage of giving the lightest parts true. Yet many good inferior tints may be produced proper for backgrounds, with indigo, Indian red, and yellow ochre, by mixing them as a *body* colour, and floating them on the ivory, when laid flat, which should remain so till the colour is dry: and, as all body colours dry different to their wet appearance, it is a good precaution to try the tint on a piece of spare ivory, and dry it by the fire.

"Some painters put silver foil behind the ivory to

force a brightness, but the foil is liable to tarnish, and to hurt the effect. Perhaps great care might avoid the tarnishing of the foil: it adds much to the brightness of the colours under which it is placed. *Hume's white,* laid thick on the back of the ivory, over the space occupied by flesh colour, will give great warmth and brightness to the colours, especially if the ivory be thin. Some tint the ivory, behind the parts where white drapery is to appear, with a neutral tint, in order to take off the yellowness of the ivory; but this is not practised by the best painters. Their reason is, that the ivory becomes opaque by time, and shuts out the effect of the colour put behind, leaving the front, in the same degree, meagre for want of it. *Fine* ivory, *properly bleached,* will admit of all the perfection of colouring without any of these contrivances. There must not be any *bits* of paint seen on a miniature; all must be delicate, and as impalpable as possible, enduring the magnifying glass, and improving by the trial; and if you can touch so fine as to make the working imperceptible, so much the better, if you pay due attention to the greater requisites of the work; as smoothness, *merely,* is not a perfection, unless accompanied with the rest. A Birmingham tea-tray has smoothness in the highest degree, produced by varnishing and polishing; yet what pictures do they exhibit? Their manufacturing expedition will not admit of the time requisite to paint a *good picture.*

"Always determine that your present work shall be your very best, and wait patiently and attentively for

the completion of your picture, before you indulge your flatterers with the opportunity of praising you. It is an intoxicating tribute, and should be received with great caution. When application and experience have rendered your essays worthy a genuine compliment, your constitution for praise will be proof against many of its bad effects.

"In the early stage of your picture, do not be over eager to make it look pretty with *colour;* but proceed patiently with your neutral, or modelling tint. This will look cold, till you begin the complexion; but when that is properly added, you will find the neutral tint vanish, and the whole will appear flesh: take care to preserve a coolness in the *retiring* parts, unless reflected on by a warm colour: and even then, the *effect* of retiring can only be produced by the *cool tint.*

"You may touch broad and general in the first, shading to gain your masses speedily; but rather lean to the careful style, and freedom will arrive, in its proper time, as far as it is possible in this minute sort of work; for you must never expect to perform a HIGHLY-FINISHED picture speedily. The only possible means of gaining time, is to learn what *you have to do:* with this sort of forecast much time may be gained. Breadths of colour, of any considerable degree of depth, may be laid on ivory, in the same broad manner that you would observe in laying the various shades in an India-ink drawing on paper; but you must never retouch a *wet* part, for that would draw off the colour just laid, so as to give you much unnecessary labour in the finishing;

but when you can decide on the general effect with some certainty, you may obtain it (I may say) *rapidly* by a judicious observation of method: this it is that enables an accomplished artist to surprise, by those rich and instantaneous effects, which *impatient* amateurs *wish* to display *without submitting to the study of all that supports such effects;* namely, GOOD DRAWING; with *true taste, which, however innate,* can never be displayed to advantage without thorough accomplishment by practice.

"Habituate yourself to look enough at your subject, to learn to a certainty that your next touch will improve your work; and draw *what* you *see,* and *as* you see it, or what you *know* to be, may deceive you. For instance, you know the top of a wine-glass to be a circle; yet it generally stands in a point of view to appear an oval; but this belongs to the science of perspective, which should be clearly understood before you can expect certain *success* in *any* department of painting. When you have made yourself thoroughly acquainted with the methods I have given, and can practise accordingly, I shall see by your performance wherein either the tutor or pupil is deficient, and will make my remarks thereon the subject of another letter; and remain,

"Madam,

"Your obedient servant."

