

40TH THOUSAND.

SIXPENCE.



HOW TO BE A

— SUCCESSFUL —

Amateur
Photographer,

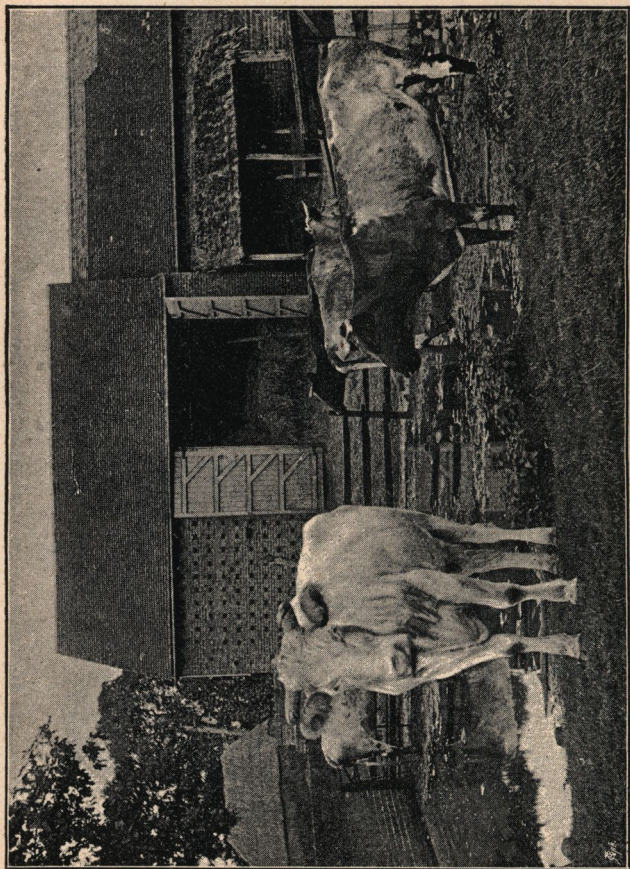


— BY —

W. J. Lancaster, F.C.S.

J. LANCASTER & SON,
OPTICIANS,
BIRMINGHAM.





THE FARM YARD.

By an Amateur Photographer. Taken with Instantograph.

1890

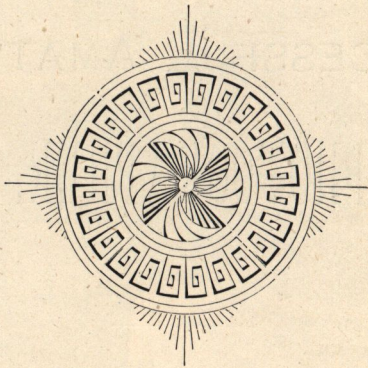
+ + HOW TO BE + +

❧ A ❧

SUCCESSFUL AMATEUR
PHOTOGRAPHER.

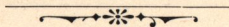
❧ BY ❧

W. J. LANCASTER, F.C.S.

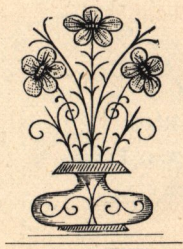




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HOW TO BE A

Successful

Amateur Photographer

BY

W. J. LANCASTER, F.C.S., etc.



THE FORMER EDITIONS of this Brochure have been so rapidly taken up by the continually increasing army of Amateur Photographers, that one feels, in presenting this, the *40th thousand*, to the public, considerable gratification and pleasure; the more so, because one has received so many expressions of thanks for the simplicity of the language used, and for the directness and completeness of the information contained in its pages. The present issue is more complete and extensive than the former editions, and I trust will be as useful, profitable, and helpful to the reader as the former issues have been. My desire has been, and is now, to initiate the reader into the study of that Art (than which there is none more fascinating,) which stores images of faces and

places, and leaves nothing but pleasant memories of delightful excursions or happy picnics. The Amateur Photographer is now met with in every part of the world. The Norwegian, revelling among the grandeur of fjord and mountain scenery ; the Muscovite, in the wilds of Siberia ; the Swiss, in his mountain, lake, and glacial surroundings ; the Dutch, among his dykes and windmills ; the stolid German in his Fatherland ; the Italian, with his fairy lakes and gorgeous sky, all vie with each other in the production of amateur work of the highest attainable quality. The never-beaten Englishman, the humorous Irishman, and the keen Scotchman all delight in unravelling the secrets of Amateur Photography, and one might recount the names of almost every nationality in the world, and say that here and there are bands—countless bands of Amateur Photographers.

The Amateur Photographer is now, in many instances, able to run on a level with the ablest Professional. He has placed in his hands Lenses and apparatus equal to the very best money can purchase, at most moderate prices, but one thing he cannot purchase, and without it he will never succeed, and that is METHOD ; without method he will be a novice, a neophyte, a tyro ; with method and cleanliness he will rise to the true meaning of "Amateur"—one well skilled in the Art he has studied. It is not my intention to devote any space to the history of

Photography, nor to the reason why such and such an effect should be due to such and such a cause ; my whole idea is to lay this most fascinating art within the reach of the humblest student, and my words will be strictly to the point, and entirely divested of any literary padding. Now then, follow me, and shortly we shall have fulfilled our title without the usual poring through an immense amount of literary matter, after all of but little value. The first question we must decide is the **SIZE AND KIND OF APPARATUS** we intend to use, and as there are so many sizes and varieties, it will be perhaps best that we should at once make ourselves acquainted with them.



CHAPTER I.

Apparatus and How to Select it.

BEFORE we purchase our Apparatus, it will be quite necessary to make ourselves acquainted with the terms, Quarter Plate, Half Plate, Full Plate, Carte, Cabinet, and so on, and a table to which we can refer will assist us. *The following are the sizes of plates—*

- $3\frac{1}{4} \times 3\frac{1}{4}$... For Lantern Transparencies.
- $4\frac{1}{4} \times 3\frac{1}{4}$... QUARTER PLATE FOR CARTES.
- 5×4 ... A Size used more in America than here.
- $6\frac{1}{2} \times 4\frac{3}{4}$... HALF PLATE FOR CABINETS.
- $7\frac{1}{2} \times 5$... For views between Cabinet and Full Plate.
- $8\frac{1}{2} \times 6\frac{1}{2}$... FULL PLATE for large views, groups, &c.
- $10 \times 8, 12 \times 10, 15 \times 12, 18 \times 16, 30 \times 24, \&c.$

Having carefully gone through this list, and remembering that with each of the larger sizes we can use *Carriers for any of the smaller sizes*, we will examine each of the different kinds of apparatus presented to us before making a final decision; it is well not to be too hasty in deciding which apparatus we intend having, the lower priced ones may not be cheaper than the higher priced ones, but if our means are limited, we shall then have to select among a few only, and while the only safe course is to rigidly keep within our income, still, where a pound or so makes no material difference to us, the better way is to spend it, not on a lot of accessories, but on a better apparatus, with which we shall be able to do work of a higher class than with the low priced sets.

We shall find that a Cabinet size is about the handiest, best, and most convenient apparatus we can use. There are so many facilities for making enlargements from small negatives, that we may, in the majority of cases, make up our mind to begin with nothing larger or smaller than a Cabinet or Half Plate Camera: as we become proficient, we shall never regret taking this course.

To recapitulate briefly we shall find that in the selection of a Photographic Apparatus two things have to be considered; first, the size picture we desire to obtain, and secondly, how much we intend to spend.

The $\frac{1}{4}$ -Plate is very handy to carry, most compact, and with a good lens will do charming Photographs.

The $\frac{1}{2}$ -Plate or Cabinet is a very nice size, and pictures produced with this size apparatus contain a lot more appreciable detail than $\frac{1}{4}$ -plate.

The $\frac{1}{1}$ -Plate is an excellent size for Landscapes, Groups, Architectural Subjects, &c., &c.

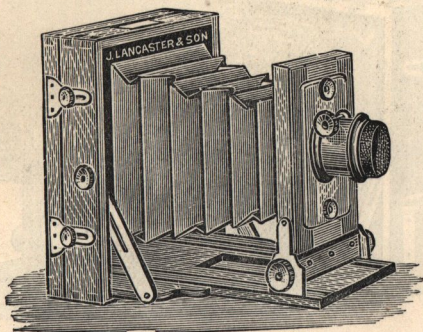
Now as to Cost.—If we can only spend

- £1 1. We have $\frac{1}{4}$ LE MERVEILLEUX and BOY'S OWN SET.
- £2 2. $\frac{1}{2}$ MERVEILLEUX, $\frac{1}{4}$ INSTANTOGRAPH. SNAP SHOT CAMERA, $\frac{1}{4}$ LADIES' CAMERA, LANTERN SLIDE CAMERA and STEREO-MERVEILLEUX.
- £3 3. $\frac{1}{4}$ MERVEILLEUX, $\frac{1}{2}$ MERITOIRE, $\frac{1}{2}$ LADIES' & STEREO-MERITOIRE.
- £4 4. $\frac{1}{2}$ INSTANTOGRAPH, $\frac{1}{4}$ COMPLETE INSTANTOGRAPH OUTFIT, STEREO-INSTANTOGRAPH, etc.
- £5 0. $\frac{1}{2}$ BRASS-BOUND INSTANTOGRAPH, $\frac{1}{2}$ INTERNATIONAL, $\frac{1}{4}$ SPECIAL or EXTRA-SPECIAL, with Rectigraph Lens, $\frac{1}{2}$ LADIES' COMPLETE SET.
- £6 6 $\frac{1}{4}$ MERITOIRE and SET, $\frac{1}{4}$ INSTANTOGRAPH, $\frac{1}{4}$ AMATEUR'S COMPLETE OUTFIT.
- £10 10. $\frac{1}{4}$ INSTANTOGRAPH COMPLETE OUTFIT, $\frac{1}{4}$ SPECIAL or EXTRA SPECIAL with Rectigraph Lens, etc.
- £20. 12 x 10 INSTANTOGRAPH COMPLETE SET, 12 x 10 EXTRA SPECIAL SETS, etc., etc.

THE SECOND APPARATUS,
A MOST EXCELLENT ONE FOR A BEGINNER, IS

The 1890 "Le Meritoire."

(PATENT).



THE Camera has Double Swing Back, and may be readily swung all ways, vertical, horizontal, and corner swing being obtained. The Slide reverses in an instant from vertical to horizontal. The Stand belonging to LE MERITOIRE has a brass top and brass clips.

The Swing Back is most essential when the Camera is required for Architectural Work, and also the rising fronts are indispensable for the same kind of work, in fact, it is impossible to get true architectural lines unless we have both the Swing Back and Rising Front.

EACH SET CONSISTS OF CAMERA, SLIDE, LENS, AND STAND.

$\frac{1}{4}$, 31/6 ; $\frac{1}{2}$, 63/- ; $\frac{3}{4}$, 90/- ; 10×8, 120/- ; 12×10, 150/-

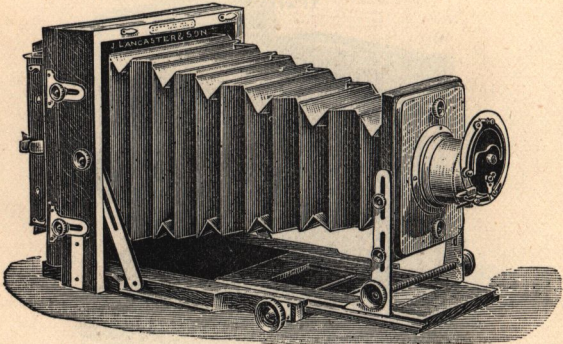
Carriers same prices as page 12.

THE 1890 LE MERITOIRE

is an excellent Apparatus for a beginner. It has a very good Lens in Rackwork Mount, which covers the plate, clean and crisp, from corner to corner.

NOW WE COME TO AN APPARATUS
WHICH HAS BEEN THE MOST SUCCESSFUL EVER INTRODUCED,
OVER 21,000 HAVING BEEN SOLD
SINCE ITS INTRODUCTION.

The 1890 "Instantograph." (PATENT).



WILL TAKE VERTICAL AND HORIZONTAL PHOTOS.

THIS Apparatus is useful for all kinds of work ; Instantaneous pictures of moving objects, Portraits, Groups, Landscapes, Architectural and Engineering Subjects, etc. The Lens is of a most rapid type, and has a patent Instantaneous Shutter working with the greatest rapidity, also our patent Adjustable Diaphragms, showing at a glance the precise aperture by a divided scale, and the relative times of exposure with different apertures. The Camera is beautifully made, and folds up into the smallest compass possible. The Tail Board opens out of Camera, and the Lens Front slides out and clamps. Fine Adjustment is obtained by Rackwork. The bellows in THE INSTANTOGRAPH are made of leather, and the whole apparatus, of which over 21,000 have been sold, is pronounced the *sine qua non* of the Amateur Photographer. The Stand is of polished mahogany with a brass top.

EACH SET CONSISTS OF CAMERA, SLIDE, LENS, AND STAND.

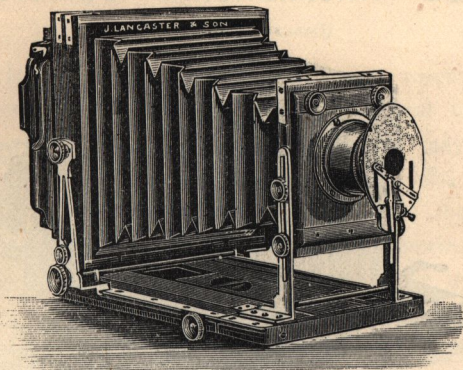
$\frac{1}{4}$, 42/- ; $\frac{1}{2}$, 84/- ; $\frac{1}{1}$, 126/- ; 10 x 8, 168/- ; 12 x 10, 210/-

Ditto, ditto, with Patent Rectigraph Lens and See-Saw Shutter
in place of Instantaneous Lens,

$\frac{1}{4}$, £3 4 6 ; $\frac{1}{2}$, £6 1 6 ; $\frac{1}{1}$, £8 13 6 ; 10 x 8, £11 5 6 ;
12 x 10, £14 5 0.

Carriers same prices as on page 12.

—•— THE 1890 —•—
Special Brass-Bound Instantograph.
 (PATENT).



THE 1890 SPECIAL BRASS-BOUND INSTANTOGRAPH is a new Camera, made to meet the wishes of a large number of Amateurs who have asked for a high class Camera, Brass-Bound, with Double Swing, and having a Tail Board to fold over and protect focussing glass when packed for carrying.

The SPECIAL BRASS-BOUND INSTANTOGRAPH fulfils all these conditions, and is a combination of the 1890 International and Instantograph. The Camera is of the Kinnear form and has a longer focus than ordinary Instantograph; it has Double Swing, Rising and Cross Fronts, Rack Adjustment, &c.

Best Instantaneous Lens with patent Diaphragms and Lancaster's New patent See-Saw Shutter, giving exposure of any length, and dispensing altogether with leather caps.

CAMERA, LENS, SLIDE, AND STAND,

$\frac{1}{4}$, £2 10 0 ; $\frac{1}{2}$, £5 0 0 ; $\frac{1}{1}$, £7 10 0 ; 10×8, £9 9 0 ;
 12×10, £11 11 0 ; 15×12, £13 13 0 .

Ditto, ditto, with Rectigraph Lens and See-Saw Shutter in place of Instantaneous Lens,

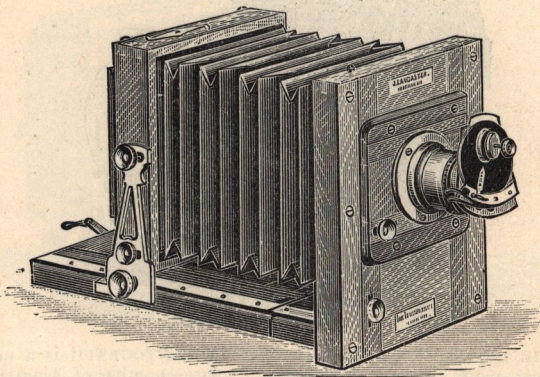
$\frac{1}{4}$, £3 12 6 ; $\frac{1}{2}$, £3 17 6 ; $\frac{1}{1}$, £9 17 6 ; 10×8, £12 6 6 ;
 12×10, £15 6 0 .

— Carriers—see page 12. —

· · † THE † · · ·

1890 "International" Camera.

(LANCASTER'S PATENT).



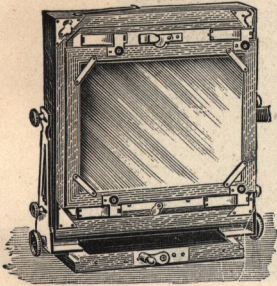
THIS Camera has given universal satisfaction, and is one of the very best Cameras made. It contains all the modern improvements, and packs up without any portion being removed or unscrewed. The Lens is an Instantaneous one of the latest formulæ, and has Lancaster's Patent Elliptical or Instantaneous Shutter and Patent Diaphragms, giving any aperture that may be required, and showing at a glance the diameter of stop, ratio of aperture to focus, and speed of same. The Stand is of a new kind, being a modification of Lancaster's Patent Girder Stand. The same Camera can be fitted with the Rectigraph Lens and new Shutter.

EACH SET CONSISTS OF CAMERA, SLIDE, LENS, AND STAND.

$\frac{1}{4}$, 50/- ; $\frac{1}{2}$, 100/- ; $\frac{1}{1}$, 150/- ; 10 × 8, 189/- ;
 12 × 10, 231/-

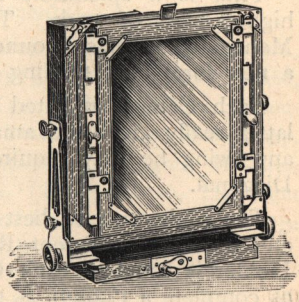
—❧ International Camera. ❧—

THE back of INTERNATIONAL Camera resembles the Instantograph and Special Cameras, and is so



made that slides may be put in and out easily, and the back may be moved from vertical to horizontal in a moment. The upper woodcut represents the back arranged for HORIZONTAL photo, then, to alter it to VERTICAL, as bottom wood-

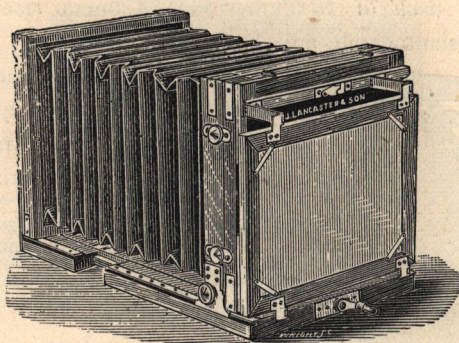
cut, all that is required is to lift two catches, one at each side at the top, when back will spring out easily, and being square, will fit in the other way. The INTERNATIONAL CAMERA has Screw Adjustment, and quick adjustment by screw brass clamps working on brass strips.



The Camera is very strong and portable, and one of the most convenient Cameras an Amateur can possess.

FIRST QUALITY APPARATUS.

The 1886 Special Camera.



LANCASTER'S PATENT.

THIS is a splendidly made Camera, fit for the highest class of work. The Camera is of the best Mahogany, is brass bound, has leather bellows, and a new form of extending tail board.

Each Camera is fitted with double Swing. The latter really gives the amateur the power of getting any swing he may require: Vertical, Horizontal, or Diagonal.

