

OF THE

LEGISLATIVE

AND EXECUTIVE

DEPARTMENT

OF THE

STATE OF

NEW YORK

FOR THE YEAR

1860

AS PASSED BY THE SENATE

AND THE ASSEMBLY

AND BY THE GOVERNOR

AND BY THE

DESCRIPTION  
OF THE  
CAMERA LUCIDA,  
AN INSTRUMENT  
FOR DRAWING IN TRUE PERSPECTIVE,  
AND FOR  
COPYING, REDUCING, OR ENLARGING  
OTHER DRAWINGS.

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TO WHICH IS ADDED, BY PERMISSION,  
A LETTER ON THE USE OF THE CAMERA, BY  
CAPT. BASIL HALL, R.N., F.R.S.

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SOLD BY  
G. DOLLOND, OPTICIAN TO HIS MAJESTY,  
59, ST. PAUL'S CHURCH YARD, LONDON,  
WHO WAS THE SOLE MANUFACTURER OF THIS INSTRUMENT TO THE  
PATENTEE, THE LATE  
DR. W. H. WOLLASTON.

THE HISTORY OF THE  
CITY OF LONDON

BY  
WILLIAM COCKER

LONDON:  
PRINTED BY C. WHITTINGHAM, TOOKS COURT.

IN THE  
YEAR 1791



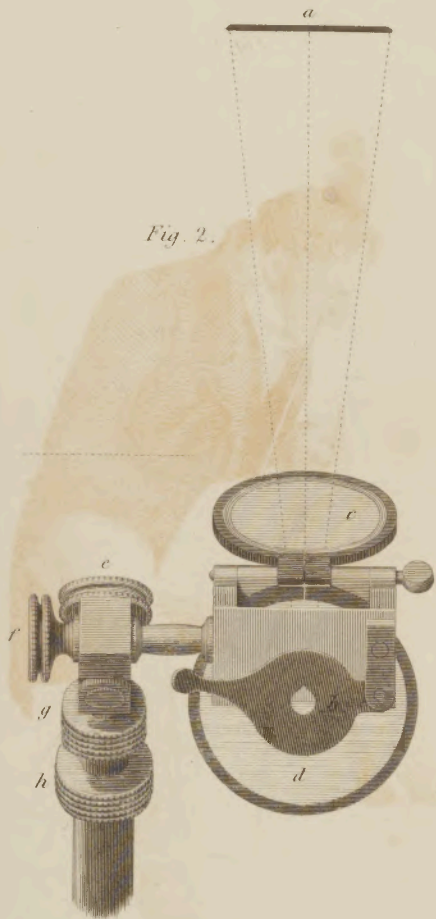


Fig. 2.

LC



Fig. 1.

Drawn by C. Varley for G. Dolland, with the Camera Lucida.

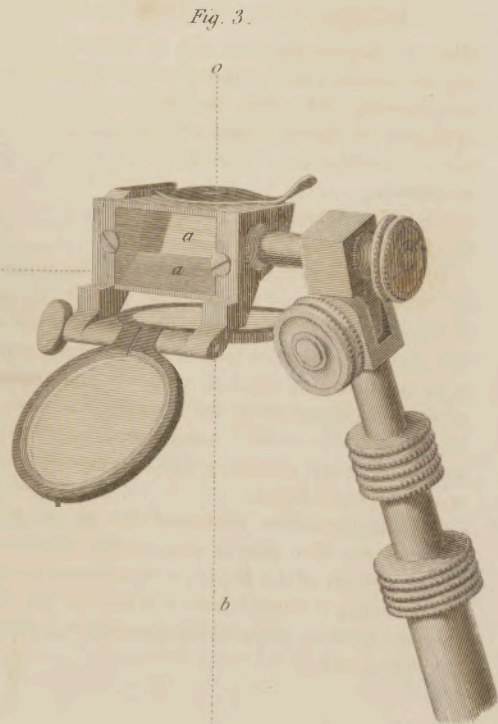


Fig. 3.

Engraved by G. Gladwin,  
8, Charles Street, Somers Town.

## THE CAMERA LUCIDA,

*An Instrument for Drawing in true Perspective,  
and for Copying, Reducing, or Enlarging other  
Drawings.*

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### REFERENCES TO THE PLATES.

FIG. 1, Represents a person in the act of drawing, with some parts of the Portable Apparatus that is generally sold with the Instrument, properly arranged for taking views of the surrounding scenery, buildings, &c. The object he is supposed to be drawing, cannot be shown, as it is directly in his front. The Apparatus is frequently varied to meet the wishes of the Purchaser.