LETTER XX.

Miniature Painting concluded.

" MADAM,

" I EXPECTED the neutral tint would not meet your entire approval at first, as it is very difficult for a young practitioner to look on a fine complexion, &c. without being drawn off from the consideration of a colourless form; but if you can persevere in preserving the three distinct properties in your subject separately (if only in idea), your work will proceed systematically; *perfectly comprehending*, first, that a *true* outline *must be obtained;* and, secondly, that mere *lights and shades are not local colours*; and, thirdly, that *the local colour*, with due observation of *shining* and reflections, *must* be general *in both light and shade,* I have no objection to your *carrying all on together;* but, in my humble opinion, it is to be compared with a young musician attempting to play three parts at once.

" The most perfect method of oil painting, or using colours embodied to their various tints with white, is to determine as nearly as possible *that each touch of the pencil shall give the full effect of the part it covers, with no more blending than just to unite them to a natural effect, all rather lighter than the finishing depth;* which finishing is to be performed with transparent tinctures of the various colours, without white, which, in oil painting, is termed " *glazing*." Now this *transparent* system is the *whole* system of miniature painting, and so well

admits of progression, that *form, shade,* and *colour,* may best be done separately.

"Your queries about the colours of reflections on flesh, are very pleasing proofs to me, that you think on what you do; and the vast variety, on which the truths of reflection depend, admits only of a general conclusion, in answer. You have already been told that reflected parts are, in general, warm or yellowish; and that retiring parts are generally cold or blueish: these two would produce a tint of a greenish hue, but that they will *compound with the complexion,* and a certain degree of shade; which, like all other triple compounds, become to a certain degree neutralized; therefore, from the many circumstances which may occur to vary any given rule,—reason, practice, and observation of nature, must be your guide. *These are the parts of a picture* which depend much on the harmonizing power of the eye. *Genius* must here find proof from reason, as no effect can be relied on, where the cause is not clearly understood to exist, and rest on a better origin than either fancy, or (uninvestigated) examples: yet rather follow *well-recommended* example, than doubt or object, while your own judgment is immature, and (with study) the knowledge of the cause may unfold itself to your satisfaction as you proceed. That kind of faculty is necessary to success, in the department of fine and harmonious colouring of shadows reflected on, which is either natural or acquired in a musician who is master of the VIOLIN; *taste* and *practice* enable him to stop, or finger the strings, in tune—whereas, on a piano-forte,

that faculty is fully provided by the maker and tuner of the instrument: and although that shaded colour, which is accompanied with any reflection, cannot be faithfully represented, without the assistance of the *three primitive colours,* the whole consideration of *natural colouring* might be lost by mixing them, although the "*engraver's effects*" might still be preserved. Look at nature, and you never conceive *black,* except as a local colour: study *shade,* abstractedly, and no thought of colour will impress your ideas. Now, to unite these opposite conclusions to practical advantage, you have only to consider the property of each colour, to apply them separately to produce a natural effect, such as the works of Rubens exemplify as the artificial path, and the best practical one I can suggest to the NATURAL of TITIAN. Even a study from white marble, or any other white object, requires the above considerations, where natural effect of colouring is presumed; because the reflection of colours from surrounding objects, compounds with the simplicity of the white object, so that the plain light and shade, which, to a superficial observer, is all that can be required, would only produce a print effect, and not unite with the other colourings of the picture, if well done.

"I observe that you leave the shading of the globe of the eye, or that part which *is* white, too much so, and unfinished: you must consider how small a portion of absolute white would be found on any white globe; and when you attend to the overshadowed situation of an eye, by the thickness of the eye-lid, and the additional

shadow caused by the eye-lash, you will find it impossible to have any real white in a well-painted eye, except the glittering reflection of the light, which will seldom be no more than one speck, which must be placed with the utmost attention to the original.