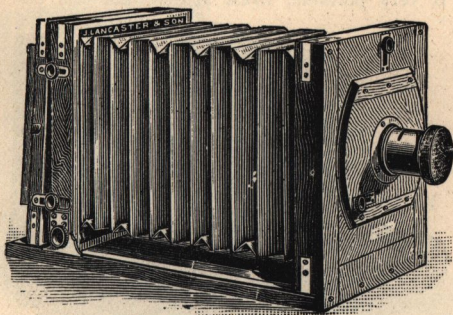
The Slides are of best quality and Brass Bound, and Lancaster's Patent Reversing Frame and Slide Holder is fitted to each Camera, making altogether, as complete a Camera as the most advanced Amateur could desire.

CAMERA AND SLIDE ONLY.

$\frac{1}{4}$, 50/- ; $\frac{1}{2}$, 80/- ; 1, 100/-

LANCASTER'S

Special Patent Sets,

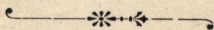


SPECIAL 1886 SETS.

FIRST QUALITY COMPLETE SETS

— INCLUDING —

LANCASTER'S PATENT CAMERA, Double Swing, &c., &c., three Brass Bound Double Dry Slides, best Camera Stand, Rectigraph Lens, best Leather Case for Camera, Lens, Instantaneous Shutter and three Slides, Lancaster's Patent Ruby Lamp, three Ebonite Dishes, Plates, Scales and Weights, Measures, Vignette Glass, Printing Frame, Cutting Shapes, Light-tight Plate Box, Compound Focuser, Sensitised Paper, and large Stock of Chemicals in Stoppered Bottles, &c., &c.

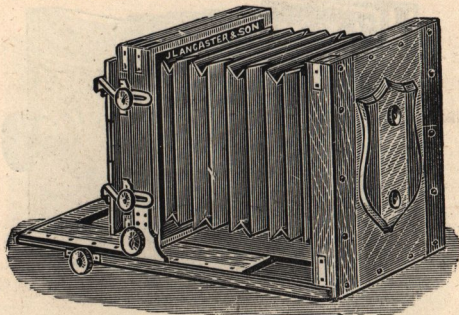


$\frac{1}{4}$, £8 8 0; $\frac{1}{2}$, £12 12 0; $\frac{3}{4}$, £16 16 0;
10×8, £21 0 0; 12×10, £25 0 0.

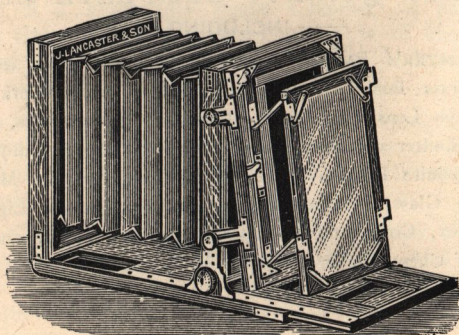
Improved Special 1886 Camera.

(PATENT).

THIS Camera has an inner Sliding Tail Board for Double Extension, Rack Adjustment, Patent Universal Front. The Camera is very portable, Brass Bound, and has best Leather



Bellows, Reversing Back, Double Swing; the Focussing Slide moves in a lateral direction. The Camera is a most compact, light, and portable one.



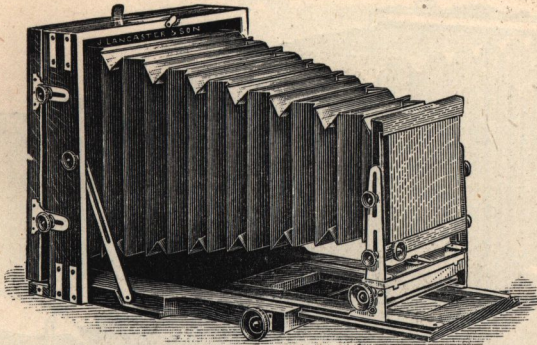
EVERY RECENT IMPROVEMENT.

— CAMERA AND SLIDE ONLY. —

$\frac{1}{4}$, 50/-; $\frac{1}{2}$, 80/-; $\frac{1}{1}$, 100/-; 10 x 8, 120/-; 12 x 10, 140/-

FIRST QUALITY APPARATUS

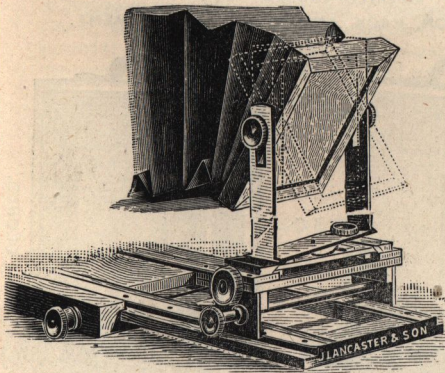
The Special 1890 Patent Camera.



THIS Camera is of the best quality, brass bound, leather bellows, fine rack adjustment to front carrier, with every possible motion, rising front, angular motions, both vertical and horizontal, double swing back, reversing frame with

lateral hinges, the whole folding up without the removal of a single part, and forming the most portable and compact Camera in the market.

This Camera is especially suitable for good and continuous work, and for hot climates. It has given very great satisfaction to all who have used it, and will no doubt take the place of the high priced Cameras in the market, none of which are so complete, nor are they any better in their workmanship.



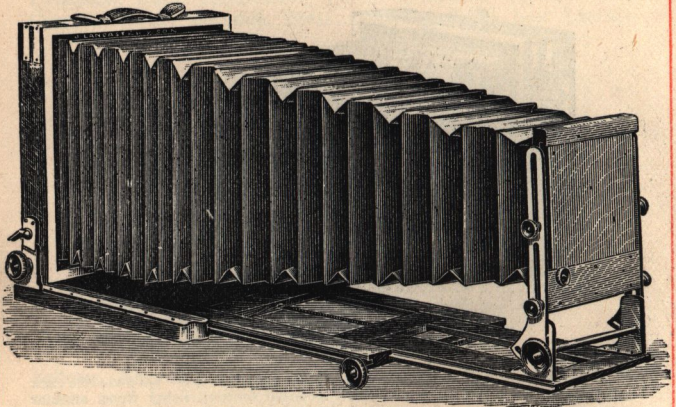
CAMERA AND SLIDE.

4, 50/- 1/2, 80/- ; 1, 105/- ; 10 x 8, 130/- ; 12 x 10, 150/-

Lancaster's 1890 Extra Special Camera.

(PATENT.)

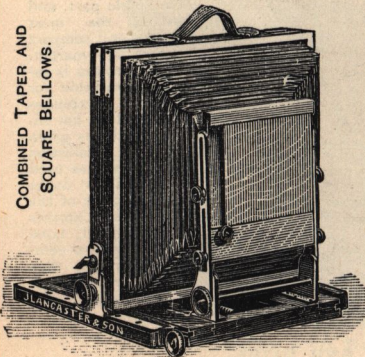
THIS is a magnificent Camera, having every motion, and extending fifty per cent more than any other Camera in the market.



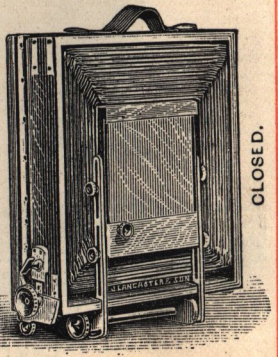
A PERFECT CAMERA.

TRIPLE EXTENSION, RACK AND SCREW ADJUSTMENT.

COMBINED TAPER AND SQUARE BELLOWS.

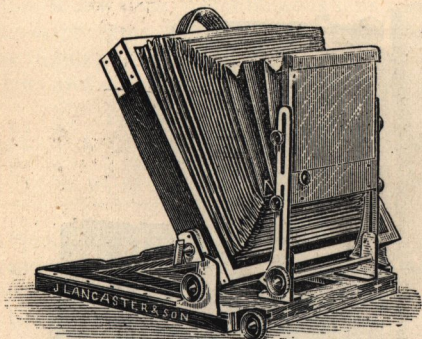


CLOSED.



FOR SHORT FOCUS LENS.

. . . LANCASTER'S . . .
1890 Extra Special Camera.
 (PATENT.)



THESE CAMERAS ARE THE LIGHTEST, LONGEST, AND MOST COMPACT
 IN THE MARKET.

THE EXTRA SPECIAL opens out to three times the length of plate, and closes to about two inches. It has Rack and Screw Adjustment, the rack adjustment commencing when Camera is closed, and racks out to double extension, then the Screw Adjustment extends Camera to triple extension, giving fifty per cent more extension than any other Camera extant.

**DOUBLE SWING BACK, SWING FRONT, NO HINGES,
 FOCUSING GLASS PROTECTED, &c.
 CAMERA AND DOUBLE DRY SLIDE.**

¼, £2 10 0; ½, £4 0 0; ¾, £5 5 0; 10×8, £6 10 0;
 12×10, £7 10 0; 15×12, £8 15 0

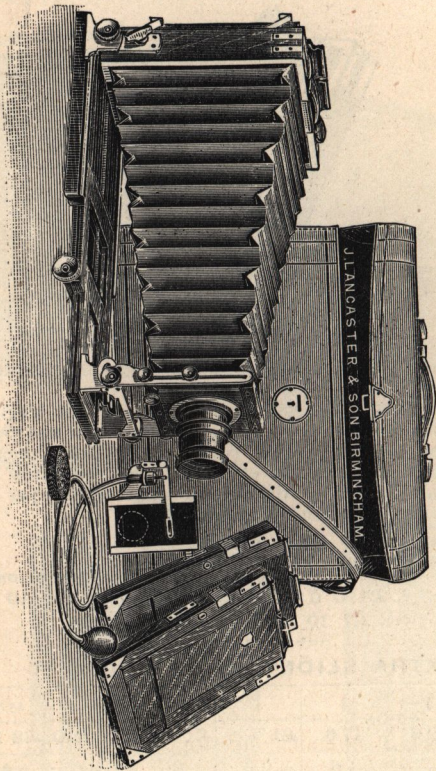
EXTRA SLIDES. BRASS BOUND.

	¼	½	¾	10×8	12×10	15×12
Double Dry	12/6	17/6	£1 5 0	£1 10 0	£2 2 0	£2 10 0
Carriers . .		1/6	2/6	3/-	3/6	4/-

This Camera can be used with the shortest focus Wide Angle Lens, and will extend sufficiently far to be used even as an Enlarging Camera.

IT HAS GIVEN UNIVERSAL SATISFACTION.

First Quality Sets.



First Quality Sets.

LANCASTER'S EXTRA SPECIAL PATENT CAMERA, brass bound, double dry slide, instantaneous lens with patent adjustable diaphragms, instantaneous shutter, and best mahogany folding stand, leather-bound case to carry camera, lens and slide, &c.

$\frac{1}{4}$ Ex. S. A.	$\frac{1}{2}$ Ex. S. A.	$\frac{1}{1}$ Ex. S. A.	10 × 8 Ex. S. A.	12 × 10 Ex. S. A.	15 × 12 Ex. S. A.
£4 4 0	£6 6 0	£8 8 0	£10 10 0	£12 12 0	£14 14 0

LANCASTER'S PATENT CAMERA, &c., &c., as above, but having Rectigraph Lens and Lancaster's Patent See-Saw Shutter in place of instantaneous lens and shutter. This is a perfect camera and lens.

$\frac{1}{4}$ Ex. S. B.	$\frac{1}{2}$ Ex. S. B.	$\frac{1}{1}$ Ex. S. B.	10 × 8 Ex. S. B.	12 × 10 Ex. S. B.	15 × 12 Ex. S. B.
£5 5 0	£7 17 6	£10 5 0	£12 15 0	£15 0 0	£18 0 0

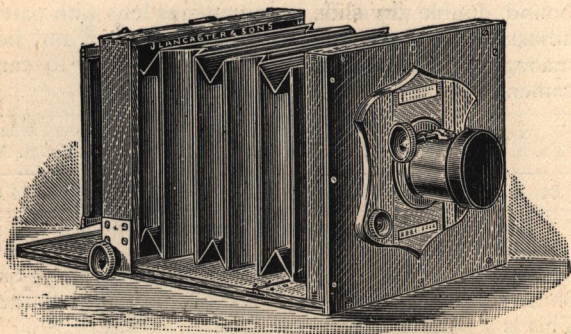
First Quality Complete Sets,

INCLUDING—

LANCASTER'S EXTRA SPECIAL PATENT CAMERA, three brass-bound double dry slides, best camera stand, rectigraph lens, best leather case for camera, lens, instantaneous shutter and three slides, Lancaster's patent ruby lamp, three ebonite dishes, plates, scales and weights, measures, vignette glass, printing frame, cutting shapes, light-tight plate box, compound focusser, sensitised paper, and large stock of chemicals in stoppered bottles, &c.

$\frac{1}{4}$ Ex. S. C.	$\frac{1}{2}$ Ex. S. C.	$\frac{1}{1}$ Ex. S. C.	10 × 8 Ex. S. C.	12 × 10 Ex. S. C.	15 × 12 Ex. S. C.
£8 8 0	£12 12 0	£16 16 0	£21 0 0	£25 0 0	£30 0 0

The Ladies' Camera.



VERY LIGHT AND COMPACT. NO LOOSE PARTS AND EASILY USED.

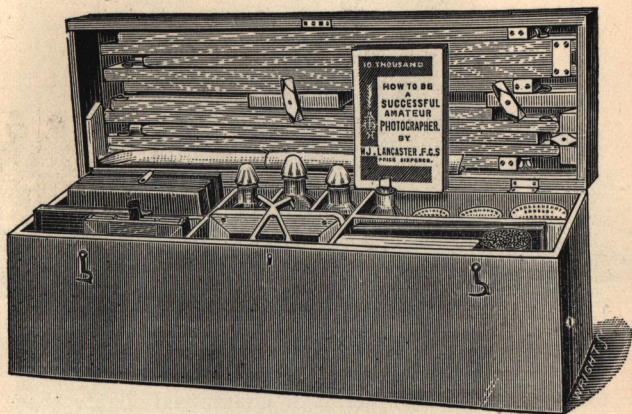
THIS Apparatus has been especially designed for Ladies. It is entirely free from complications, and although strong, yet it is extremely light and portable.

The Apparatus consists of an excellent portable Camera of polished mahogany, with folding tail board, rising front, &c., best lens for portraits, groups, and views, triple folding stand, &c., &c., making the most portable and complete apparatus a lady can possibly have.

CAMERA, SLIDE, LENS AND STAND.

$\frac{1}{4}$ plate, 35/-; $\frac{1}{2}$ plate, 60/-; $\frac{3}{4}$ plate, 85/-.

The Ladies' Camera Sets.

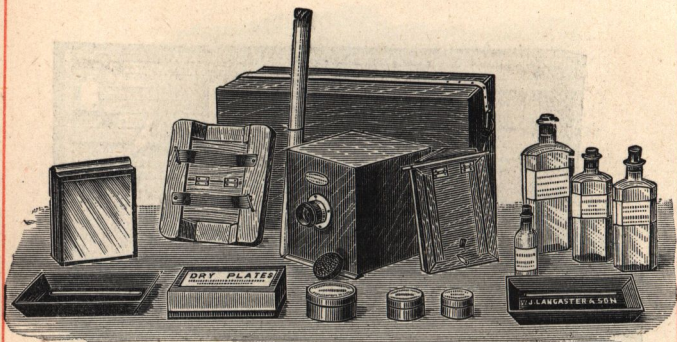


THESE Sets are designed especially for the use of Ladies. They contain all requisites for negatives and prints, and book of instruction. The Camera has already been described. The stand is the Ladies' 3-fold stand; an exceeding portable, light, and strong stand.

COMPLETE SET IN POLISHED CABINET.

$\frac{1}{4}$ plate, 50/-; $\frac{1}{2}$ plate, 84/-; $\frac{3}{4}$ plate, 120/-

The Boy's Own Set.



HAVING been repeatedly asked for a cheap Camera for boys at school, which is of guaranteed quality, they have made up the Set as above, which consists of polished mahogany Camera, with single dark slide, achromatic meniscus lens covering the plate all over, ruby lamp, printing frame, ebonite dishes, plates, chemicals for negatives and prints, sensitised paper, &c., all fitted in travelling case with straps. They do not separate these Sets, but sell them complete with book of instructions.

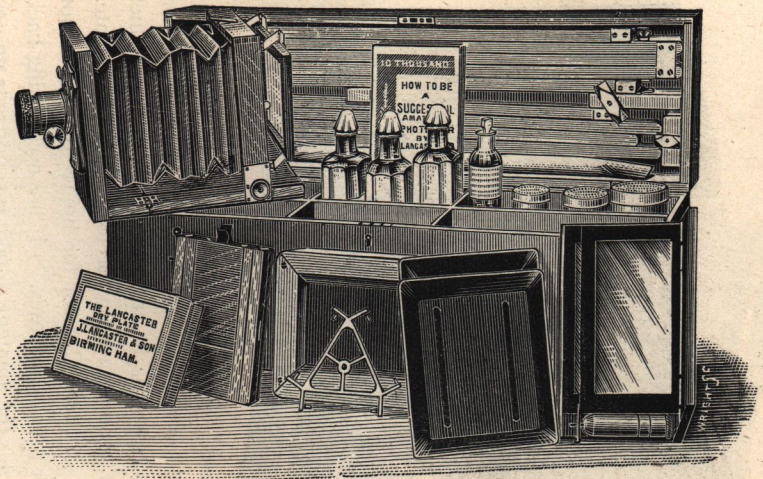
COMPLETE SETS FOR NEGATIVES AND PRINTS.

$\frac{1}{4}$ plate, 21/-;

$\frac{1}{2}$ plate, 42/-;

$\frac{3}{4}$ plate, 63/-

The Amateur's Camera.

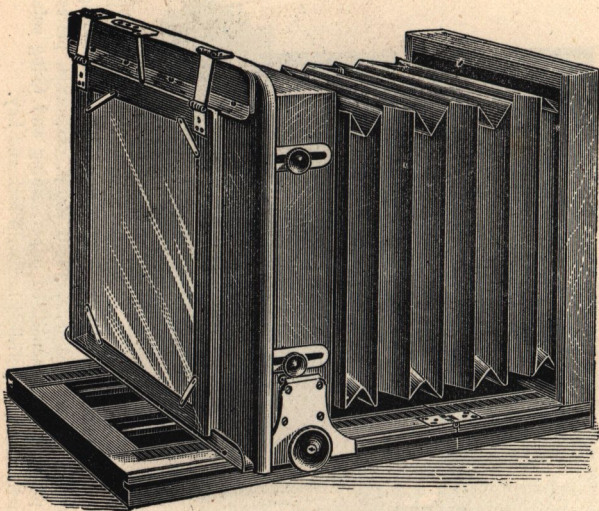


THE AMATEUR'S COMPLETE OUTFIT consists of mahogany Camera with folding tail board and patent reversing back, best lens, 3-fold stand, chemicals, plates, patent folding ruby lamp, printing frame, sensitised paper, toning and fixing solutions, &c., with book of instructions, in polished box with lock and key.

PRICES COMPLETE.

4, \$2 10 5, \$1 4 1, \$6 0 10x8, \$7 10
 12x10, \$9

New Studio Camera.