FIG. 2, Is a perpendicular view of the upper face of the Instrument of the full size, showing the place of the object *a*, which is to be copied, also the eye-hole *b*, the glasses for long or short sighted persons, *c*, *d*, the fastening screws, *e*, *f*, *g*, *h*, and the whole of the arrangements of the Camera, excepting the Clamp and tubes, which are shown in use in Fig. 1, and being very simple, a full description of them would be superfluous.

FIG. 3, Is another representation of the Instrument of the full size in perspective, showing the face and form of the Prism, with the attached parts for fastening it when in use, *o* being the position of the eye, looking downwards towards the paper, in the direction *b*.

### DIRECTIONS FOR ARRANGING AND USING THE INSTRUMENT.

THE Instrument being fixed by the Clamp to the Table, Drawing-board, Sketch-book, or any other mode of Placing the Paper to be drawn upon, that may be considered convenient; and the tubes which support the Prism drawn out to the length that may be the best adapted to the size of the drawing required, and the upper part of the Prism, *b*, Fig. 2, placed directly over the middle of, and parallel to the Paper, with the face, *a*, Fig. 3, towards the object to be copied. It may be proper here to remark, that the distance at which the Prism is placed from the Paper, to the distance from the object, will determine the proportion of the drawing. For instance, if the upper face of the Prism *b*, Fig. 2, is at one foot from the Paper, or Drawing-board, and the object to be copied at two feet from the same point, the drawing will be one-half the size of the original. If the distances are equal, the drawing will be the same size as the original, and upon the same principle, the relative sizes may be varied at pleasure. When it is required to take a view of the distant scenery, the sliding tubes should be drawn out to their greatest extent, if it be wished that the drawing may be upon the largest scale that the Instrument will allow.

Having so far arranged the Camera, place the eye at *O*, Fig. 3, and looking downwards along the line *O, b*, the pencil will be seen upon the paper; at the same time the object to be drawn, will also be seen apparently upon the paper; it being transferred to the eye by the two reflecting surfaces of the Prism, *a, a*, Fig. 3. The eye-hole, *b*, Fig. 2, must now be placed more or less over the edge of the Prism, until the light from the object to be drawn is equal



to the light upon the pencil. When the eye-hole is so far arranged, a little practice will enable the draughtsman, by a trifling motion of the eye, on or off the edge of the Prism, to divide the light equally between the pencil, and the different shades of light that are transmitted from the object to be drawn. This part of the operation is of very great importance, as the ease with which the object is seen as well as the pencil, will render the Instrument more or less comfortable in use. Some persons reject the eye-hole altogether, and trust to the position of the eye alone.

The Glasses, *c, d*, Fig. 2, are intended to assist that proportion of the eye which is directed either to the object or the pencil. *The principles of the Instrument depending upon an equal division of the eye.* It therefore becomes very requisite that the eye should be accommodated to distinct vision upon both pencil and object. If the object and the pencil are both at the same distance from the eye, these glasses are useless, but if the distances vary considerably, then it becomes requisite to assist that proportion of the eye which is the least suited to the distance. For instance, if the object is at a considerable distance from the eye, and the eye of short focal length, it will require the glass, *c*, to be placed between the object and the Prism; on the contrary, if the distance of the object is suited to a long sight, the glass, *d*, must be turned underneath the Prism. These glasses may be varied in their focal length, according with the focal length of the eye, and the varieties of distances at which the eye is to be accommodated. Persons, whose flexibility of eye is considerable, can use the Instrument without these glasses, but they are recommended as giving greater ease even to those persons.

Having so far arranged the Instrument, it must now be corrected for Parallax. This is effected by a trifling alteration in the distance of the prism to the paper by drawing out or shortening the length of the sliding tubes, until the point of the pencil will remain steadily upon that point in the object which is to be drawn. This is to be ascertained by a slight motion of the eye laterally.

The preceding arrangements having been attended to, and the use of each part of the Instrument understood, it will now be requisite for the draughtsman to observe, if every part of the object to be drawn is equally well seen, that is, if the upper part be as distinct as the lower; if not, the Prism must be turned upon the pin, *f*, until they are. To obtain this equality, and also to know if the Camera is properly placed, a little practice will be required. It is recommended as a good method for obtaining this knowledge, to place a picture, book, or any square object, directly before the Camera, and then placing the Prism in various inclinations, and sketching the outline to find the proper position, this will be effected when the outline is exactly similar to the picture or book.