"In answer to your question, How must I paint white drapery? I can assure you there will be a very small portion of *white paint:* you must form the whole by tender, delicate shading, with a cool neutral tint; and the whiter you bleach your ivory the better, both for this, as well as all other colours. The reflection tint, and also the retiring, must be used in white drapery; and when all is nearly formed, touch the edges of a hem, or the points of lace, the highest lights on the shoulders and breasts, with fine white; which, if done according to your model, will produce a true effect of white drapery. Need I say, heighten the lights on pearls with one speck each of the fine white, and the glittering of diamonds, gold, silver, or satin; tinting them afterwards to their peculiar keeping with a thin touch of suitable *transparent* colour.

"To paint hair well is very easy, when compared with the judgment requisite in the drawing and composition of it. This is one of the great tests of true taste: the colours to be used in hair can only be dictated by its local colour, observing that hair is transparent and glossy; all the masses of light will be cold; the absolute shades will be tempered with the colour of the hair in a very small degree; the less absolute shades will have more hair colour; and the parts which neither

shine nor are in shadow, will be the colour of the hair. It is the transparent property of hair, to present more of its colour when loose and relieved by some light-coloured surface behind it, while *lighted* on the side it is viewed, than when platted close or laid smooth to the head ; for then the lights will be cold and glossy. These are the best directions I can offer for a general rule ; but you must study these matters according to the circumstances of light, shade, reflection, and their own peculiarities. The local colours which commonly occur in hair, are, burnt umber, Vandyke brown, and seppia, with various gradations of Indian ink, brown madder, and indigo, as shade ; but reflection will so affect any glossy matter, that all must be ascertained by the accompanying circumstances. Whenever you find the united effect of form, substance, and colour, too much for your practical comprehension at once, return to your systematic clue, securing the forms first, then the substantial appearance by shading, and finally the colours and reflections ; each separately, according to the directions in Letters X. and XVII.

" It is not very good practice for a young student to work on the flesh in the absence of the subject ; but this must be regulated by your own confidence in what you know may be safely and truly done, to forward the picture ; for instance, where time is an object, you may have attained all your drawing and shading by a bold, broad, and open touch. In such a case, an *experienced* artist would sit down to his work, and proceed to fill

up all the spaces, uniting all to one agreeable state, with the colour or shading suited to each part, preparing his picture well for the next visit.

"You wish to know *how long a* good miniature ought to be on hand—I cannot give you any direct answer; but must say, it is a question that no painter ought to ask: for such is the *delicate nature* of the work, and too often of a well-employed painter's *nerves,* to find time to gain that air and exercise which are requisite to an independent tone of mind. All is anxiety and endeavour in the art itself; and when the hurry and impatience of his employer are added to this, it may very probably overthrow the success of the work. It is advisable to employ an artist you approve, and then give up all command to him; the ultimate result will always answer this proceeding. *Patience, perseverance,* and sufficient ability, will complete a picture in *proper time.* You must make up your mind to this fact; that *painting well,* as it is one of the most rational and delightful amusements, will always remain one of the most difficult: it may, perhaps, in this respect, be classed with such wonderful feats as *dancing on a rope,* or standing on a horse's back when in full speed, or the like, requiring extraordinary exertion both to attain and practise with success. *Ambition of excellence, necessity,* or a *natural impulse,* must be the stimulus: I hope the first and last of these you possess. Had I been writing to a gentleman, I might have observed, that they are two excellent spurs to Pegasus, and should conclude that a bridle would also be requisite to re-

strain your muse to a regular pace. If what has been communicated may be the means of rendering your journey towards Parnassus more easy and certain than it otherwise would have been, it will give me the utmost satisfaction, and I shall ever remain,

"Madam,

"Your obliged, obedient servant."

LETTER XXI.

On Crayons, Oils, and other Materials.

MADAM,

I SHOULD endeavour to comply with your demand on the art of painting in crayons, had not the late Mr. Russel superseded the best I could say on that subject, by the publication of a complete treatise; not only of the art of using, but also of making crayons, to which I think it best to refer you.