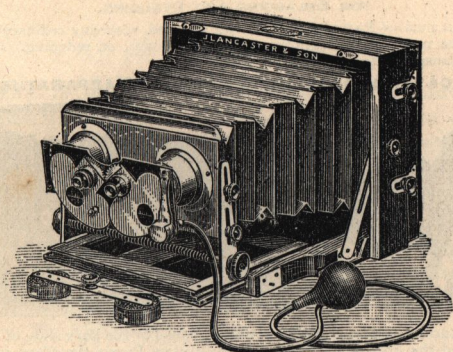


UNIVERSAL CAMERA, with repeating back, rack adjustment, double swing, bellows body, allowing the use of any lens between 3in. and 10in. focus, taking cabinet portrait, or group, and one or two cartes on a plate. This is an excellent Camera for home use, but is not adapted for tourist purposes. It has a repeating back which enables the amateur to take two portraits on one plate.

FOR ONE CABINET OR TWO CARTES, ... 45/-

FOR TWO CABINETS, ... 70/-

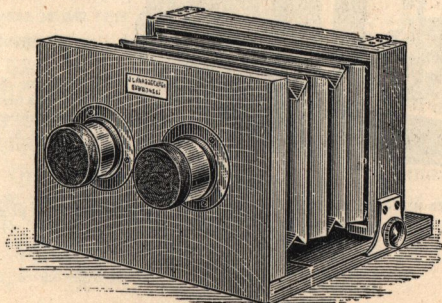
Stereoscopic Cameras.



THE STEREO-INSTANTOGRAPH (PATENT).

STEREO Photography once held sway over the amateur mind, but now it seems, in spite of hard flogging, to be unwilling to become once more popular; still, there is a charm in glass stereoscopic transparencies that no other photograph possesses—the solidity, perspective and reality of the landscape, building, &c., is very apparent, and should, in the younger army of amateurs, prove especially interesting. These Cameras are made in three forms as below:—

STEREO-MERVEILLEUX, £2 2 0; STEREO-MERITOIRE. £3 3 0;
STEREO-INSTANTOGRAPH, £4 4 0



THE STEREO-MERVEILLEUX.

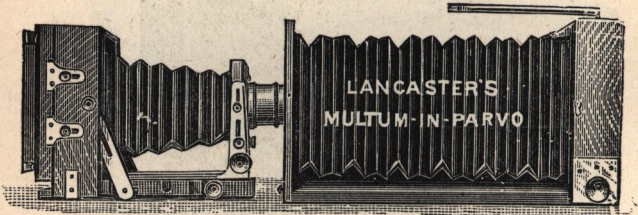
— LANCASTER'S —

Multum-in-Parvo Camera,

FOR ENLARGING AND REDUCING.

THE MULTUM-IN-PARVO CAMERA can be used with any ordinary Camera, and may be used for enlarging, copying same size, or reducing. Also for Lantern Transparencies.

A CAPITAL DAYLIGHT ENLARGING APPARATUS.



FOR ENLARGING.—The Negative must be placed in the dark slide of ordinary Camera, and the enlargement taken in Multum-in-Parvo, the plate going into the end of Camera.

FOR COPYING same size, the two cameras must be opened out equally to about twice the length of focus of lens used.

FOR REDUCING.—The Negative must be placed in Multum-in-Parvo Camera, and plate put into dark slide of ordinary Camera.

THE AMOUNT OF ENLARGEMENT OR REDUCTION CAN BE VARIED TO ANY AMOUNT.

THE DARK SLIDE will hold either a dry plate or bromide paper, and can have carriers to carry any size plate.



PRICES.

To Enlarge up to $\frac{1}{4}$ -plate	£0 10 6	To Enlarge up to 18×15 pl.	£3 0 0
" " $\frac{1}{2}$ " ..	0 15 0	" " 20×18 "	3 15 0
" " $\frac{3}{4}$ " ..	1 1 0	" " 24×20 "	4 4 0
" " 10×8 pl.	1 5 0	" " 30×24 "	5 5 0
" " 12×10 "	1 10 0	" " 36×30 "	8 8 0
" " 15×12 "	2 0 0		

EXTRA SLIDES.

$\frac{1}{4}$, 5/-; $\frac{1}{2}$, 7/6; $\frac{3}{4}$, 12/6; 10×8, 16/-; 12×10, 20/-; 15×12, 25/-

CHAPTER II.

Lenses.

THERE is no part of the outfit so important to the amateur as the lens ; and certainly there is more room for deception in the lens than in any other part of the apparatus. The amateur, as a rule, knows comparatively nothing as to the quality of a lens he may be about purchasing, and it is difficult to convey to him in a few words, what to avoid ; we will examine a lens together, and we will lay down the following conditions :—

1st.—*The lens must be of absolutely clear glass.*

2nd.—*It must not contain any fine wavy lines.*

3rd.—*As a single lens its inner surface should be concave, or meniscus form.*

4th.—*It should be mounted optically true.*

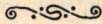
For our first we shall be able to satisfy ourselves in a moment by laying the lens down on a piece of white note paper ; if the lens but slightly colors the paper, it will do, but if it should have a yellow tinge, or a pronounced green tinge, we will discard it.

The second point we can determine by holding the lens about ten inches from our eye, and looking into its structure for fine wavy lines ; if present, the lens is bad.

Thirdly, we can at once tell by its shape whether the lens is concave.

Fourthly, we must, by turning the lens and cell round, by gently unscrewing out of mount and watching an object reflected by its posterior surface, ascertain whether the image moves, if it moves in a curved direction, the lens is not true in its cell ; if the image is stationary, the lens is right.

—✧— Lenses. —✧—



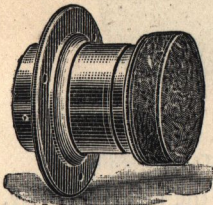
MESSRS. LANCASTER & SON have pleasure in recording the fact that during the last seven years, they have sold over **75,000** of their lenses, and have received the most flattering testimonials from the highest in the profession to the most distinguished of amateurs. They have never yet printed testimonials, and although there are, perhaps, a few who would be guided by testimonials, yet they only desire to secure that personal recommendation of friend to friend, which they have had to such an unprecedented extent during the last five or six years, and which they will do all in their power to still merit.

MESSRS. LANCASTER & SON have only to warn customers against counterfeits, which, by an imitation of name, and by as near a copy as the law permits of, Shutters, &c., &c., have been palmed off as their make, and to ask them, before purchasing, to see that every lens is stamped with their trade mark, or has their name engraved upon it in full. They carefully select only the best flint and crown, and do not send a lens out unless it passes the most stringent testing. These remarks apply to all lenses of their manufacture.

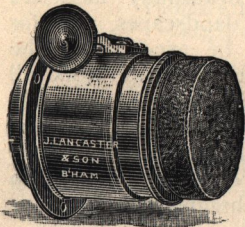


ACHROMATIC MENISCUS LENSES.

Landscape Lenses.



No. 374

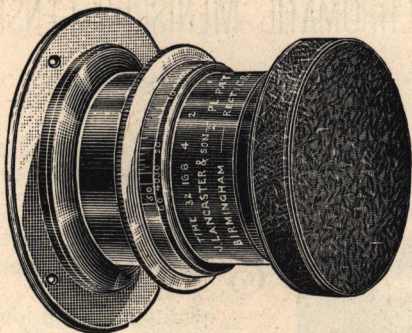


No. 375

THESE Lenses are of good quality although low in price, and will cover the plate from corner to corner. They are of the Meniscus form, and each Lens is guaranteed to do its work well. 374 is a brass sliding mount, and 375 has rackwork adjustment.

	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{1}{1}$	10 x 8	12 x 10
374	5/-	10/-	15/-	20/-	25/-
375	7/6	15/-	22/6	30/-	37/6

The Rectigraph Series.



No. 376

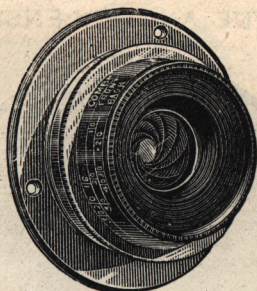
RAPID RECTIGRAPH WITH PATENT ADJUSTABLE DIAPHRAGMS.

THESE are a series of Lenses of the highest quality, and are the result of long and tedious experiments. With them can be obtained beautifully modelled portraits, excellent groups and landscapes, and for architectural work they cannot be excelled. The Lenses being both perfectly symmetrical, will work full aperture for portraits and groups, and when stopped down a little, will produce landscape and architectural photos that it would be impossible to surpass. They can be had with Waterhouse diaphragms, or with Lancaster's patent adjustable diaphragms at same prices.

	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{1}{1}$	10 x 8	12 x 10	15 x 12
Diam. of Lens	1 $\frac{1}{8}$	1 $\frac{3}{8}$	1 $\frac{1}{2}$	2 $\frac{1}{8}$	2 $\frac{3}{8}$	2 $\frac{5}{8}$
Focus	5in.	8 $\frac{1}{2}$ in.	11 $\frac{1}{2}$ in.	14in.	18in.	24in.
PRICE	40/-	60/-	80/-	100/-	120/-	140/-

The Combination Rectigraph Lens.

EXQUISITE DEFINITION, ALTERED
INSTANTLY FROM SHORT
TO LONG FOCUS.



WIDE ANGLE, ORDINARY ANGLE,
LONG FOCUS,
ALL COMBINED.

No. 376 C.

THIS is a New Combination Lens with patent diaphragms, three different foci.

Short as Wide Angle.
Ordinary Focus as Ordinary Angle.
Long Focus as Narrow Angle.

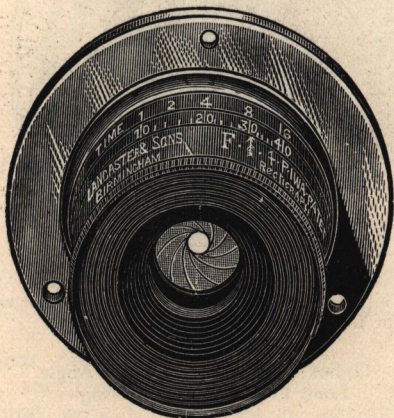
The $\frac{1}{4}$ plate Combination Rectigraph is $3\frac{1}{4}$ in., 5in. and 9in. focus, thus giving the amateur or professional every variation of focus that he may require; other sizes vary in about the same proportions.

COMBINATION RECTIGRAPH LENS.

	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{1}{1}$	10 x 8	12 x 10	15 x 12
Focus of Combination	$3\frac{1}{4}$ in.	$4\frac{3}{4}$ in.	$6\frac{1}{2}$ in.	8in.	9in.	10in.
" Front Lens	5in.	8in.	10in.	12in.	14in.	16in.
" Back Lens	9in.	12in.	18in.	20in.	24in.	30in.
PRICE	30/-	42/-	50/-	70/-	90/-	110/-

Lancaster's New Lenses.

WIDE ANGLE LENSES.

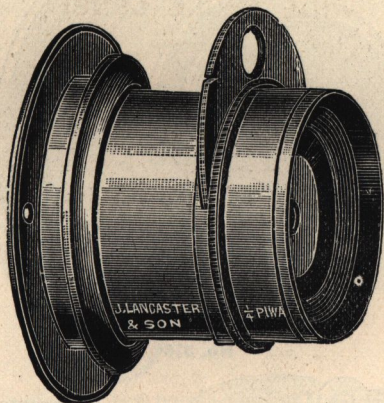


Wide Angle Rectigraph Patent.

THESE Lenses are both symmetrical and are fitted with patent adjustable diaphragms giving every variety of aperture; the mounts are divided, showing at a glance the aperture and speed. The back lens may be used alone and will have a focus just over twice combined focus; this enables not only wide angle views to be taken but also comparatively narrow angle views as well.

SIZE ...	...	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{1}{1}$	10 × 8	12 × 10	15 × 12
FOCUS ...	...	3 $\frac{1}{4}$ in.	5in.	6 $\frac{1}{2}$ in.	8in.	9in.	11in.
PRICE ..	...	30/-	42/-	50/-	63/-	70/-	80/-

Wide Angle Lenses.



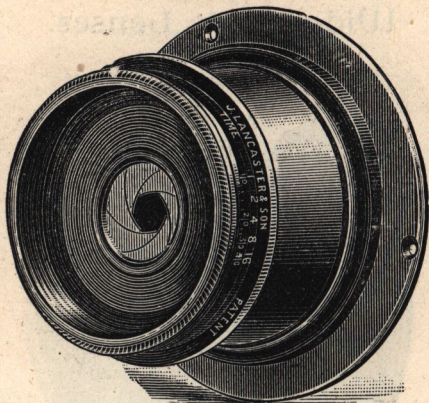
No. 377

THESE Lenses are very useful in confined situations and for copying full size in an ordinary camera. The focus of each is given below. They are very useful for architectural work in restricted areas, but they are not equal to the wide angle rectigraph lenses.

SIZE	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{1}{1}$	10 x 8	12 x 10
FOCUS... ..	4in.	6 $\frac{1}{2}$ in.	8 $\frac{1}{2}$ in.	10in.	12in.
PRICE	10/6	15/-	21/-	25/-	30/-

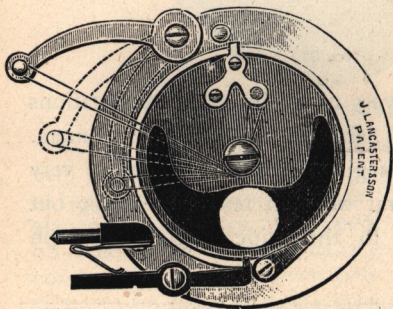
Instantaneous Lenses.

NEW FORM OF LENS WITH
PATENT ADJUSTABLE DIAPHRAGM.



APERTURE OF STOP AND
SPEED ENGRAVED ON MOUNT.

No. 378

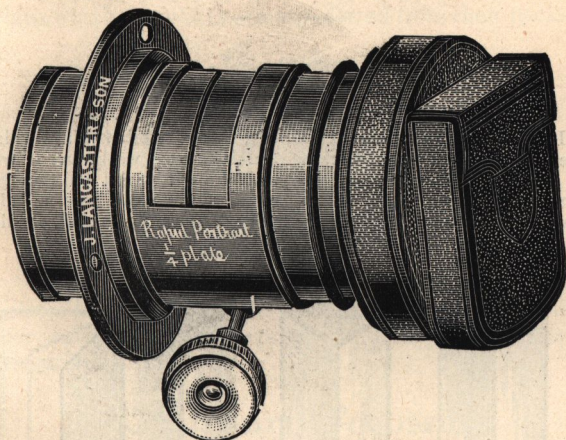


Lancaster's Patent Instantaneous Lenses

For groups, portraits, landscapes, or architectural work, with patent shutter, giving any length of exposure, and patent adjustable diaphragms.

Size	...	...	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{1}{1}$	10 x 8	12 x 10	15 x 12
Focus	...	...	5 in.	8½ in.	11 in.	14 in.	17 in.	21 in.
Price	...	...	21/-	30/-	42/-	52/6	63/-	84/-

FIRST QUALITY Rapid Portrait Lenses.



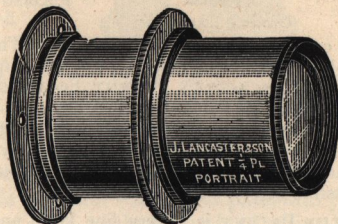
THESE LENSES are of best possible quality and finish, they are exclusively for portraits or groups, or for use with the optical lantern.

A Quality.—These are useful Lenses for general work.
 $\frac{1}{4}$ plate, 30/- $\frac{1}{2}$ plate, 63/-

B Quality.—A magnificent Lens doing the finest possible work.
 $\frac{1}{4}$ plate, 75/- $\frac{1}{2}$ plate, 110/- $\frac{3}{4}$ plate, £10.

No. 376 P.

RAPID,
PORTABLE.



EXCELLENT
DEFINITION

PORTRAIT LENS WITH PATENT DIAPHRAGMS.

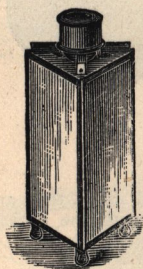
$\frac{1}{4}$ plate, 21/- $\frac{1}{2}$ plate, 42/- $\frac{3}{4}$ plate, 63/-

THESE LENSES have been expressly made for use with any of the ordinary cameras, and will screw into the same flanges as the ordinary lenses.

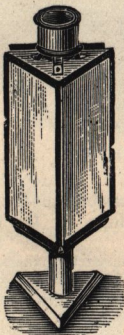
CHAPTER III.

—❧— Accessories. —❧—

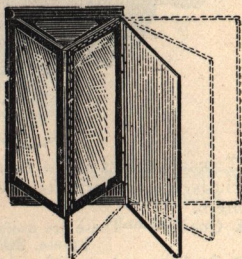
IN addition to the camera and lens, there are other things which the amateur must have before he can commence work, and it will be necessary for us to go carefully through our wants, and then get what we are compelled to have. First, we must have a Ruby Lamp; of these we may have a choice of three kinds: oil, candle, and folding lamp.



OIL LAMP.
2/-



CANDLE LAMP, 3/-



LANCASTER'S PATENT
FOLDING LAMP.
5/-

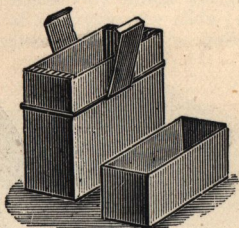
The oil lamp contains an oil burner with cap. The candle lamp has a candle holder with spring chamber giving a supply of candles for a long time. LANCASTER'S PATENT FOLDING LAMP closes into $\frac{3}{4}$ -inch, and opens out in an instant. It has a self-feeding candle chamber, and when opened as in woodcut, may have the door closed on one half, giving only darkest ruby light, and may as developing proceeds be gradually opened, thus regulating amount of light to the greatest possible nicety.

THE RUBRALUX PATENT is a very fine lamp and gives either white, yellow or ruby light at will, and has a paraffin burner at 7/6, and 10/6 and can be used for gas at 12/6.

THE PARABOLOID is a large lamp for large dark room, 10/6.

Light-tight Plate Boxes.

ANOTHER useful thing is a LIGHT-TIGHT PLATE BOX into which the plates are transferred from their packing.



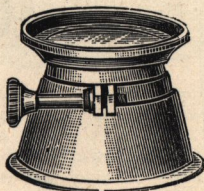
‡, 1/6

‡, 3/-

‡, 4/6

These boxes are made of metal and hold one dozen plates each, they are light and portable and may be used for carrying either exposed or unexposed plates or negatives.

Compound Focusser.



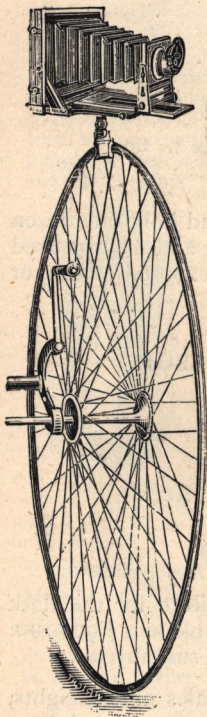
2/6

THIS is of great value as a substitute for the dark cloth used when focussing. It is a double lens FOCUSSER mounted in brass with adjustment to suit anyone.