The principal points which require particular attention in the use of the Camera Lucida are, the placing of the Prism so that the face, *a*, Fig. 3, may be parallel to the object to be drawn;—to have the Drawing-board so placed, that it may be as nearly horizontal as possible;—to adjust the eye-hole, and eye-glasses, so as to see the object and pencil equally distinct;—to arrange every part of the Camera, and to screw all tight, before commencing the drawing, that there may not be any necessity to disturb it afterwards.

## LETTER

FROM CAPT. BASIL HALL, R. N.

TO MR. GEORGE DOLLOND.

4, *St. James' Place.* London, 22d May, 1830.

MY DEAR SIR,

I HAVE read your description of the Camera Lucida, and the directions for its use, with attention, and have only one or two remarks to add, which, if you think them calculated to assist any one desirous of using this admirable instrument, you are at full liberty to print.

I may observe, in the first place, that the Camera, though possessed of great powers, has no means of supplying taste, or industry to persons, who by nature are destitute of these gifts—neither will it enable people, who are totally ignorant of the use of the pencil, whatever be their talents, to make good drawings, without very considerable practice. I mention this because I have seen many beginners so much disappointed with the result of the first few trials, that they have thrown the instrument aside, when, by a moderate degree of perseverance, they might certainly have attained a moderate proficiency in representing the objects before them.

The Camera, properly used, enables us to conquer three of the most tormenting difficulties in drawing, viz. Form, Proportion, Perspective; and if we superadd a reasonable degree of patience, and that degree of what is called handling, which practice alone can give, we may expect that the sketches

made with it will give as true representations of nature as any amateur, or perhaps even any artist ought to aim at in a sketch.

I recommend all persons using the Camera to fix it on a stand, capable of being varied in its height, such as that you have lately made for me, in which the case for holding the instrument, when opened, serves the purpose of a table, and where the legs, and other contrivances are so arranged that the sketch book may at once be placed in a horizontal position, whatever be the inequality of the ground. I advise you, also, to make the instrument with a double joint at the bottom of the stalk, by which the prism can be placed over any part of the paper with more ease than by the other methods. An apparatus to retain the stalk in its place, at any angle of inclination, is likewise very useful.

It will be found, after a little experience, better, in many respects, and far less fatiguing, to keep both eyes open when this instrument is used, and I think the little black piece of metal, containing what is called the eye-hole, should be entirely discarded. It is detrimental to an agreeable or proper use of the Camera, and is only useful in explaining the principle by which the position of the eye is regulated. If the eye-hole be moved, so as to be entirely over the upper face of the prism, the object to be drawn will be seen with the greatest distinctness, but the pencil will not be visible at all. If, on the other hand, this eye-piece be drawn back, so that no part of the hole remains over the prism, the object will not be visible, but the pencil will be seen with the greatest distinctness. It is between these

two positions that the eye ought to be placed ; and if every part of the object to be drawn, were of the same degree of brilliancy, or its details of equal distinctness, then one position of the eye-hole might be found, with which the whole sketch might be made. But as there is generally a great variety of lights and shades on the surface of every object, the eye-hole requires to be shifted backwards or forwards, according as a brilliant, or an indistinct part of the object is looked at. It is far better, however, to let this adjustment in the position of the eye, be regulated at the moment, by the person who is sketching, by merely advancing or withdrawing it, as occasion requires. After a little practice, the facility of making this adjustment of the eye, without the eye-hole, is so great, that the object and the pencil come to be seen with the required degree of distinctness, as it were instinctively, or without effort on the part of the draughtsman.

Care should be taken, after the instrument is prepared for drawing, that all the screws be turned so firmly that nothing may be moved after the sketch has been commenced. In sketching, I have found it most agreeable to use a uniform scale. For landscapes, I generally pull the upper tube out till the letter *D*, engraved upon it, becomes visible ; and, for the human figure, I think about ten feet distance the most manageable ; in this case, the number 10 should be brought just in sight. It is well in sketching the human figure, or any other object, to place it so that all its parts may be at nearly the same distance from the Camera. For example, if the person to be drawn be seated in a chair, his side

should be turned to the sketcher; for if his feet be turned towards the instrument, they will be considerably nearer to it than his head is, and this, at so short a distance as ten feet, would produce distortion in the drawing.