My practice in crayons has been chiefly on very small portraits, and effects of evening scenes, generally on vellum. I shall not withhold from you the methods I have found to answer, as far as my experience in this mode of painting has qualified me; but by no means would I be understood to offer it in lieu of the work to which I have referred you.

My first care is to get good materials. *The Swiss crayons* are (in general) the most pure. The vellum

must have a soft velvet-like nap, or smooth roughness, on the *outside* the skin, sufficient to hold the colour: this must be strained tight, by tacking on a straining frame, on which should previously be pasted a piece of stout *white* drawing-paper. If it be possible, strain the vellum in damp weather, or lay it cleanly covered in a damp place the night before you strain; then the surface will always be smooth, for vellum strained in a very dry state, as in summer, will relax in damp weather and become uneven. When the vellum is strained, set it in the sun, or at a distance from the fire, to harden; then, with an elastic cane, or the like, beat it well, to discharge all the whitening which the manufacturers leave in it: this makes it take the colours more plentifully, and gives the dark ones their full force.

Stout, but fine, wove drawing-paper, tightly strained on a frame, or drawing-board, rubbed with a fine pumice-stone, will take crayons well for large subjects. Care must be taken to discharge all the powder of the pumice-stone from the paper; after which, spunge it well with a very clean damp sponge, and let it dry for use.

I first draw my subject as correctly as I can with charcoal; touching very tenderly: for if used too freely, *vellum* will retain too much of it. When the drawing is sufficiently marked, I flap off as much of the charcoal as I can, and there will still remain a very visible sketch: I then begin the painting, by covering all the darkest masses with the darkest tints; using *as little of the crayon* as *possible*, and driving or spreading it with a

leather stump, leaving no more paint on the part than sufficient to stain or tint it (nearly) to the proper depth and colour; bearing in mind all my elementary laws, respecting the proper effect as to light, shade, and colouring; and covering the whole vellum in this manner, as quickly as the nature of the study will allow, to obtain a general idea of what the picture is to be. Thus, having overcome the whiteness of the vellum, I proceed to study the portrait, using (if a small picture) a neat-pointed, hard-rolled paper stump; preserving the lights broad and untouched, and marking the shades deep, but very spare of crayon; thus I proceed till all is *tinctured,* rather than *covered* with paint; taking care to keep the parts full as deep in the shades as can be required at the finish, and the lights as *bright* and *pure* as possible, never suffering a light tint to cover a part which must ultimately be a shade, as that would produce a chalky effect. In these small pictures, I can *mark* much of the drawing (with a passable effect of truth as to colour) with the hard native black and red chalks. [There is a good deep black composition, called Conti chalk, very useful in its proper place.] I now begin to touch with the crayons, sufficiently with regard to quantity, to cover the whole of the flesh as near to nature as I can.

I then carefully blend or soften them together with my finger, pressing a little, to fix the colour firmly in the vellum.

The stump must now be laid aside, as it rubs off the colour. Take care that the whole is just covered with

paint in the lights, *and as sparingly as will cover* in the shade: as it is a great accomplishment in crayon painting, to arrive at the true effect without a superabundance of colour.

If a wrong colour be laid, it can be scraped off very safely without injuring the vellum; but *paper must not* be scraped, but a hole may be cut in a piece of writing paper, the shape of the place you would clean; laying it correctly over the part, whether on paper or vellum, and by rubbing it with crumb of bread, the colours will be discharged.

When blending the colours, observe that the dark tints will rise through the light ones; and, on the contrary, the light tints will weaken, and always render the colour of shades *chalky;* but this may be all turned to advantage by much practice, and more reflection, so as to ascertain the desired *effect,* as both may be required under some circumstances.