WE should also have a box of Scales and Weights, those made of metal with brass pans and grain and dram weights cost 3/-; while a much superior box with better quality scales, having glass scale pans, cost only 4/-; we shall find the latter much the cheaper and cleaner of the two.

For Cycling

WE can have a clip to attach to our driving wheel, and in a few seconds can put the Camera into position, take the picture, and pack up again.

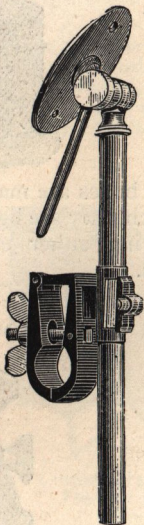


ORDINARY.

$\frac{1}{4}$,
5/-

$\frac{1}{2}$,
7/6

$\frac{1}{1}$,
10/-



BEST

$\frac{1}{4}$,
7/6

$\frac{1}{2}$,
10/6

$\frac{1}{1}$,
15/-

BEST CLIP.

The Cycle Clip

Is attached either to the top of the wheel, the handle of the machine, or to the backbone. We have with it every possible motion and great rigidity. The larger woodcut shows the clip we should use with a $\frac{1}{2}$ -plate Camera, and we can see from the woodcut how easily the clip can be attached either to a tricycle, a five-barred gate, or to a small bough of a tree. We can have a clip to suit any size machine.

The Changing Box

Is about equal in bulk to two double dark slides. There is a slide made to work with the changing box and camera, and in *Fig. 1* is shown the method by which we charge the slide, and *Fig. 2*, the method of emptying the slide (*a*). The changing box has a third shutter which can be pulled completely out,

Fig. 1

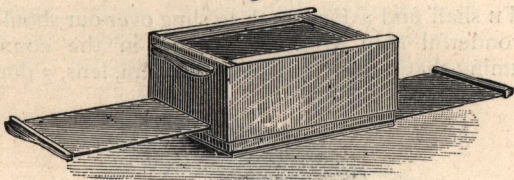
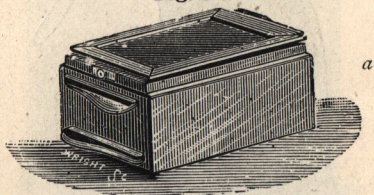


Fig. 2



springs covered with velvet, instantly closing up so that not a particle of light can get into box. The space between this shutter and the bottom shutter (*Fig. 1*) is just enough to hold one pair of plates, and by drawing the upper shutter out and pushing it back again, one pair of plates are thus put into position ready to go into dark slide, and underneath is the slide with its upper shutter drawn out, and the lower shutter of changing box is now drawn out, so that the plates fall into slide easily. In emptying dark slide, put slide into other side of changing box (*Fig. 2*), open shutter in slide, and then shutter in changing box, and plates will slide back into box. The boxes hold one dozen plates.

FOR MERVEILLEUX OR MERITOIRE.

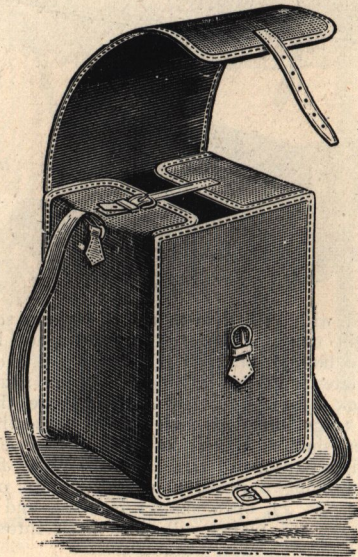
$\frac{1}{4}$, 16/- $\frac{1}{2}$, 27/6 $\frac{3}{4}$, 37/6

FOR INSTANTOGRAPH OR INTERNATIONAL.

$\frac{1}{4}$, 21/- $\frac{1}{2}$, 31/6 $\frac{3}{4}$, 42/-

Knapsacks, Bags, &c.

WE shall find a Knapsack to sling over our shoulders a wonderful help in a day's work in the country, assuming that our kit consists of camera, lens, 3 double



$\frac{1}{4}$,
5/-

$\frac{1}{2}$,
7/6

$\frac{3}{4}$,
10/-

10 x 8,
12/6

12 x 10,
15/-

15 x 12,
17/6

WATERPROOF CASE.

dark slides, and a case to contain the whole, we shall have quite sufficient for a day's work. We shall not be in a hurry to expose our plates on the first thing we

see, it is better to look well at the subject before we unpack our camera, &c., and having made up our mind, then in a few seconds our camera is ready, plate is exposed, and before packing up again, we will take out our note book and put down, subject, size of stop, exposure, approximate amount of light, we can make a table of our own say 1 to 10, the latter being brilliant sunshine, and the former a dull afternoon, with a very little experience we shall be able to determine the necessary exposure to a nicety on any future occasion. This little note book we will keep in our case so that we shall never be without it.

$\frac{1}{4}$,
7/6

$\frac{1}{2}$,
10/6

$\frac{3}{4}$,
15/-



10 x 8,
21/-

12 x 10,
25/-

15 x 12,
30/-

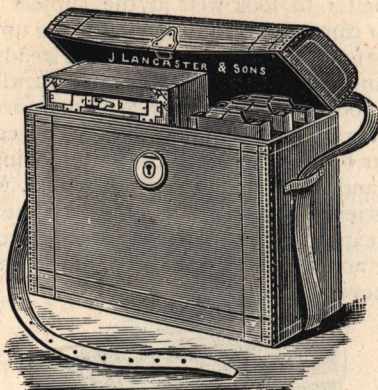
AMERICAN LEATHER CASE.

The knapsacks or cases are made in different materials, all of them are waterproof and nicely lined. so that our camera slides, &c., need not get rubbed during the hardest day's work. There are three kinds of cases, the first is a waterproof one, made like bicycle knapsacks, strong and cheap. These are not so strong as the second class made of American Leather, with real leather bindings, straps, &c. The third class are very beautifully made, and if we can afford the extra cost, we will have one, because the best case puts such a finish upon the apparatus that we are really obliged to take more care of our apparatus, by keeping it free

$\frac{1}{4}$,
17/6

$\frac{1}{2}$,
25/-

1,
35/-



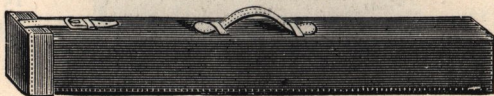
10 x 8,
42/-

12 x 10,
45/-

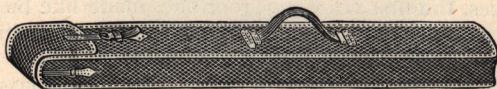
Best Leather Case.

from dust, &c., making it last much longer than we otherwise should do.

We can also have a case for our camera stand, these



are very nice when travelling, the stand being put into the case in a few seconds, and as their cost is very small, it is an indulgence worth having.

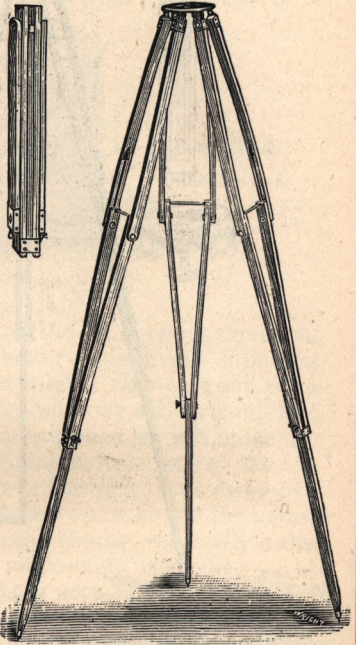


$\frac{1}{4}$, 3/-; $\frac{1}{2}$, 4/-; $\frac{1}{1}$, 5/-; 10 x 8, 6/-; 12 x 10, 7/-

The case may be made of waterproof material, folding up when not in use. Both are same price.

Camera Stands.

THESE we shall find of various forms, but the main feature to be looked for is lightness, rigidity, portability and strength; some of the simplest are among the best, and combine all the characteristics we have mentioned. A most excellent and portable stand is



THE LADIES' STAND.

This is a 3-fold stand closing into a very small compass, and when extended forming a rigid though light stand. It is a general favorite among the ladies, and for cycle use cannot be beaten.

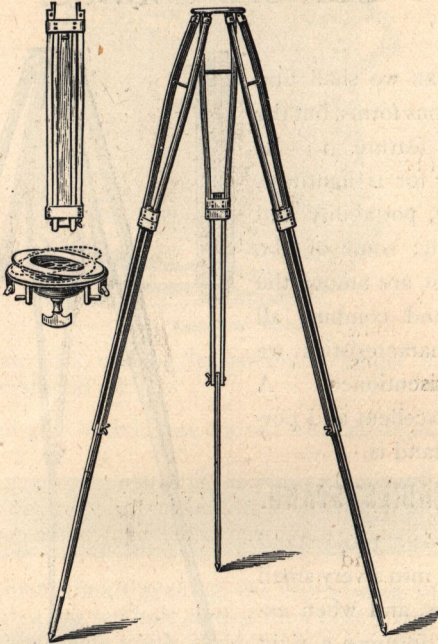
$\frac{1}{4}$ -plate,
6/6

$\frac{1}{2}$ -plate,
10/-

$\frac{1}{1}$ -plate,
12/6

ANOTHER STAND OF A NEW DESIGN IS

LANCASTER'S PATENT UNIVERSAL STAND.



THIS is a 3-fold Stand with adjusting legs for altering the length of any or all of the legs. The top has an universal motion so that the camera can be placed in any position that may be required, or if the Stand cannot, owing to inequalities of the ground, be placed upright, the camera can at once be put in a horizontal position. We shall find this a most useful Stand.

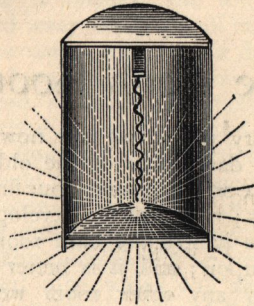
For heavy work we must carry a stand with a triangle top, and legs having not more than one fold, but for general work the Universal Stand is most useful.

$\frac{1}{4}$, 10/6; $\frac{1}{2}$, 15/-; $\frac{1}{1}$, 21/-; 10 x 8, 25/-; 12 x 10, 30/-

The Magnesium Lamp.

THIS will enable us to take photos at night. The wire or ribbon should be put into lamp, as in woodcut, then the cap must be removed from lens, the lamp lit

LAMP,
3/6



WIRE,
2d. per yard.

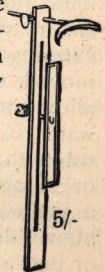
and moved in an arc around the head, about three feet away. Perhaps we had better experiment a little first so that we shall not make a failure: *thus*—we will cut a piece of string a yard long, hold one end by lamp and let the sitter hold the other end, then we will move the lamp in a quadrant, beginning a little on say the left side and going over to the right; if we can move it from 30° on one side over to 60° on the other, we shall get a beautiful picture, especially if the string is held at an angle of 60° from the sitter. When we have accustomed ourselves to the movement of the lamp, then we will take a photo and develop exactly in the usual way.



10/6

FOR PORTRAITS

It is well to have a Head Rest, this we shall find of value in taking portraits indoors in perhaps a dull light when a long exposure may be given, and either of the two will be very useful. The larger one has universal motions and is well worth its extra cost.



5/-

CHAPTER IV.

The Dark Room.

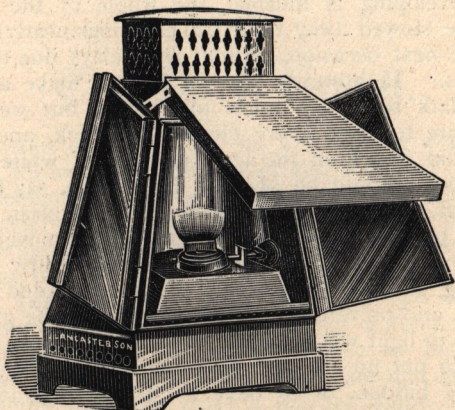
THANKS to dry plates, we are now in a position to do without a dark room of the old kind, and, as a consequence, we no longer smear our fingers and hands with silver stains; now we can develop our plates in the bedroom, the pantry, the bath room, or anywhere we may decide upon; still, it is better to use a small closet, pantry, or any other room we can lock up and keep the key. If we can find a room with a window facing the north or east, then we may glaze one or two panes with deep ruby glass and paint all the others black, or make a wooden frame to cover the whole of the windows (light-tight) and put in it a pane of dark ruby glass, about 24-in. \times 18-in. If we can use up the whole of a small window frame, say up to 30-in. \times 20-in., then our best plan is to glaze all but one pane near developing tray, with dark ruby, the one pane, say 12 \times 10, should be of canary yellow or pale orange; we will make a frame carrying a piece of ruby, to cover this, and easily moved, so that when development is over, we may allow more light to enter dark room. If there is a water supply, so much the better, if not, a wooden tub with a pipe and pinch-cock would be very useful, or in the absence of both, a bucket of water and a jug will answer every purpose. If we have a shelf above developing tray, we can then place a bucket or jug full of water upon it, and have an india-rubber

syphon hanging over dish, this will give a nice stream of water. If we decide to develop at night, then the ruby lamp will be all that we shall require in the form of light. The plates and chemicals may be carried to a washing stand or a sink, and when the developing is finished, the whole of the things may be stowed away tidily (do all things neatly) ready for the next occasion, without the delays due to carelessness. If, however, we can find or make an outdoor dark room, so much the better, but we must take care to close every chink and crack, and have the room free from the least particle of white light. The room should be of good dimensions, say 6 ft. or 7ft. x 5ft. with one or two panes of ruby glass, and a sliding pane of dark ruby; this may be removed after developing. The room should be ventilated by means of a **Z** formed tube which will allow heated air to escape, and prevent the ingress of light. The greatest care as to light will be in the door: it is always worth while to put up an extra partition inside, so that the door is hidden, or to have a curtain to draw over the door inside when closed. A large number of plates are wasted through having a dark room that is not light proof.

A cellar may be used as a dark room in the absence of any other convenient place. The cellar should be quite dark, and a good ruby lamp should be used; one of the best lamps we can use is the Rubralux; with this lamp we can have white light, or by closing one door, orange light; closing both, dark ruby; all this light can be reflected down on to plate by the reflector in front.

On the supposition that we have formed or made a room to suit us, then we should provide ourselves with a lock-up cupboard, and use every effort to keep all our chemicals, &c., perfectly clean, and in so-called (whatever it may mean) apple-pie order.

All the bottles, &c., we use, should be loosely fitted into a tray which can be lifted in and out of our cupboard with ease. It is really a great treat to be able to find all our bottles, measures, &c., with our eyes shut. Method is the *open sesame* of the amateur photographer.



THE NEW RUBRALUX LAMP (PATENT). 7/6

A great number of our troubles may, and often will, arise from the use of a dark room not light-proof, and if we find that our plates will fog, despite all our method, care and attention, let us make a simple experiment: we will now take a quarter plate (slow or quick) and place it, face upwards, in our dark room; we will now place a penny on the centre of plate, and leave it for five minutes, this is about the longest time it will ever take us to develop a negative, then we will develop the plate, and if we can see the plate going dark around space covered by penny, then dark room is not light-proof, and we must search for the crack or hole through which it comes: to do this, we will close up window, put out light, and wait until we are accustomed to the darkness, then we shall soon be able to find the source of trouble and remove it.

CHAPTER V.

Chemicals and Plates.

Our dark room is useless unless we have the chemicals and plates requisite for commencing work.

There are differences of opinion as to the quantities of chemicals necessary to form our stock, but we shall find it much better to get our chemicals as we require them, rather than obtain a heavy stock at commencement, or, in fact, at the very commencement it is really better to have our chemicals mixed for us, then we can afterwards make up our own solutions.

To commence making up solutions we shall need a box of scales and weights, a two ounce and one dram measures, and the following chemicals: one ounce each of pyrogallic acid, ammonia, bromide of ammonium, bromide of potassium, and acetate of soda, two lbs. of hypo., and 15 grains of chloride of gold, costing us altogether 5/-, or with scales and weights and measures, 10/-; with these we can make a fair start, and our first solutions shall be made according to the following formulæ:

DEVELOPING SOLUTIONS.

A SOLUTION—Pyrogallic Acid, 24 grains.
Distilled Water, 10 oz.

B SOLUTION—Ammonia, $\frac{1}{2}$ oz.
Bromide of Potassium, 30 grains.
Distilled Water, 2 oz.

Other developing solutions we shall be able to make when we have obtained good results with this one, and will wait until then before we mix developers given on another page.

FIXING SOLUTION.

Hyposulphite of Soda, 4 oz. Distilled water, 20 oz.

All our bottles must be clean and should be labelled at once, and kept for their own solutions entirely. We will use these solutions for the present, and when we are sufficiently advanced to make further experiments, we will do so later on.

DRY PLATES are now made under so many different names, and have all of them such a splendid reputation, that one hardly knows whose plates to use, but we must really be guided by common sense. Let us take up any plate to begin with, being satisfied that the reputation of the maker is good, and cannot be associated with a bad plate. Then we will work away with it, determined to produce a good negative, and if we begin in this spirit we cannot fail; we shall be met by amateurs who have never been really successful, because they have tried a host of different plates, and have never become thoroughly acquainted with any one of those tried; we shall be told that a certain plate is useless by one amateur, and the very next in all probability will tell us the same plate is a magnificent one; every plate maker will be blamed, aye, almost cursed by some, and by others will just as heartily be blessed. Well, let us go over the various lists of the hundred and one makers and make up our minds which we intend to use, beginning preferably with slow plates; we will get what we want and keep them in a dry place, if we put them into a damp closet, we shall soon find to our cost, the whole of them will be spoiled. When opening a box of plates, it is better at once to store them away in a light-tight plate box, then they will be always ready for us the moment we require them, and we will store them in the darkest and driest corner of our cupboard, as near the bottom as possible, so as to be away from any ammonia fumes.



OUR NED, TOTSIE, AND DOLLY. TAKEN WITH INSTANTOGRAPH.

CHAPTER VI.

The Subject.

Now we come to one of the most important features in the whole process. We must have a SUBJECT, and oh, we won't subject anyone we care a straw for to the trying ordeal of being converted from a christian into a murky brown savage; no, we don't intend asking Adelina, Augusta, Eleanor or Teresa to be our model, we will search for some statuette or bust that will not grumble at us if we do convert a blonde into a brunette; or perhaps better, will try a landscape, and when fairly successful we will then make an attempt at a portrait; but even a landscape will teach us some lessons we ought never to forget; a landscape to make an impressive picture wants careful study and when once we have hit upon the right spot we will put some form of life, boy, girl, cow, sheep or dog, into the centre or a little off the centre of the foreground, and take a picture worth giving away. It will well repay us to examine all the best pictures of the great masters and to note how the least bit of life gives beauty to the picture. Cover over the small portion containing may be the fisherman, sportsman, dog, or what not, and the picture becomes cold and dull; in our work we shall find some of the roughest nooks will give the most charming results, and a collection of such pretty little spots, with memories called back, will produce joy and pleasure on what otherwise might be dark days. A novel may charm one and lead one over lands whose dim memories take much refreshing to form shape, but the results of one's own fixed images upon paper of lovely little bits, of the dashing wave, or the rushing train, charm, not for the moment, but to the end of one's life; the charm growing with age and infirmities.