Beginners ought certainly to sketch with the instrument so adjusted, that when the eye is moved from side to side, the object shall not appear to move away from the pencil. When a greater degree of familiarity is acquired with the use of the instrument, this nicety is not absolutely necessary, though it is always pleasant: I endeavour to regulate matters in such a way, as to position, scale, and distance, that there shall be little or no parallax, as this shifting of the object is called.

Most people who have hitherto used the Camera, have not been in the habit of shading with it; but I can see no reason why shadows, as well as shades, whether well or ill defined, should not be as effectually represented by means of the Camera, as the outlines of objects are. In practice I have generally found it best to draw all the shades first, and then to add the outlines. If the contrary plan be used, as in ordinary drawing, the outline is apt to be obliterated by the shading. In sketching with the Camera, as there is no difficulty or doubt as to the correctness of the outline, it is not absolutely necessary to begin with it, as in ordinary drawing, and I conceive this change in the order, of shade and outline, one of the great advantages of the instrument. The same principle may be applied to shading with Indian ink, or to colouring either with oils or with water colours, as I have seen practised by some

artists, with great advantage. When water colours are used to sketch with, the lights and shades may be first washed in, and the outlines added with a pen afterwards, an operation at once easy and effective.

It ought to be a rule strictly adhered to by all sketchers with the Camera, never to touch those drawings done with it, after the instrument is removed. There is a truth, and what is called a feeling of accuracy about the work performed in this way, which, any after touches, however skilful, are sure to injure. It is easy, with the assistance of the Instrument, to make a copy of what has been done, but the original sketches done on the spot, ought on no account to be meddled with.

There is an idea in some people's minds that there is less merit attaching to a sketch made with the Camera, than to one made in the ordinary way, and they are apt to feel a sort of humiliation when borrowing instrumental assistance. It mortifies them to think, that so much previous labour should have been thrown away in learning what is now done to their hand, almost without effort.

But a little reflection will show, that the wish to gain credit for making sketches, is, or ought to be, altogether subordinate to the wish to represent natural objects correctly. And there is little fear that any amount of diligence or talents, however aided by previous instruction in drawing, will be able, even with the help of the Camera, to come up to nature—and so long as this point is not reached, no sketcher has any reason to complain that his task is so easy that it is unworthy of him.

But the fact is, that it is to those persons in parti-

cular, who have learned to draw, and to whom the difficulties of representing objects in just perspective are the most familiar, that the Camera is the most likely to be useful; while, to those who have not previously taken any lessons in drawing, it will afford the readiest, and by far the most encouraging means of attaining that degree of proficiency in the art, which renders sketching agreeable to the draughtsman himself, and instructive to those who have not the means of seeing what he has been so fortunate as to witness.

I am, therefore, decidedly of opinion that drawing masters, instead of discouraging the use of this instrument, would best consult their own interests, and the pleasure, as well as the advantage of their pupils, and, through them, of the public, if they would exert themselves to bring the Camera into more general use. We should then see young persons employing themselves in making sketches, which should, at all events, have the merit of being accurate as far as they went; and those frigid caricatures of nature, which now disgust us almost every time we open an Album, would soon be discarded for something more true to good taste.

I have only to add, that I have generally found it best when drawing the human figure, or in sketching landscapes, to use a soft pencil in preference to a hard one. That marked HB, of Brookman and Langdon, is perhaps the hardest that ought to be used for outline, while for shading, that marked BB, or even a still softer pencil is preferable. I have frequently observed, that the quicker a sketch is done with the Camera, the more effective it gene-



rally is—and with a soft pencil this is more easy than with a hard one. Where every line or touch is sure to be in its true place, an attention to details is not necessary in order to produce the effect. I should, therefore, recommend sketchers to avoid minute particulars, and, having first thrown down on the paper all the largest and most conspicuous shades, to touch in the sharpest outlines, as well as those bits of shade which are deepest, without much regard to the actual form of the objects themselves. In this way the sketch will convey, upon the whole, a more correct idea to the mind of another person, than if twice the pains had been taken to render all its parts rigidly correct.

For architectural drawings, or for mere outlines of landscapes, a harder pencil, and more care, are of course necessary.

I remain, my Dear Sir,

Most truly yours,

BASIL HALL.

P.S. I send you a copy of a set of etchings lately published. They are done from sketches, which I made with the Camera Lucida, in North America, and will serve to show you what the instrument is capable of performing, under circumstances by no means advantageous. To prove to you, however, that the Engraver has taken no liberties with the originals, I send you one or two of the sketches, exactly as they were drawn on the spot.