A *red tint* of the *pink* class will clear any dirty part of flesh that is not of the red class; a tint of a light-greenish cast will *take down* red in reflected parts, but must seldom touch the full lights of flesh: (the *best way* is, to *discharge* the wrong colour, and use a right one in its stead.) If you regard the durability of your picture, paint with such colours as are strongest in their original natural state: ochres, umbers, and earths, both raw and burnt, are of this description, and agree best with the whitening with which the gradations of tints *should be* made up. *Fine genuine lamp-black* is the only black that should be used in crayons.

Crayon Painting.

The best white for the general mixture with *all the colours,* is the *flake,* or uppermost strata of the whitening, when it is in pulp, in large quantities, at the manufactory, ready for moulding, because all the gross and heavy matter has precipitated towards the bottom.

Some think they procure this flake by dissolving a few lumps of whitening: but it is inferior; because, after all, it is only the flake of an inferior strata. *The pure first flake of the whole* is worthy the trouble of applying for at the manufactory. *Hume's white* might be used for *entire white,* and some of the finest tints of the three principal colours may be embodied with it.

The late Mr. Morland (father to the great genius of that name) made the very best crayons I ever possessed.

Sufficient grinding of all the colours is an important object. They may be made up with various glutinous liquids, diluted. Skim milk, small beer-wort, and common gin, are the three generally used: the clearness of gin suits the light tints. Mr. Morland used gin, as the best of the three, for the purpose. Beer-wort will do well enough for all the darker tints; (*I* use skim milk only.) Practice and experiment are *wanting* in this department, which I leave to the ingenious and industrious, under the assistance of the treatise recommended.

Provided you make no more use of the following expedient than just to ascertain the best manner of first laying on the crayons, you may depend on its great efficacy. I find this caution, as apology, proper; because the examples I shall propose, although *(manufactured)* from the works of eminent artists, are far below

that perfection, as pictures, which is wisely recommended for the proper formation of the best style, and are as much inferior to ultimate excellence as the rough *foundation* stones of a pedestal are to that out of which the statue should be formed; from which I argue, that the proposed subject for imitation being intended as a sort of *foundation* only, on which future excellence may find a certain support, I shall forthwith venture to shock the lofty taste of those who scorn progression; and, if I may so describe my ideas, "*are always jumping at the pinnacle.*"

Paper printed in colours, for the hanging or ornament of rooms, is printed with a sufficient number of blocks, so ingeniously matched, as to complete a certain effect; each block performing its part by an impression of one of the several colours required in the pattern: by which means as perfect a representation as this ingenious association of the several separate tints can produce, is obtained. (Look at some good paper-hangings attentively, and you will the better comprehend the instruction.) There are some productions of this sort, particularly of *ripe fruit, flowers, &c.* (broad bordering) of so good an effect, that I have proved them to be an excellent *first* key to *using* crayons; because each tint, in *such specimens,* has its *distinct* shape, and can be easily matched in a *full* set; which, with the softening property of crayons, may be finely blended together with the finger, so as to produce at least a very finished and pleasing effect, even more like the *original* design than the paper-hanging, which you may study

after. By copying some of these with tolerable mechanical precision, and having learnt therefrom how to arrange the first lays of colour, you will have finished the foundation, and must proceed to the finest specimens of painting, and of nature, to complete your system.

With regard to painting in oil, I shall say little more than refer you to the only book I think adapted to give an idea of the systematic use of the materials—"*Bardwell's Art of Painting in Oil Colours,*" which is sold at Laurie and Whittle's, Fleet-street, (price 1s. 6d.) will give any one a very pure and proper method, who *begins* with his instruction. I know systems of this sort are under the prejudice of those who have previously habituated themselves to other modes; but so far as the choice of materials, the preparation and arrangement of them for the pallet, and the application of them to the canvass; it may be safely adopted in preference to the practice of those whose works would have been a *lasting* ornament of the art, had their methods and materials been better understood.