Portraits.

ASSUMING that we have earned our title as to Landscape Photography, now let us try to take a portrait, and first we will wander through the garden and find some shady corner facing north, north-east or north-west, with an overhanging willow, laburnum, or a fruit tree, under whose shadow we intend getting lasting impressions of friends who may be here to-day but tomorrow we know not where. Having found our corner and taken possession we will add to it a rough garden gate covered with virgin cork, or a field stile with a shrub on either side, or a bit of imitation rockery, or a wire table with drooping ivy, and a few flowers not mathematically arranged but better in a careless manner, and when we are satisfied then our next and most important work is to find the sitter. Let it be a lady and if our own sister we will be as gracious as we should be to anyone else's sister for whom we have something more than simple brotherly love, we will remember that our sisters are to others equally as interesting as their sisters are to us, and it will repay us to be gentle, patient, and kind in our little suggestions about moving your head, no laughing, keep your mouth shut, don't blink your eyes, and all this sort of thing. We shall get on ever so much quicker by going through our work slowly. It is far better to spend ten minutes in getting one good negative, than to take three pictures in twenty minutes, and not have one worth looking at. Experience is a most valuable servant, and as we proceed we shall find that every little wrinkle is of value, and by making either a pencil or a mental note of all we see and are told, we shall soon have mastered the elementary details and be in a fair way to success.

Well, we ask our fair sitter to kindly take the chair, or lean over the gate, or sit upon the stile, or recline on the rockery; the position of the face we arrange according to mutual desire; remembering that full face is

never nice in a picture, and we will so arrange our subject that one side of the face shall have a little more light upon it than the other side. All this gives roundness and beauty to the portrait. We expose the plate, giving at least twice to three times the exposure we give for our best landscapes. We develop, and our first picture is simply charming. We don't intend to have it spoiled, so we give it a thorough good washing before we let anyone see it.

If we are not the happy possessors of a garden, but have simply a small yard then we will find a corner with same aspect, and with a little trellis work we shall be able to make a pretty small arbour, or if we cannot do this, then a blanket hung about four or five feet behind the sitter will make a fair background. Backgrounds ready painted are very useful where our space is limited, and we shall find that a shade over the sitter to keep off too much top light will be very useful and can hardly be dispensed with.

If we cannot find any convenient place in our yard, then we will use the clothes-horse with a blanket as background, the largest we possess, and we will so arrange it that one half is say two or three feet behind the sitter, the other half being placed at such an angle as to reflect light on to the darker side of the face, occasionally a white sheet thrown over this half helps us wonderfully, in fact with such an arrangement and a board overhead to keep off top light will enable us to do really excellent work.

Portraits in the House.

If we have not even a yard, or outside corridor, or a conservatory, then for portraits we may do fairly well in a room with a large bay window facing same direction as the nook in the garden we have just been through, and we shall require a little arrangement of light before

we shall be able to get a good portrait. Assuming that the window is on our left hand, then we will put our camera behind the left hand side of the window as close to the wall as we can possibly get it. The sitter we will place about two feet away from further side of window, and on the right side of sitter we must so arrange a looking-glass as to get a good amount of reflected light on to the shady side of face, another mirror suspended so as to reflect light on to the forehead will be very useful, all helping to give a good modelled face. If we cannot get mirrors, then a clothes horse with a white sheet overhanging it will work well. This will require a little patient study but will repay us a hundredfold in the quality of the pictures we shall obtain; what we want to obtain is a beautiful portrait appearing as it were in relief with just the shading requisite to make it a speaking likeness.

And lastly, whatever we do, we won't make a pair of delicate $6\frac{1}{4}$ hands into $8\frac{1}{2}$, we will keep them close to the body, not arranged automatically but gracefully holding a flower, locket, chain, book, fan, or what not, remembering that the nearer the hands are to the camera the larger do they appear upon the plate, and we have no desire to spoil a beautiful portrait by making the hands the centre of the picture. Let us lose everything but the face, this is the centre of the picture, the key to the whole, the index to the mind behind the face.

We won't either place a bull-dog on the lap of the fair sitter to take away beauty from the most beautiful work of nature. How many pictures are spoiled by the introduction of a dog or cat to a lovely woman's portrait; let us take both, but one on one plate, one on another. "Love me, love my dog," so we will, but we will love one at a time, and the dog we will take in every attitude we can get him to arrange himself in, but we won't group the dog with our fair cousin.

Groups.

GROUPS we can manage very easily when we have succeeded with portraits, but in taking a group we will look for a spot backed by rhododendrons, laurestinus, laurels, or an ivy wall, and then with a piece of string tied to front leg of camera, and a piece of chalk to the other end, we will mark out an arc upon the grass and ask our groupists to arrange themselves parallel to such an arc, some standing, others sitting and reclining, we won't be too particular in placing everything perfectly straight, rather drop down into the seat or lean on the shoulder of one in front, and we won't all of us stare at the amateur, nor laugh at him or chaff him; to get a good group requires not only the skill of the amateur but the kind forbearance of the groupists themselves. Having obtained this, the probability is we shall obtain a group worth keeping. If we have not any garden, then we can take a group in the yard keeping as far away from the wall as possible, or we will cover the wall with a large piece of brown paper obtained from any carpet factor, the kind of paper one lays on the floor underneath the carpet—with such a background we can do excellent work.

We must not forget that a blue or white dress will spoil the features, the dresses coming out white and the face darker than it looks to the amateur. All light blues come out white, and the beautiful flesh tint of the healthy cheek always comes out slightly darker than it looks to the eye, the reasons of all these changes demand a study of spectrum analysis, and we have no intention of studying them to-day.

BLUE EYES are very difficult to take, such eyes should be screened as much as possible so that they may get a less exposure than the other parts of the face. Dark eyes, and eyes well sunk into the orbits should have plenty of light, and a little blinking will not hurt the picture.

THE NOSE is generally crooked, only we won't tell our fair sitter so ; but let us find out for ourselves which way it is bent, then if bent to the right, let the sitter turn to the left until we get the nose apparently straight, and *vice versa* If the nose is long we won't try a profile, but try to get nearly a full face ; if the nose is turned up, we must get our camera well above the head and tilt the camera downwards.

THE MOUTH gives expression to the whole portrait, before the cap is taken off, close the lips slowly, then whisper "prest" and leave your lips just as they are finishing the word.





AN INTERIOR, TAKEN BY AN AMATEUR.

A dimly lighted Interior requires a very long exposure.

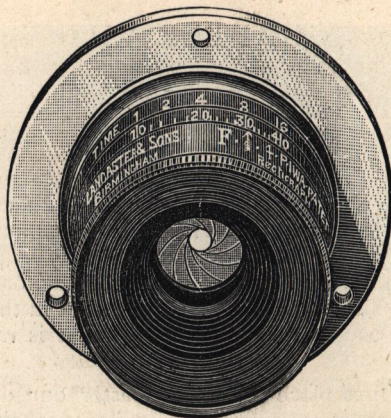
CHAPTER VII.

Exposing.

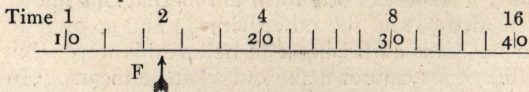
THIS we shall find one of the most difficult things to become perfect in. The necessary amount of exposure may be tabulated for our use, may be put down as a given amount of time for April, May, or June, we may have all this worked out for us, but in the end we shall find, as others have found, that it is *experientia docet*.

In the first place we must master our diaphragm apertures, thus, an amateur who has probably had a month or six weeks' start, will tell us that this photo was taken with $\frac{F}{10}$ and the other with $\frac{F}{20}$, and so on; we say dear me! it is surprising; we believe his word; but for the life of us cannot make out what he means. In the first place we soon find out that F means focus of lens, and that the divisor means the diameter of diaphragm into focus of the lens; thus, as an example:—Lens 5-in. focus, diaphragm $\frac{1}{4}$ -in. = $\frac{F}{20}$ that is, there are twenty quarter inches in five inches; this is charmingly simple, but our lens may be $8\frac{1}{2}$ -in. focus, and the diaphragm $\frac{9}{16}$ -in. in diameter, well, we reduce $8\frac{1}{2}$ -in. to sixteenths, $8\frac{1}{2} \times 16 = 136 \div 9 = 15$, so that the diaphragm is $\frac{F}{15}$; we shall of course soon find out that $\frac{F}{10}$ on one lens will take the same exposure as $\frac{F}{10}$ on another lens, and when we know this we shall be saved a great amount of trouble in calculating exposures for various lenses. All our best lenses, such as those belonging to the Instantograph and International, Rectigraph Lenses, &c., have a divided scale, &c.

Let us examine the scale in detail, and thoroughly understand its working.



The scale upon the lens above reads thus:—



Now we know that the line commencing with 10 is the aperture of the diaphragm divided into the focus of the lens, and 10, 20, 30 and so on, means $\frac{F}{10}$, $\frac{F}{20}$, $\frac{F}{30}$, and the lines between 20 and 30 are 22, 24, 26, &c., so whenever we put the arrow by rotating diaphragm, we know in an instant the exact aperture of stop, and knowing this, we can calculate the length of exposure required for any given stop, this is, however, engraved on the top line above, and follows Time 1—2—4—8—16, that is, if $\frac{F}{10}$ takes one second, one tenth of a second, or whatever fraction it may be, then 2 takes twice the exposure, 4 four times, 8, eight times, and so on; we must experiment with our largest aperture first, and then we can calculate the exposures for smaller stops.

The calculations must be based on the squares of the various apertures, thus, taking $\frac{F}{10}$ as our standard, then $10 \times 10 = 100$, and $14 \times 14 = 196 = 2$, $20 \times 20 = 400 = 4$, $28 \times 28 = 784 = 8$, and $40 \times 40 = 1600 = 16$, hence by knowing the focus and aperture, we can ascertain the exposure with ease.

But apart from the diameter of stop, &c., we have a varying factor to take into account, and that is, the amount of light or actinism at any given moment; this is a matter for experience, and it is safer to trust to our memos of our former plates, giving time of day, brilliancy of light, and then, added after, Over Exposed, Under Exposed or Right, as the case may be, such a series of memoranda are of the highest value, and we shall do well by commencing making them with our first picture, perhaps after an experience of a twelve-month we may make a table of our average exposures as below.

APPROXIMATE EXPOSURES.

Taking our standard as $\frac{F}{10}$ and using this stop, and then calculating exposures for other stops, we shall be able to classify our exposures with ease.

													Seconds.		Min.	
$\frac{1}{50}$	$\frac{1}{20}$	$\frac{1}{10}$	$\frac{1}{2}$	1	2	4	6	10	20	30	40	50	1	2		
<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>	<i>f</i>	<i>g</i>	<i>h</i>	<i>i</i>	<i>j</i>	<i>k</i>	<i>l</i>	<i>m</i>	<i>n</i>	<i>o</i>		

Plates used 30 times wet.

- (a) Trains, Ships, Birds flying in bright sunshine.
- (b) Landscapes in bright sunshine and no foliage near.
- (c) Ordinary Landscapes with foliage, bright sunshine.
- (d) Ditto, Ditto, with heavy foliage.

If the sun is hidden then take next letter as the standard.

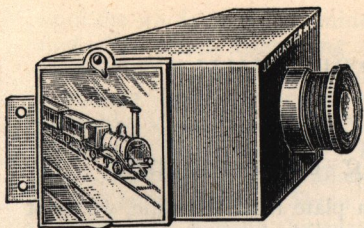
- (e)(f) Groups out of doors in diffused light.
- (f)(g) Portraits " " " "
- (h) to (j) Interiors of Fern Glens and Woods.

(j) to (l) Portraits in a window with reflector, also interior of rooms well lighted.

(n) (o) Interiors of Churches and rooms fairly lighted. Some Churches are very badly lighted and will take much longer exposure.

Then we must remember that the intensity of actinic light varies in each month, and taking our table as correct for May, June, July, then for April and August we must give an exposure 25% more, and March and September 50% more, the other months doubling the exposure until we reach December. The best light in the day is between 11 a.m. and 3 p.m.; before and after those hours the exposure is longer; add generally 10% for each hour in the Summer months and 25% for each hour in the Winter months.

Having now become thoroughly at home with our lens and its rapidity, we proceed to focus the image upon the ground glass. This is generally a very simple process, and yet it is often perplexing to the amateur. We must not look through the ground glass but upon it, then we shall at once see a blurred inverted image, and our attention should be drawn to obtaining the sharpest possible definition. We open the diaphragm to its largest aperture, and then focus by means of the rack or screw adjustment until in a portrait we see the hairs on the face, or the pupils of the eyes of the sitter, or in a landscape we obtain perfect sharpness to a point midway between the centre and corners of the plate. It is not wise to focus the centre of a plate only, the result being often a very sharp centre and indistinct margin, this we shall get rid of by focussing for two points midway between the centre of plate and corners. Having obtained an accurate focus, we request our sitter not to move if we are about to take a portrait, using Lancaster's New Finder, costing 5/-, which, for



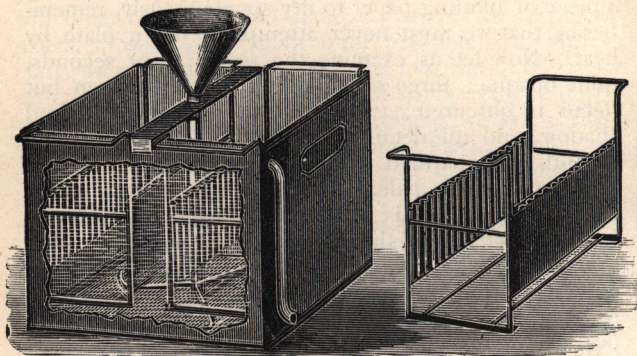
instantaneous or even ordinary work is very useful; in taking portraits the sitter would be much more comfortable if we could look in another direction when exposing the plate.

Or if a landscape we are of course ready with our dark slide for the exposure, assuming that our preliminary trial is at home, let us now go back into the dark room and take out of our plate box two plates, one we place face downward in the deeper side of the dark slide, then one or two pieces of thin black cardboard, and a second plate prepared side upwards, close the slide down, fasten the clips, go back to camera, and now for the time of

EXPOSING IN THE CAMERA.

This will depend upon the light, and as we have found no hard and fast line can be drawn here, *experientia docet*, we must be methodical in our work if we wish to succeed. We will now obtain our data on which to calculate exposures, and we will not waste a number of plates, but endeavour to do all we desire with one plate, and perhaps our best plan will be to focus from a bedroom window; put in the dark slide and draw the shutter out to its full limit, expose one second without shaking the camera, then push slide in one inch, expose another second, and so on, until shutter is closed, we shall have a plate in sections of 1, 2, 3, 4 seconds exposure, and we will go back into the dark room, and having everything ready, proceed to develop.

We are now ready to go into the field and take our place among the army of amateurs, and as we climb higher and higher the ladder of success, we shall always look back to our earliest efforts with pleasure and delight, and when meeting a brother or sister amateur who perhaps has not been so fortunate as ourselves, we shall be ever ready to give them of our knowledge, believing, as we do, that in giving we gain, and that it is more blessed and a far greater pleasure to give than to receive.



Lancaster's "Hiero" Washer,

FOR NEGATIVES OR PRINTS.

FOR ONE DOZEN $\frac{1}{4}$ -PLATES, 5/-; $\frac{1}{2}$ -PLATES, 7/6; $\frac{1}{1}$ -PLATES, 10/6

THE HIERO WASHER consists of a square metal vessel, japanned outside and enamelled inside. It has two racks to hold the plates, which may be used as dryers. The water enters through funnel, and passes down centre tube and out of the bent ends, thus causing the funnel and tubes to rotate; this gives a supply of water under the whole of the plates, and keeps up a continuous circulation, the waste being emptied periodically by the syphon on side.



SHANKLIN CHINE.

Taken by an Amateur and a most difficult subject to take ; heavy and dark green in some places badly lighted.

CHAPTER IX.

Failures.

REALLY we had no intention of having any failures, we at once say that the word impossible is not in our dictionary, that the word failure does not belong to us. Some of England's noblest men and women have risen to their heights of noble character after repeated and almost overwhelming failures, and some of our best amateurs had failure after failure before they struck the royal road to success, and we must prepare for failure, for being forewarned is, they say, being forearmed, and as failure may insidiously creep into our dark room, we will be ready to get rid of it, exterminate it at the first possible opportunity. Failure may come and does come to the most methodical and clean as well as to the stupid and dirty. Failures may be classed under two heads, outside and inside; that is, failures over which we have no control and failures of our own making.

We will take Outside Failures first; these arise from a number of causes, as bubbles in the plates, due to bad and inferior gelatine, sometimes plates have no good substratum to the gelatine film, then the film will split and wash off, this we can correct by putting the plate at once into a bath of Epsom Salts in water, or sometimes a strong alum bath will be found sufficient.

Sometimes the plate is denser on one part than another, this is due to an uneven flow of emulsion during the coating of the plate, we cannot correct this better than by a prolonged soaking in the hypo bath. Plates as now prepared are generally fairly good, but some of the cheap and nasty plates are very annoying from defects.

We now come to Inside Failures; these are our own making, and therefore may be cured.

SPOTS which develop quite transparent and have a wonderful propensity to settle upon the end of a nose or upon one of the eyes of the sitter, are generally due to dust upon the plate. *Remedy*—Carefully dust the plates with a broad flat camel hair brush before putting them into the slides.

STREAKS and sinuous curves upon the surface of developed plate are due to the uneven flow of developer when putting plate into dish. *Remedy*—Always plunge the whole plate instantly under the developer, and see that every air bubble is driven off.

STAINS, generally due to finger marks and insufficient washing. *Remedy*—Do not touch the surface of a plate with your finger and be sure to wash well after each process.

CHAPTER X.

Things to be Remembered,

OVER EXPOSURE may be corrected to a certain extent by adding at once more **A** solution, and an extra drop of **B** solution to the developer.

UNDER EXPOSURE hardly worth the trial, but add **A** in drops, and if at hand, an equal quantity of distilled water to the developer.

BLISTERS may be arrested by flooding the plate with methylated spirit, then leave it to dry.

GREEN FOG, caused as a rule either by bad gelatine in the plate, or bad pyro. in the developer. *Moral*.—Always use fresh pyro.

IMAGE too Dense, then flow over the plate a solution of ferric chloride 30 grains, water 2-oz., wash and put into fixing solution. A little experience will soon teach the amateur the proper strength, &c., of solutions.

TRANSPARENT Spots, generally due to dust on the film, plates should be brushed gently with a large camel hair brush before being put into dark slides.

RAPID PLATES are much more difficult to develop than slow plates. *Moral*—Begin with slow plates, go on with slow plates until you have been thoroughly successful, then try rapid plates, use the developing solution once only, fixing solutions over and over again.

DON'T hold the plate up to the light while developing, keep it as far away as possible from the source of light.

DON'T let the developing solution with plate in rest a minute, but keep oscillating the dish all the while you are developing, a speck of dust may settle, and if it does settle it will be just on the spot where we don't want it.

DON'T let the sun shine into the front of lens, or on to the dark slide, shade the former with your hand and the latter with a cloth.