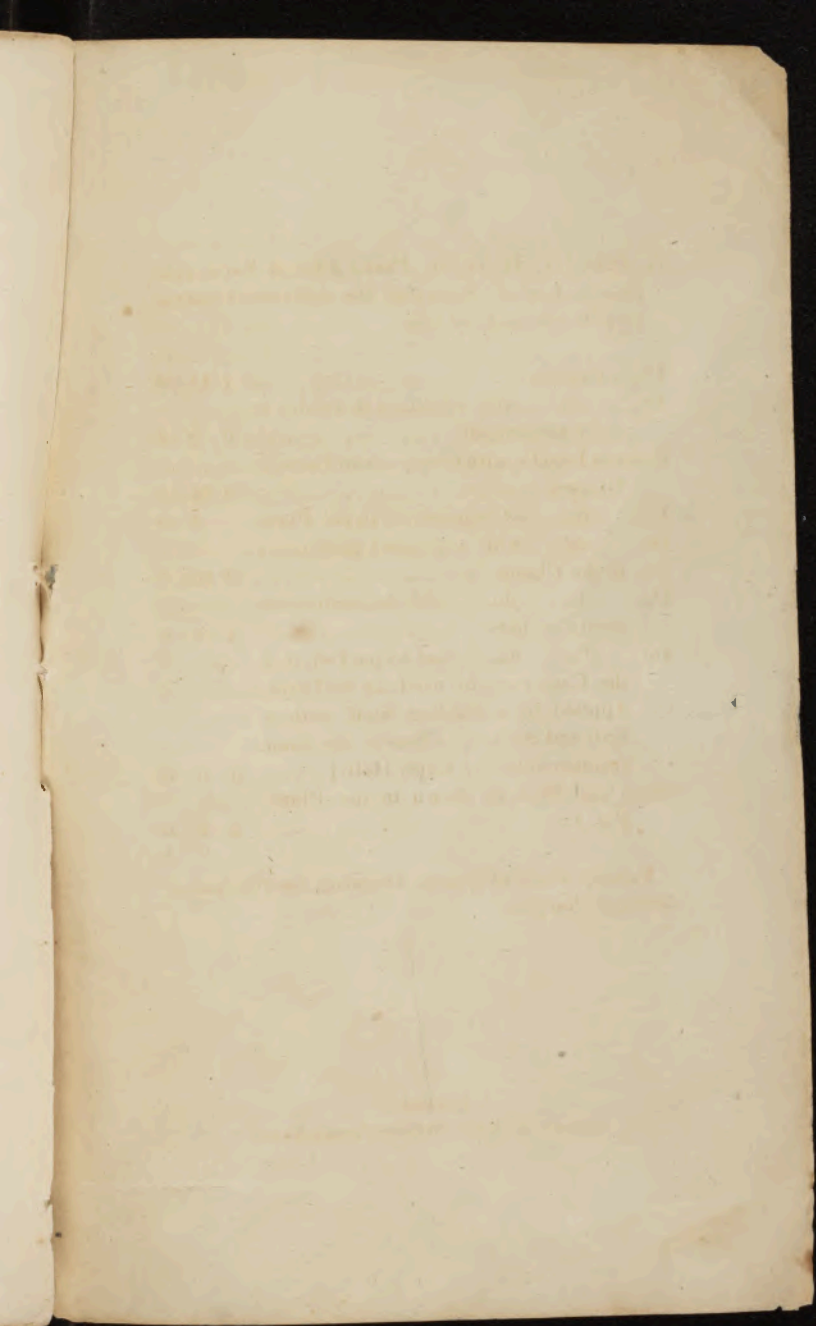
*G. DOLLOND, 59, St. Paul's Church Yard, sub-joins a List of Prices of the different Cameras and Stands made by him.*

Plain Camera . . . . .	1	11	6
Do. do. with additions to render it more convenient . . . . .	2	2	0
Camera Lucida, with Concave and Convex Glasses . . . . .	2	12	6
Do. do. as represented in the Plate	3	3	0
Do. do. with a general movement to the Clamp . . . . .	3	10	0
Do. do. do. with the addition of steadying bars . . . . .	4	4	0
Do. do. do. and so packed, that the Case may be used as a Table. Applied to a Folding Staff, with a Ball and Socket. [This is the kind recommended by Capt. Hall.] . . .	6	6	0
Stand and Seat, as shown in the Plate, Fig. 1. . . . .	2	2	0

Various kinds of Stands, Drawing Boards, &c. at different charges.

LONDON :

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