An old experienced artist (whose works are sufficient evidences of the truth of his testimony) assured me, that spirits of turpentine mixed with a very small portion of good nut oil was the only vehicle he made use of in painting; which, when finished, had a dry calcarious appearance; but when varnished with *mastic* varnish, all came forth with excellent effect, and would *neither crack* nor *change colour,* except from the slow but certain power of *time,* on all similar materials.

A method discovered by Mr. Cornelius Varley, (pa-

tentee of the Graphic Telescope) for preparing the resin called *gum* copal, as a vehicle to supersede the use of oil, in painting, is now made public.

A composition for painting, in imitation of the ANCIENT GRECIAN MANNER, IS EXPLAINED by *additional* communications in the 25th vol. 1817, of the Society for encouraging ARTS, MANUFACTURES, and COMMERCE; as discovered and successfully practised by Mrs. Hooker, of Rollingdean, near Brighton, formerly Miss EMMA JANE GREENLAND, and first published in the 10th vol. of the Society's Transactions, for the year 1792. The whole is also published in the "New Family Receipt Book," London, 1811, page 318. This method precludes the use of oils and *turpentine* varnishes, and is therefore (if only in this particular) finely adapted for amateurs of delicate constitutions. The process is simple and wholesome, and appears to possess all the fineness of oil paint.—C. H.

The regular sizes of canvasses, and their technical names, are as follow: for which I am obliged to Mr. Brown, Primed Cloth Manufacturer and Colourman to Artists, 163, High Holborn.

	Measures.				
	ft.	*in.*		*ft.*	*in.*
A whole length	7	10	long by	4	10 wide.
A bishop's half length . .	4	8	—	3	8
Common half length . . .	4	2	—	3	4

Sizes of Canvass and Papers.

	ft.	in.		ft.	in.
Small half length . . .	3	4	long by	2	10½
Kit-cat	3	0	—	2	4
Three-quarter size . . .	2	6	—	2	1
Head size	2	0	—	1	8
Two smaller sizes . .	1	9	—	1	5
	1	5½	—	1	2

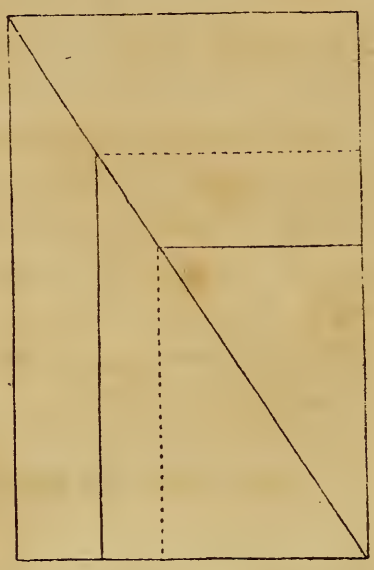
Landscapes have no settled dimensions, but are often painted on the "*given sizes,*" placing them on their sides instead of upright, as for portraits; thus, on asking the size of a landscape, a painter would answer, "It is a whole-length size, landscape way," which, you are to understand to measure in length and width according to the measure given under the head "*whole length.*"

SIZES OF DRAWING-PAPER.

	Inches.		
Demy	20	by	15
Medium	22	—	17
Royal	24	—	19
Super Royal	27	—	19
Imperial	30	—	21
Columbier	34	—	23
Atlas	33	—	26
Double Elephant	40	—	26
Antiquarian	52	—	31
Extra Large ditto	56	—	38

Whenever you would make a small copy of a picture, divide the original by whole numbers, so that the copy

may measure exactly one-half, one-third, fourth, fifth, sixth, seventh, or eighth, &c., part of the original, both in height and width; that the proportions may be the more easily compared.



But should it be required to copy some particular length or width, the proportion to the original may be perfectly obtained, by drawing a diagonal *right line* on the original, with a piece of fine twine, or thread, from one corner at the top, to the opposite corner at the bottom; then set up the given length from the bottom, parallel to the side, or width from the side, parallel to the end, till either touches the diagonal, and from *that* point the corresponding width or length will be truly determined.

THE END.

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