DON'T attempt to remove a speck of dust with your finger nail, rather swill the plate well until it is dislodged or let the plate get dry and then remove it if necessary.

DON'T try to rub a stain off the paper print when in toning solution, and keep your fingers clean, and pick up prints with a pair of ebonite tweezers.

DON'T use one dish for everything, but have separate dishes for each solution.

DON'T use the developing solution under any circumstances for more than one plate, if you do, probably a good photo will be ruined.

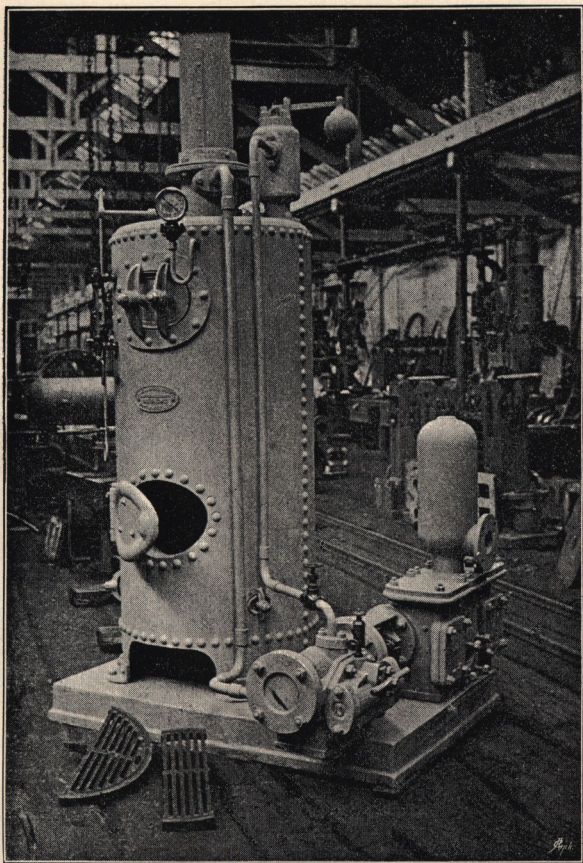
DON'T let your dark room get dirty or disorderly, it will make you repent it if you do.

LASTLY, make haste slowly.

CHAPTER XI.

Paper Printing.

FOR Paper Printing we shall require sensitised paper, preferably in a tin case, Chloride of Gold, Acetate of Soda, Hypo, Printing Frames, Dishes, &c. The Chemicals should be of good quality, especially the gold, and the sensitised paper should also be of the best quality, and the freshest we can obtain; bad chemicals are always a nuisance to the Amateur. Having all these, we shall find that the Paper Printing is a very easy process, and one much simpler than formerly. The paper is already sensitised, and our first work is to cut the sheet up into the sizes we require, and the better way is first to get a piece of brown paper exactly the same size as sensitised paper, and fold it in every way our imagination can conceive, until we get the greatest possible number of pieces size required, then cut up the sheet of sensitised paper in like manner, and take one piece and put it into our PRINTING FRAME, with the sensitised surface of paper resting upon the gelatine surface of negative, behind the paper we will put one or two pieces of folded blotting paper, making a nice pad to keep the sensitised paper quite close to negative in every part, now we close the back of frame, and expose to a bright sky, but not in the direct rays of the sun, and we must every now and again examine the print. First we shall find a dim outline of the picture, by and by it will be very much deeper, but we must not remove the print until we find the dark shadows beginning to bronze, and the light parts getting discolored, then we may remove the print, and if we don't want to tone them until we have printed a lot, we will simply put the prints into a



TAKEN BY A YOUNG AMATEUR WITH LE MERITOIRE.

*A Subject to commence with that will neither move or be
annoyed if we make repeated failures.*

dark box, and before we tone them we must WASH the prints in several lots of water, until the water in last washing is quite clear, then we must put them into the TONING SOLUTION, and this we may make in several ways. No. 1 is about the best, and we leave the print in the toning solution until the color goes beyond our taste, the longer the print is in the solution, the darker will its colour be, but the hypo. will bring back some of the color, we must however be careful not to handle the paper in any way, or let one print rest upon another, better have a pair of ebonite clips or tweezers to move them about, as every finger mark leaves a stain. Either of the other toning solutions below will give good tones, the color of tone we shall find below the formulæ.

1—	Chloride of Gold	1 gr.,	Acetate of Soda	30 grs.,	Water	5 oz.
2—	"	"	1 gr.,	Phosphate of "	20 grs.,	" 6 oz.
3—	"	"	1 gr.,	Bicarbonate "	4 grs.,	" 6 oz.

No. 1. should be made the day before it is wanted, and will keep a long time, this gives warm tones.

No. 2 must be made up just before it is required, and gives purple to black tones.

No. 3 should be made an hour or two before use, and will not keep, this gives brown to sepia tints. No. 1 is by far the best for an Amateur. Having toned our prints, then we wash them for a moment and put them into the FIXING SOLUTION of the same strength as we used for the plates. The prints we will leave in the solution from ten to fifteen minutes, then give them a good washing, better leave them under the tap all night, or make a washing trough containing wooden rails with canvas stretched across, and the prints upon the canvas held down with tapes, over which the water flows, and in the morning we will take them out, pin them to a shelf or rail, and leave them to dry.

When dry we may cut the prints to the size of a cutting glass and mount them on cards.

It is well to moisten prints with water before mounting, putting them between damp sheets of blotting paper is about the best method we can adopt.

When mounted, then their appearance will be much improved by rolling them, or if a burnished surface is wanted, we must use a burnisher. The burnishing we may probably get a professional photographer to do for us at a small cost per dozen prints, as a burnisher will cost 15/-.

CHAPTER XII.

VIGNETTES AND CLOUD NEGATIVES.

VIGNETTES we can easily print by putting over the negative a Vignette glass, or we can make a Vignetting card by cutting an oval out of a black card and glueing a border of cotton-wool all round the margin, then pull the cotton-wool up all round like an oval cloud, this will give a beautiful Vignette, then by using masks and discs we can have either a white or black background at will. A white background is obtained by putting the masks with oval cut out over the vignette glass, then if we want a black background we can print as above and afterwards put the oval piece over the print in the centre and print the outside as deep as we wish.

Cloud Negatives.

NOTHING adds more to the beauty of a landscape than a pretty cloud effect. Now we can make an artificial cloud on our prints by painting on the back of negative, this is never a success, and is really not worth the time it takes. We will await our opportunity, and on some fine day when cumulus or cirrus clouds

are floating about in mid-air, then we will have a few shots at them with our Instantograph. The shutter will have to be worked at its full speed, and when we have got the cloud we want, then we will carefully develope and put away, until it is required for use. We will however make the most of our opportunity, and get at least half a dozen good cloud effects. Having secured them, let us now make use of one of them. We will print our landscape, but will take care to so cover the sky that it will come out perfectly white on print, then in another printing frame we have our cloud negative, and with a piece of paper, cloth or cotton wool, we cover over the landscape and print in the clouds to the depth we require them. We shall find the process exceedingly simple, especially after the second or third attempt and having succeeded, we shall never turn out a production of ours without a charming bit of cloud effect.

CHAPTER XIII.

FORMULAE FOR EXPERIMENTALISTS.

DEVELOPERS.

FERROUS OXALATE DEVELOPER.

Make the following Solutions :

A—Saturated Solution, Oxalate of Potash,
about 1-oz. to 4-oz. of water.

B—Saturated Solution, Protosulphate of Iron,
about 1-oz. to 3-oz. of water.

Add 1 drop of Sulphuric Acid to each Ounce.

To Develop mix as follows :

Slow Plates	...	...	...	IB to 6A.
Rapid "	...	...	...	IB to 4A.
Instantaneous	...	...	...	IB to 3A.

PYRO DEVELOPERS.

- (1) **A**—Pyrogallic Acid 10-grains.
 Distilled Water 5-ounces.
B—Ammonia '880 2-drams.
 Bromide of Amonium 4-scruples.
 Distilled Water 20-ounces.
 To Develope mix 1A to 1B.
- (2) **A**—Pyrogallic Acid $\frac{1}{2}$ -drm.
 Distilled Water 10-oz.
B—Ammonia '880 4-oz.
 Bromide of Potassium 5-drm.
 Distilled Water 10-oz.

To DEVELOPE, soak the plate in water for a few seconds then flood with a small quantity of A. After it has flowed backwards and forwards, put into a dish a little more A and 5 drops B, then put plate in and oscillate gently, adding more drops of B as required, generally 18 to 20 drops in all of B will bring out a good negative.

- (3) **A**—Pyrogallic Acid $\frac{1}{2}$ -oz.
 Glycerine $\frac{1}{2}$ -oz.
 Alcohol 3-oz.
B—Bromide of Potassium $\frac{1}{2}$ -drm.
 Ammonia $\frac{1}{2}$ -oz.
 Glycerine $\frac{1}{2}$ -oz.
 Water 3-oz.

To prepare for developing get two 16-oz. bottles, label them A and B, then put 1-oz. of A into the first bottle and fill up with Distilled Water, and into the second bottle put 1-oz. B and fill up with water.

To develope take equal parts of A and B.

TOUGHENING SOLUTIONS.

In addition to the plain alum solution, we may use the following :—

- Finely Powdered Alum 4-oz.
 Common salt 2-oz.
 Water 40-oz.

This can be made and kept as a stock solution.

Another solution can be made as follows :—

Finely Powdered Alum	...	...	...	...	2 oz.
Citric Acid	...	...	...	...	1-oz.
Distilled Water	...	...	...	...	20-oz.

A third solution, very useful to harden the film and remove stains after pyro. development is as follows :

Finely Powdered Alum	...	...	...	...	1-oz.
Oxalic Acid	...	...	...	...	1-drm.
Distilled Water	...	...	...	...	10-oz.

This must be used before the plate is fixed.

TONING SOLUTIONS.

In addition to the three solutions mentioned before we may make the following stock solutions. The Chloride of Gold may be obtained in $7\frac{1}{2}$ and 15-grain tubes, and we will make up whichever suits us best. The first is using $7\frac{1}{2}$ grains.

A SOLUTION :

Chloride of Gold	...	...	...	...	$7\frac{1}{2}$ -grs.
Distilled Water	...	...	...	...	2-oz.

Keep this in stoppered bottle.

B SOLUTION :

Phosphate of Soda	...	...	...	...	$\frac{1}{4}$ -oz.
Acetate of Soda	...	...	...	...	$\frac{1}{2}$ -oz.
Distilled Water	...	...	...	...	40-oz.

To Tone, mix 1-drm. of A to 4-oz. of B.

Another solution is made up as follows :—

Chloride of Gold	...	...	...	...	1-grain.
Carbonate of Soda	...	...	...	...	3-grains.
Acetate of Soda	...	...	...	...	1-drm.
Distilled Water	...	...	...	...	6-oz.

INTENSIFYING SOLUTIONS.

A —Bichloride of Mercury	...	...	...	...	$\frac{1}{2}$ -oz.
Chloride of Ammonium	...	...	...	...	$\frac{1}{2}$ -oz.
Water	...	...	...	...	10-oz.

Shake well until the mercury is dissolved.

B —Ammonia	...	...	...	...	$\frac{1}{2}$ -oz.
Water	...	...	...	...	10 oz.

The plate to be intensified is put into **A**, and left in for some minutes until it has a white filmy appearance, then it must be washed and put into **B** until black. The plates should be well washed and varnished.

Another intensifier may be made as follows:—

Bichloride of Mercury	½-oz.
Water	20-oz.

Dissolve the Mercury, then add Iodide of Potassium sufficient to cause a vermilion precipitate and to just re-dissolve the precipitate.

This may be poured over the negative until it is as dense as required.

IMITATION GROUND GLASS.

A Varnish made of—

Gum Sandarac... ..	1½-drms.
Mastic	1 scruple
Ether	2-oz.
Benzole... ..	1-oz.

will, when poured on a plain piece of glass, replace the focussing glass. A small bottle is useful on a journey.

BEACH'S DEVELOPER.

A —Pyrogallic Acid	1-oz.
Sulphurous Acid	3¼-oz.
Sulphite of Soda	4-oz.
Distilled Water	4-oz.

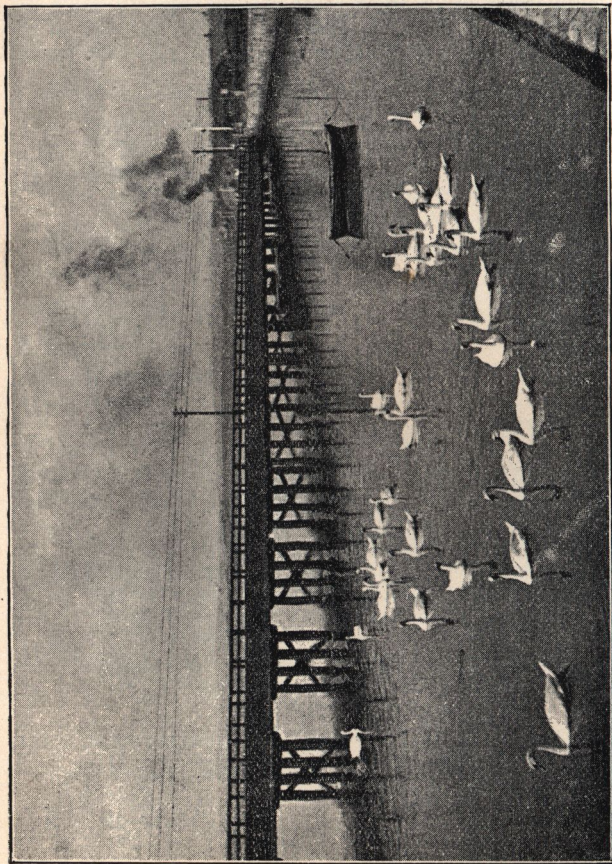
The Sulphite of Soda should be dissolved in the Distilled Water at a temperature of about 150 degrees, then the acids added.

Then mix in separate bottles—

B —Sulphite of Soda	2-oz.
Water	4-oz.
C —Carbonate of Potash	3-oz.
Water	4-oz.

Then mix both together and call it B.

To use, add 20 drops of A, and 30 drops of B to one ounce of water for ¼ plate.

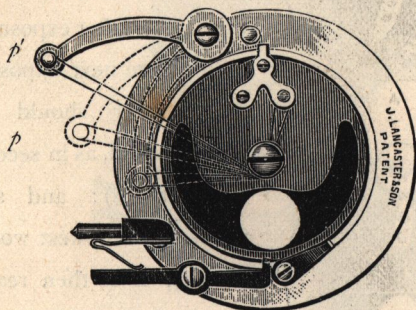


THE SWANS AT WEYMOUTH, TAKEN WITH INTERNATIONAL

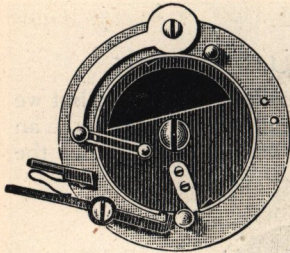
CHAPTER XIV.

Instantaneous Work.

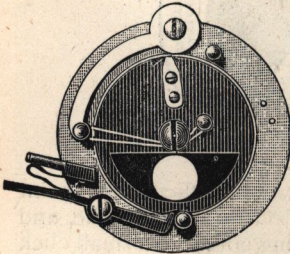
THIS is more difficult than slow plate work, but we can be successful if we like, and here we must make an experiment similar to the first one. We will put the



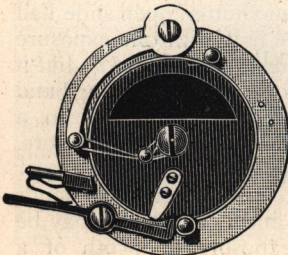
india-rubber band on the peg (p), then focus some point in the view nearest to the object we want to take, and move the stop round until spring goes into a small click in shutter and is ready for exposing ; we put in the slide, open it all the way and expose, then close the shutter of dark slide, reset instantaneous shutter, open slide half way and expose again. If the half with one exposure is done well, then the exposure will do from (p') but if the double exposure is right, then the arc carrying band must be pulled out one click only ; again, if in a brilliant light, pulled out five or six clicks or more, according to trials. With this LANCASTER'S PATENT SHUTTER almost any exposure may be given as bands of all strengths may be used, and two or three may be used at the same time ; an exposure of 150th of a second can be obtained with it, and down to almost anything.



A



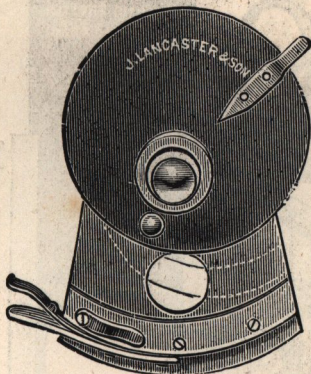
B



C

The shutter is set before the exposure in the following manner.— The first woodcut (A) represents the shutter after exposure ; then before next exposure the shutter should be moved round, as in second woodcut (B) ; and still further as in lowest woodcut (C), it is then ready for exposure. This shutter may have its speed increased considerably by putting extra elastic bands on extending arm on the side to any distance this giving a great latitude in length of exposure. The shutter is set as at B when focussing.

WE have here another Shutter. The Elliptical Shutter, which we shall find an excellent shutter in use;



$\frac{1}{4}$, 7/6

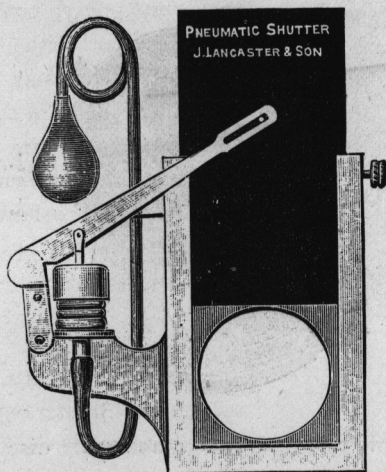
$\frac{1}{2}$, 10/-

$\frac{1}{1}$, 15/-

the principle of the shutter is a rotating disc mounted out of centre, so that as the disc rotates, it gradually exposes the foreground first, then trees, and lastly the sky, and we can readily understand that the foreground will have the longest exposure, and that the sky will have the least exposure, the exposures between these being graduated as perfectly as possible. The shutter can be driven at any speed, the centre screw being used for winding up the spring which increases speed considerably; this can be released in an instant, and a second screw clamps disc for slow exposures, so that almost any variation of speed can be obtained.

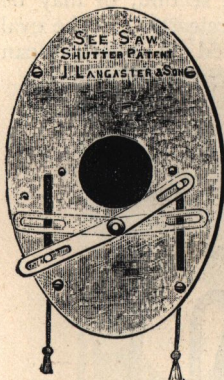
This shutter is made for $\frac{1}{4}$, $\frac{1}{2}$, and $\frac{1}{1}$ plate only, and not for larger sizes.

HERE we have a shutter exceedingly simple in action and very convenient in use. The black disc is made of enamelled ferrotypé, very light indeed and moving freely



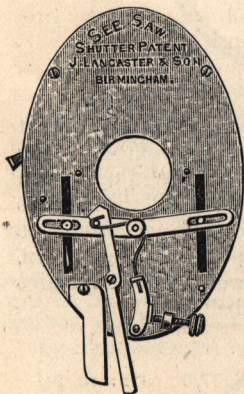
in two grooved slots, one on each side of frame; the thin piece of brass working on pin is a lever moved by means of compressed air. The pneumatic ball at one end of tube is to be held in the hand, and by gently compressing it we inflate the small bellows under lever, thus raising lever and lifting shutter. The moment pressure is withdrawn the shutter flies back again, thus making a rapid up and down motion, or by keeping ball compressed, the shutter will remain up for any length of time. If we desire a very rapid exposure, then the ball is pinched and released quickly, or by holding the ball between finger and thumb, and hitting ball sharply against any hard substance, then the exposure will be very rapid indeed.

$\frac{1}{4}$ PLATE, 7/6; $\frac{1}{2}$ PLATE, 10/6 $\frac{1}{1}$ PLATE, 15/-;



THE "SEE-SAW" SHUTTER is a very pretty, compact and useful shutter; with it the most rapid exposures may be made, and it may be used equally well for exposures of any duration, we may, in fact, dispense with a cap and use this shutter for any exposure between $\frac{1}{100}$ second and one hour or longer.

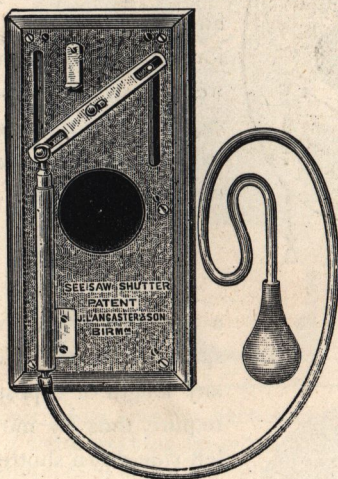
$\frac{1}{4}$, 5/- $\frac{1}{2}$, 7/6 $\frac{1}{4}$, 10/-



The lower woodcut illustrates a See Saw Shutter with driving spring and catch click giving us any length of exposure we may require, thus by moving pin on left side down shutter is set and by pressing spring on side the shutter is released, and shoots across in a small fraction of a second. When a time exposure is required we must set shutter and move click as in woodcut then shutter opens and will remain open until we release click.

$\frac{1}{4}$, 10/- $\frac{1}{2}$, 12/6 $\frac{1}{4}$, 15/- 12 x 10, 21/-

THE Shutters are both of same weight and are moved by pressure of air only in press ball. The shutters can be moved across in $\frac{1}{100}$ of a second, or may be kept up any length of time and released. The oval "See-Saw" is a simple form moved by cords and can be worked at any speed without the least vibration.



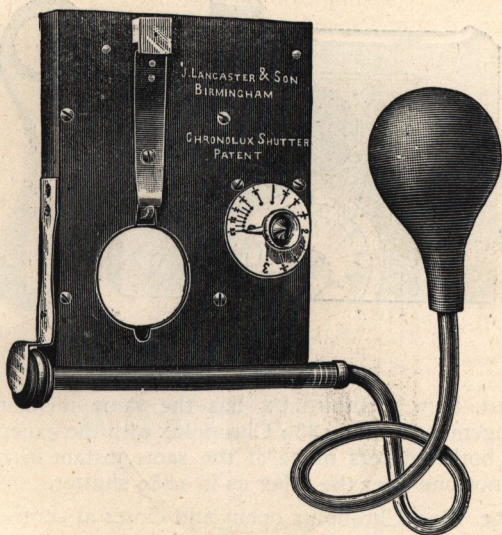
The "See-Saw" Shutter is one of the simplest mechanism and the most perfect ever invented. For rapid exposure the brass plate at top is turned up, piston is pushed down, and then, by pressing ball, the shutters cross each other at any speed we like, according to pressure. For time exposures we put brass plate down, press ball and shutter opens as in woodcut, and remains open until we release pressure on ball.

BEST FORM WITH PNEUMATIC ARRANGEMENT.

$\frac{1}{4}$, 10/6 $\frac{1}{2}$, 12/6 $\frac{1}{1}$, 15/- 10 x 8, 17/6 12 x 10, 21/-

A SHUTTER WHICH COMBINES
ALL THE REQUIREMENTS OF A PERFECT AMATEUR IS

The Chronolux



LANCASTER'S NEW PATENT TIME SHUTTER.

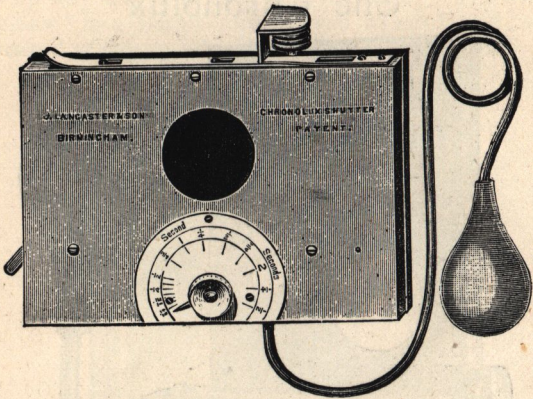
THIS SHUTTER has, since its introduction, been a great success, and having now been thoroughly tested and improved in several details, is pronounced one of the best shutters ever invented.

The Chronolux will give any exposure from $\frac{1}{84}$ th to three seconds, and is set in the following manner: the projecting arm at the bottom of spring, in front of shutter, is drawn down until it goes into aperture at bottom of clear opening; the finger on engraved dial is then set, by means of brass nut, to any number or parts of seconds required, then the shutter is ready for exposure.

The exposure is made by pressure of india-rubber release.

PRICES: $\frac{1}{4}$ -PLATE, 21/-; $\frac{1}{2}$ -PLATE, 25/-; $\frac{1}{1}$ -PLATE, 30/-

The 1890 Chronolux.



THE NEW CHRONOLUX has the same mechanical arrangements as the 1889 Chronolux with the exception that both shutters move at the same instant in 1890, and not one after the other as in 1889 shutter.

The 1890 Chronolux opens and closes at centre and moves without the slightest vibration, it works from $\frac{1}{84}$ th of a second to 3 seconds, and by moving the lever on left-hand side and slide on top, any length of exposure may be obtained.

To set the shutter the lever on left hand side is lifted up until it clicks, then the index finger is moved round to second or part of second required, and shutter is then ready for release.

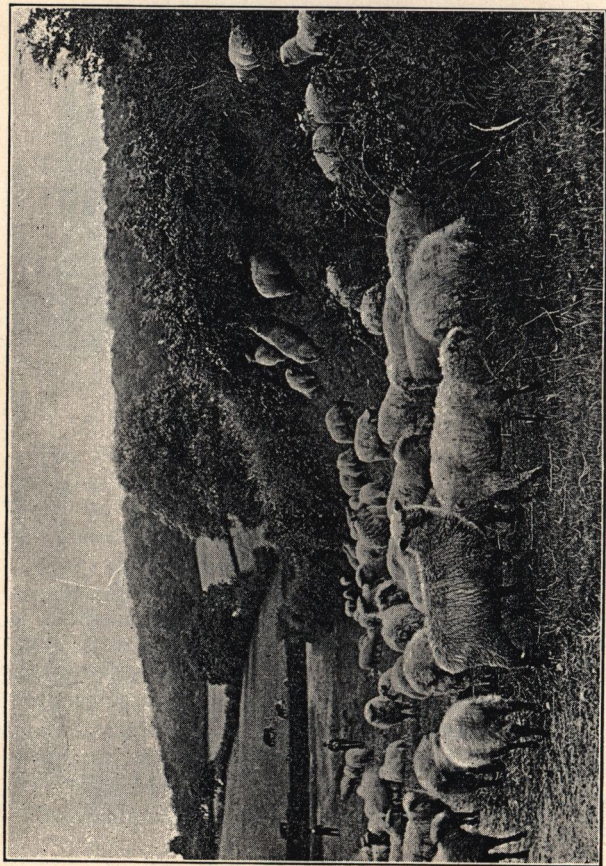
The shutters are beautifully finished, gilt and oxidized.

— PRICE —

$\frac{1}{4}$ -PLATE, 25/-

$\frac{1}{2}$ -PLATE, 30/-

$\frac{3}{4}$ -PLATE, 35/-



A PASTORAL SCENE.

A Snap Shot. The Lambs had no idea they were being photographed.

We have now looked over several shutters, and we might continue for a twelvemonth looking at and writing about the endless variety of shutters that are now at the call of any amateur, but possessing a shutter is one thing, and taking a good instantaneous photo another. There is more caution required in taking an instantaneous plate, than in anything else. Hurry will spoil everything. Sea pictures are beautiful when just caught right: we must wait perhaps some time, to get the right wave, and to get it in the right position, and it is worth all the waiting for when we have secured it. We must never work opposite a bright light, or we shall fail; better have the light at right angles, or nearer our backs than our faces. A Yacht or Steam-Boat, or a group of Swans make a beautiful picture when nicely taken. A Railway Train is difficult to get, but may be easily taken: The Camera should be placed at an angle of say 45 degrees to the approaching train, and of course on the bright side of the train, then wait patiently until the engine is say twenty yards away, and expose. After a trial or two we shall succeed. For this kind of work it is absolutely necessary to have a finder so that we may not start the shutter at the wrong time.

Sometimes Instantaneous Photography does not satisfy us, we then go back to slow work, and especially do ladies adhere more than gentlemen to slow, and generally more perfect work, and it repays them. When we meet a lady amateur and discuss with her the relative merits of quick and slow pictures, she tells us that there is no haste or hurry with her in her pursuit of photography, she tells us she can carry the whole of her apparatus in an ordinary satchel, and the stand in a short case, and thus equipped she is sure of having some excellent negatives upon her return.

We listen to her, and we at last learn that with an apparatus of the highest quality, and of the least

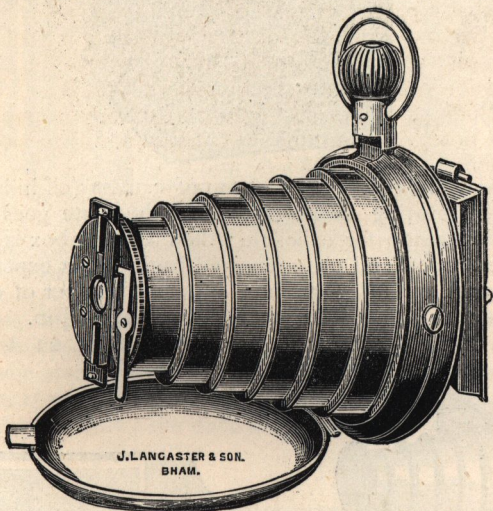
possible bulk, our lady companion can obtain charming little studies of nature's choicest bits : she can expose plate after plate, and after the tour is ended she may develop them at her leisure, or may be some amateur of the sterner sex will be only too pleased to have the honor of developing them for her. Ladies are so full of artistic taste and have so much patience in their work, that a picture of some fairy dell from their hands would in our work too often appear like a used up gravel pit. An album filled by a lady would offer matter for conversation evening after evening among her friends, and the little suggestions of others made a mental note of at the time, would spur her on to higher ambitions, and her friends would follow her in her work, and no doubt a pleasant rivalry would start into existence and drive away *ennui*, dyspepsia, and the thousand and one ailments of the fair sex. The Lady amateur is ever on the look out for some new spot; to her, no longer is time a bore, but passes away far too quickly; to her, nature becomes far more beautiful and interesting, and the world a much happier place to live in.

CHAPTER XV.

Defective or Hand Camera Work.

THERE are so many Cameras sold under these names that an amateur has great difficulty in knowing which to choose; let us examine one or two varieties and then we can at once decide whether we will take up this kind of work or not.

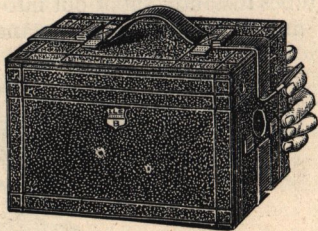
LANCASTER'S PATENT WATCH CAMERA is a new departure in cameras. The camera when closed is exactly like an ordinary watch. The camera is opened in an instant by pressing a spring, when a series of about half a dozen tubes instantly shoot out into position, and by means of another spring an instantaneous exposure is made.



The Lens is a very rapid one, and can be adjusted for taking portraits, groups, or views, &c. Extra plate holders may be had to carry sensitised plates, 1/6 each.

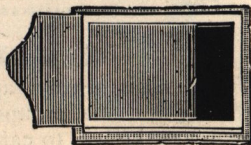
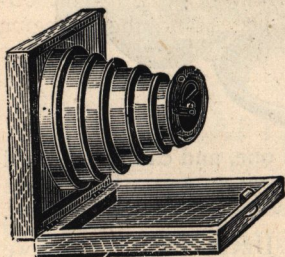
LANCASTER'S NEW 1890 DETECTIVE CAMERA we shall find to be about the simplest and most successful we can use. The camera is enclosed in a leather case and is so made that not any portion of camera is visible. The lens is a superior achromatic one of fixed focus made expressly for this camera; the shutter is of the "See-saw" pattern, and we shall be able to give any ex-

posure we desire with the simplest motions ; we shall also be able to adjust size of diaphragm by simply lifting leather tab in front and setting diaphragm to aperture we require. The changing of plates is most simple, a



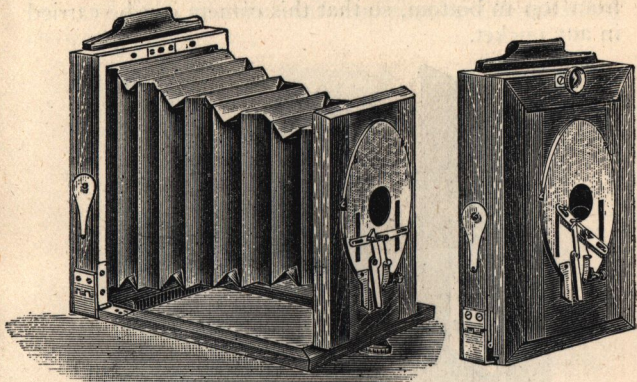
changing box goes into bottom of camera (all hidden), and by moving slide out and in, the plate goes into position ready for exposure ; the changing box is then turned round and plate received back. Six exposures are made out of each box and any number of extra boxes may be carried ; the plates are $4\frac{1}{4} \times 3\frac{1}{4}$ -in.

CHEAP FORM, £3 3 BEST FORM, £4 4
WITH RECTIGRAPH LENS, £5 5.



THE above represents THE WAISTCOAT POCKET CAMERA ; this is made of metal tubes springing out and carrying lens and shutter, and closing up into a small morocco case. The plates are $2 \times 1\frac{1}{2}$ -in. and are carried in the metal slides on right hand side, three of them going with camera for 31/6.

HERE we have a new form of Camera ; THE SNAP SHOT CAMERA opens out in an instant and having a fixed focus lens, is ready for immediate exposure. The



$\frac{1}{4}$ -PLATE, 42/- $\frac{1}{2}$ -PLATE, 84/-

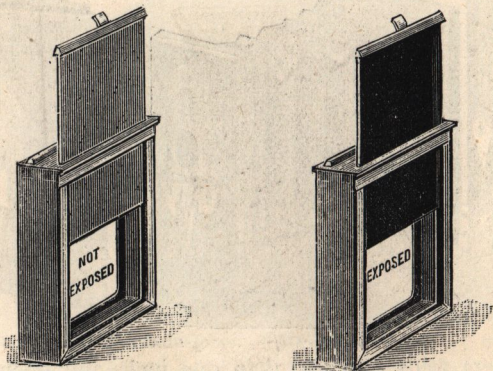
camera folds into less than one inch, and opens out and clamps to tail board by means of special hinges and one screw only. Each camera has a changing box (*see next page*), carrying six $\frac{1}{4}$ plates, and the changing is done instantly ; the dark shutter does *not* have to be drawn up for exposure.



$\frac{1}{4}$ -PLATE, 42/- $\frac{1}{2}$ -PLATE, 84/-

LONG SHOT CAMERA. This is made on an altogether new principle ; the camera consists of a front and back

hinged to a light tail board and joined together by a bellows with only one fold, so that the front and back can close right down to tailboard into less than 1-in. from top to bottom, so that this camera can be carried in any pocket.



The Changing box carries six plates and dispenses entirely with a dark slide, the changing of plates being almost too simple.

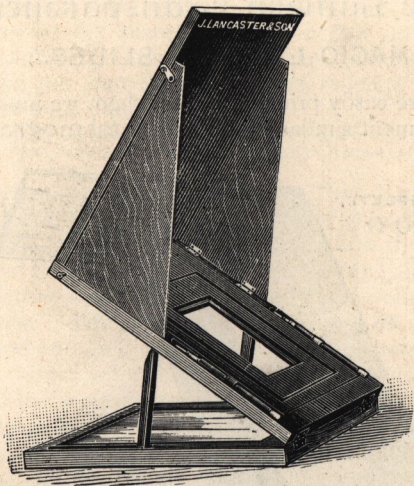
The Lens is a best one made expressly for this camera, and "See-saw" shutter is built at the back of iris diaphragm, so that the whole thing goes into a remarkably small space.

CHAPTER XVI.

Retouching.

This is a process often valuable in portrait work, although there are a number of amateurs who would be shocked if the question was put to them whether they had retouched the negative; however, some prefer a

retouched picture, and it is as well perhaps to know something about it. For retouching we shall require several pencils, and we cannot do better than get BB, HB and HH, and we shall also require a Retouching Desk.



- $\frac{1}{4}$, 5/-
- $\frac{1}{2}$, 7/6
- 1, 10/6
- 10 x 8, 15/-
- 12 x 10, 21/-

We place our negative upon the ground glass and can then commence retouching, taking care that our negative is perfectly dry; then we varnish it with any retouching varnish or medium, and work carefully with the pencil we find most suitable, varying them as we want light or dark shadows. Gelatine negatives may be often retouched without using any medium, but it is a simple process to rub the medium with a soft piece of silk carefully over the parts to be retouched, and we must work very carefully at first, perhaps simply filling in lines upon the face that may be too pronounced, and afterwards we can do a little modelling and retouching of hair, dress, &c.

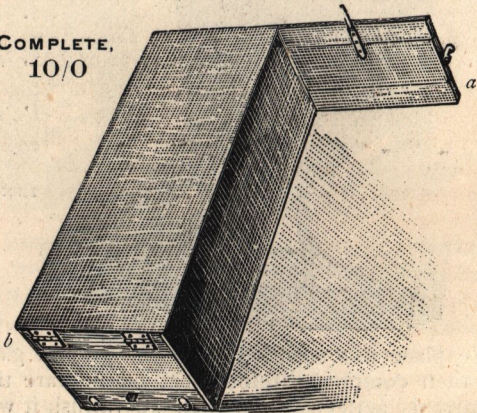
CHAPTER XVII.

Magic Lantern Transparencies.

MAGIC LANTERN SLIDES.

These are easily printed, and for them we must have an arrangement similar to the "Phantasmograph."

COMPLETE,
10/0



This consists of a long camera made to take the $\frac{1}{4}$ -plate negative, and we may use dry plates $3\frac{1}{4} \times 3\frac{1}{4}$ for obtaining transparencies, these we may either have of the gelatino chloride or gelatino bromide kind, the former are much slower than the latter, but give a much cleaner picture. Having obtained our plates, we will go into the dark room and close door (*a*) and open (*b*), into which we will place the negative with the gelatine surface upwards, then put the dry plate gelatine surface down, touching surface of negative, and covering that

part of negative desired to be copied; then close door (*b*) and take the Phantasmograph out of the dark room, and in daylight open the door (*a*) for one second, or in dull light two seconds, or by gaslight five or six seconds when Phantasmograph is held one foot away from the gas burner; then we take it back into dark room, remove the dry plate and place it face upward into a dish containing water for two minutes, and while in this dish, we put into another dish as much A solution as will cover the plate as follows:—

A solution: Distilled water, 10-oz. Pyrogallic Acid 20-grs.

B solution: Ammonia, 1-oz. Bromide of Ammonium, 1-oz.

Water, 3-oz.

We will label these A and B. Then for developing add 15 drops of B to every ounce of A. We now put the plate into developing dish and allow the developer to move backwards and forwards, for say half a minute; the picture should by this time appear well defined on the plate. The plate may be lifted out of the dish for a second and held up to the window, if not sufficiently dense we will put it into the developer again and leave it until the picture can be seen through the back of the plate by reflected light.

Then we will wash to remove the developer, and fix in hypo. solution until quite clear. The solution should be hyposulphite of soda 1-oz., water 4-oz. Swill well for a couple of minutes, or put into a dish of water and leave it until every trace of hypo. is removed.

This is a simple method of developing, but we can use any other developer, and with care we shall be equally successful.

Now we will take a gelatino-chloride plate, and having gone through the same process as above, with the exception of exposure, which must be five times longer for daylight, and from three to seven minutes exposure by gas light, same distance away as with other plate; then for developing, we cannot do better than use Cowan's formulæ as follows:—

DEVELOPERS.

No. 1. For Cold Tones.

Potass Citrate 136 grs.
,, Oxalate 44 grs.
Hot Distilled Water... 1 oz.

No. 2. For Warm Tones.

Citric Acid 120 grs.
Ammonia Carb. 88 grs.
Cold Distilled Water... 1 oz.

No. 3. For Extra Warm Tones.

Citric Acid 180 grs.
Ammonia Carb. 60 grs.
Cold Distilled Water .. 1 oz.

*To 3 parts of either of these add 1 part of the following
at time of using:—*

Sulphate of Iron, 140 grains ; Sulphuric Acid 1 drop ;
Distilled Water, 1 ounce.

For development, place the exposed plate in a porcelain dish and flood over with sufficient of either of the above developing solutions, keeping the dish rocking ; the time required will vary from 1 to 10 minutes, according to the developer used and the density required. No. 1 is the quickest, No. 3 is the slowest developer.

A great variety of tones may be obtained by mixing the first and last developers together in different proportions, and altering the exposure to suit the developer.

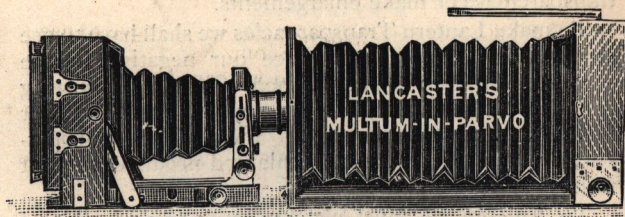
The addition of from five to ten minims of a 10 per cent solution of Sodium Chloride to each ounce developer will considerably modify the color and allow of much longer exposure, and is valuable when very rich warm tones are required.

The plates should develop absolutely clear in the parts that have received no exposure.

After development wash and fix in clean hyposulphite of the usual strength. Nothing further is required than to wash the plates thoroughly, and after drying, varnish with crystal varnish if required.

CHAPTER XVIII.

Enlarging,



As we become perfect in our work, so shall we be looking ahead for something of a higher class, and we shall find no work more satisfactory and pleasing than enlarging some of our prettiest little bits, and by perhaps adding a little color to them (although better without), and hanging them round our walls as specimens of our successful work. Enlarging is not difficult but we must have an apparatus especially made for the work, otherwise we cannot succeed.



TO ENLARGE
UP TO

$\frac{1}{4}$ -PL., 10/6;

$\frac{1}{2}$ -PL., 15/-;

$\frac{1}{1}$ -PL., £1 1;

10 × 8, £1 5.

12 × 10, £1 10.

15 × 12, £2 0.

30 × 24, £5 5.

THE "MULTUM-IN-PARVO" is an enlarging and reducing apparatus made in a cheap yet serviceable form for use at home; with it we can take lantern transparencies or make enlargements.

To make Lantern Transparencies we shall have to use our ordinary camera, and place our negative in the carrier of Multum-in-Parvo; then we can, by adjusting distance of lens from plate, get any part of the subject included in our transparency. We shall find transparencies very useful in making enlarged negatives to print from.

To Enlarge we must place negative in dark slide of our own camera and then draw out Multum-in-Parvo until we have the picture as large as we require it, then we put our bromide paper on back of dark slide, as in woodcut, fastening it down with mapping pins, and make our exposure as per instructions given in this chapter.

In using the Multum-in-Parvo we shall find that the best position to place camera will be directly opposite north to north-east and inclined upwards about 45° ; then we shall obtain a fine illumination without any dark shadows.

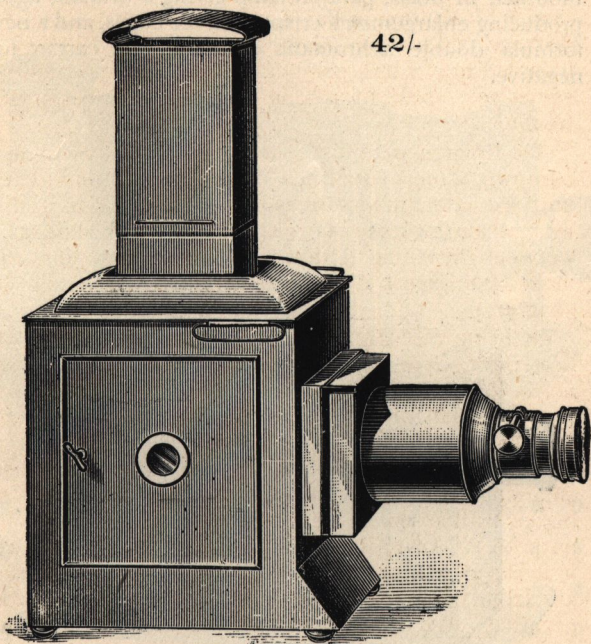
We can, during the long winter months, do our enlarging with either an ordinary magic lantern or, far better, with an enlarging lantern made expressly for the purpose. An ordinary magic lantern will answer well if it has an achromatic object lens, and the condensers are large enough to cover all that we require of our negative. We cannot make a good enlargement from a $\frac{1}{4}$ -plate negative with condensers under 5 inches in diameter.

A special enlarging lantern with 5-in. or 6-in. condensers is the best form we can use, but it is possible to do really first-class work with the Amateur's Enlarging Lantern. This lantern has a pair of best 4-in. double combination condensers, achromatic object lenses in

rackwork mounts, and an excellent lamp. With such a lantern we can make our enlargements, make our lantern transparencies, and exhibit them at home.

LANCASTER'S
Amateur Enlarging Lantern,

42/-

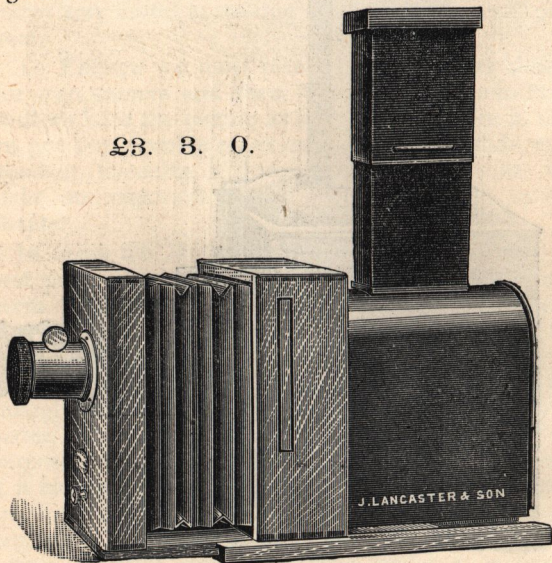


At the same time, we shall of course find that we can only enlarge that portion of the $\frac{1}{4}$ -plate negative which is contained in a circle $3\frac{3}{4}$ -in. in diameter, and if we want to enlarge from the whole of the plate, we must use a larger lantern, and most probably the lantern on next page will be sufficiently large for ordinary purposes.

THE "Lancaster" Enlarging Lantern,

THIS Lantern has a pair of 5-in. best Condensers, mounted in brass, paraffin lamp giving a brilliant light, producing enlargements crisp up to the edges, and a new formula double achromatic objective, and carrier for negative.

£3. 3. 0.

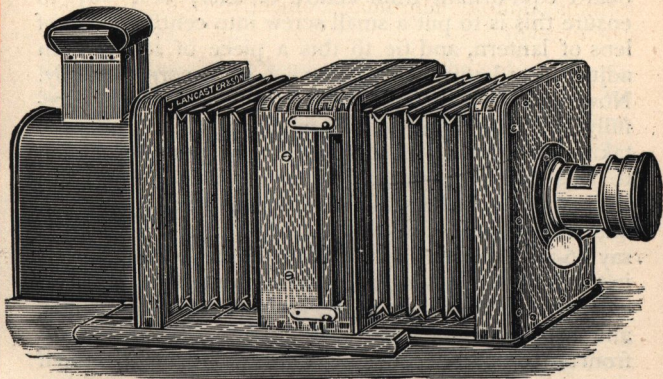


With this enlarging lantern, first-class enlargements can be obtained with the greatest ease, up to 36×30 .

This Lantern is a very useful one, and is especially suited for enlarging from $\frac{1}{4}$ plate negatives. If we wish a larger lantern, to enlarge from $\frac{1}{2}$ to $\frac{1}{1}$ plate negatives, then we must have one of the lanterns on next page.

❧ FIRST QUALITY ❧

ENLARGING LANTERNS.



429	Enlarging Lantern, with 6in. Condensers, &c.	£6 6 0
430	" " " 7in. "	" 8 8 0
431	" " " 8in. "	9 9 0
432	" " " 9in. "	10 10 0
433	" " " 10in. "	12 12 0
434	" " " 11in. "	14 14 0
435	" " " 12in. "	16 16 0

Whichever Lantern we employ, the process is practically the same, and we follow the same course of procedure.

First we must make a frame, or use a drawing board, on which we fasten our enlarging paper with mapping pins, and we take care to have each corner of this board equi-distant from centre of lens; best way to ensure this is to put a small screw into centre of cap of lens of lantern, and tie to this a piece of string, then adjust board until string touches each corner exactly. Now, upon a piece of white cardboard we focus carefully the image, and get as much of it as we require, taking care that all is square, we now put the cap on to lens and pin enlarging paper in place of cardboard and expose; the length of exposure depends upon light, and we can easily find this out by using a strip of paper say 16-ins. long and 2-ins. wide; on this we can expose in sections, by moving a board in front of it, thus we can move board 2-ins. at the end of each ten seconds, and we shall have eight sections going by ten seconds from ten to eighty seconds exposure. We develope, and if not exposed enough in any part, we then take another strip and expose for ninety seconds, and go on by twenty seconds each extra 2-ins. Develope, and we shall now have obtained correct exposure. Now we expose our sheet of paper and then we take it into our dark room, and put it into a dish of water, leaving it there for a minute or so while we put into the developing dish the developing solution, made as follows:—

A —Oxalate of Potash	...	...	...	4-oz.
Hot Water	...	...	...	12-oz.
Sulphuric Acid	...	...	...	$\frac{1}{2}$ scruple
B —Protosulphate of Iron	...	...	...	4-oz.
Hot Water	...	...	...	8-oz.
Sulphuric Acid	...	...	...	6 minims
C —Bromide of Potassium	...	...	...	$\frac{1}{4}$ -oz.
Water	...	...	...	8-oz.

To use, we must mix the A, B and C in the proportions: 48 A, 8 B to 1 C, or for a small sheet of paper, say 3-oz. A, $\frac{1}{2}$ -oz. B, and $\frac{1}{2}$ -drm. C. The paper must be put into this developer, and we watch it develop until we have it the color we require, we then put it into the clearing solution

Acetic Acid	1 scruple
Alum	3-oz.
Water	10-oz.

for one minute, then we must fix it in the ordinary hypo. solution, afterwards well washing before drying, as we wash the dry plates. By the exercise of a little care, and a great deal of cleanliness, and using dishes for their own solutions and no others, we can soon become expert enlargers. We can make the dishes required out of Willesden Paper, or of wood, lined with shellac varnish, or even lined with asphalt varnish.

As it is not human rest when one has climbed the first rung in the ladder, but to go on rung after rung until we get to the top, so is it in photography. Assuming that we have a progressive brain, then we shall go on, we shall not be satisfied with obtaining a certain result one way, but we shall endeavour to do the same by some other method and altogether in a different manner and we shall search for the cause. The grey covering matter of our cerebrum will be stored with impressions to be used, may be in large combinations of thought giving rise to some new conception, and one day we may become famous simply by the discovery of some simple law no one else has ever found out; but as there is an end to everything, so is there an end to our little journey. By and by we must part companionship, before we do so let us make up our minds not to be second best in anything we attempt, but to try to excel in everything we put our hands to, and as we go on we shall never forget the surprise and delight with which we watched the creamy film giving its first indications

of the tracery of our earliest picture ; the charm never dies, each succeeding picture charms us as the doll charms the babe, and beyond all there is a mystery which, however much we outstrip our compeers, is always present with us, and when we know all that can be known by man about the theories of color, the action of various parts of the spectrum upon different chemicals, the part played by the wave theory in the production of photographic images, when we know it all, even then the charm is not less beautiful and the pleasure not one whit more dull than when we knew next to nothing and thought we knew everything ; and now we have read all, seen all, and have apparently reached the goal, we are as far away as ever. The science and art of photography offer fields of research so wide that the keenest intellect and the sharpest eye cannot see even the dim outline of, but we must come back, my space has reached its limit, and I can only hope that what has been to me a source of infinite pleasure, will give to those who have accompanied me even a greater delight than I have experienced ; I can assure them they will find that there is no subject so interesting and no recreation so full of pleasant surprises as that of AMATEUR PHOTOGRAPHY.



ABRIDGED CATALOGUE.

All Prices Nett.

The 1890 "Le Merveilleux" Sets.

See page 12.

CONSISTING of Camera, Double Dry Slide, Lens and Stand, one dozen Dry Plates, Developing and Fixing Ebonite Dishes, Developing and Fixing Solutions, Ruby Lamp and Book of Instructions.

300A	No 300— $\frac{1}{4}$ plate, complete as above	..	£1 7 6
302A	" 302— $\frac{1}{2}$ " " "	..	2 12 6
304A	" 304— $\frac{1}{4}$ " " "	..	3 15 0
305A	" 305—10×8 plate "	..	5 5 0
306A	" 306—12×10 " "	..	6 15 0

The 1890 "Le Meritoire" Sets.

(PATENT).

See page 13.

COMPLETE SETS FOR TAKING NEGATIVES.

EACH set consists of Camera with Double Swing Back, Universal Moving Front, Double Dry Slide, Achromatic Lens in Rack Mount, Folding Stand with Brass Top, one dozen Dry Plates, Developing and Fixing Solutions, Ebonite Dishes, Ruby Lamp, and Book of Instructions.

310A	" LE MERITOIRE," $\frac{1}{4}$ plate, as above	£1 17 6
312A	" " $\frac{1}{2}$ " "	3 15 0
314A	" " $\frac{1}{4}$ " "	5 10 0
315A	" " 10×8 "	7 0 0
316A	" " 12×10 "	9 0 0

EXTRA SLIDES.

TO MERVEILLEUX OR MERITOIRE SETS.

$\frac{1}{4}$	$\frac{1}{2}$	$\frac{1}{4}$	10×8	12×10
5/6	10/6	18/-	25/-	35/-

Opticians, BIRMINGHAM.

The 1890 "Instantograph" Sets.

(PATENT.)

— See Page 14. —

COMPLETE SETS FOR TAKING NEGATIVES. (A)

EACH SET consists of Camera, with Leather Bellows, Universal Front, Double Swing Back, Swing Front, Best Instantaneous Lens with Patent Shutter, Mahogany Camera Stand, One Dozen Instantaneous Plates, Developing and Fixing Solutions, Developing and Fixing Dishes, Ruby Lamp and Book of Instructions.

320A	No. 320, with Chemicals, &c., as above ...	£2 8 6
322A	" 322, " " ...	4 16 6
324A	" 324, " " ...	7 6 0
325A	" 325, " " ...	9 15 0
326A	" 326, " " ...	12 0 0

COMPLETE SETS FOR NEGATIVES AND PRINTS. (B)

THESE SETS, in addition to above, contain every requisite for Paper Printing, including Sensitised Paper, Toning and Fixing Solutions, Toning and Fixing Dishes, Printing Frame and Book of Instructions.

320B	No. 320, and Chemicals, &c., as above ...	£2 13 6
322B	" 322, " " ...	5 7 0
324B	" 324, " " ...	8 1 0
325B	" 325, " " ...	10 16 0
326B	" 326, " " ...	13 5 0

COMPLETE OUTFITS FOR NEGATIVES, PRINTS, &c. (C)

THESE SETS consist of the Camera, Lens, Stand, 3 Double Dry Slides, 2 dozen Plates, Ruby Lamp, 6 Dishes, Printing Frames, Scales and Weights, Sensitised Paper, large stock of Chemicals, Vignette and Cutting Glasses, Measures, Plate Box, Compound Focuser, &c., in Polished Cabinet.

320C	Complete Outfit, $\frac{1}{4}$ plate	£4 4 0
322C	" $\frac{1}{2}$ "	7 7 0
324C	" $\frac{1}{2}$ "	10 10 0
325C	" 10 x 8 plate	14 14 0
326C	" 12 x 10 "	20 0 0

— Opticians, BIRMINGHAM. —

THE 1890

SPECIAL BRASS-BOUND INSTANTOGRAPH.

(PATENT).—See page 15.

THIS apparatus combines the Instantograph and the International, and while being exceedingly compact, yet at the same time possesses a longer extension than the ordinary Instantograph. The Tail Board folds over and protects the Focussing Glass. The Lens is a selected one, and has our new Patent See-Saw Shutter. A mahogany Stand with brass top goes with each set, and one Brass-Bound Double Slide.

EACH SET CONSISTS OF CAMERA, SLIDE, LENS, AND STAND.

320BB	PRICE COMPLETE for $\frac{1}{4}$ plate	£2 10 0
321 "	" " 5×4 plate	4 0 0
322 "	" " $\frac{1}{2}$ plate	5 0 0
323 "	" " $7\frac{1}{2} \times 5$ plate	6 6 0
324 "	" " $\frac{1}{2}$ plate	7 10 0
325 "	" " 10×8 plate	9 9 0
326 "	" " 12×10 "	11 11 0
327 "	" " 15×12 "	13 13 0

EXTRA BRASS BOUND SLIDES.

		$\frac{1}{4}$	$\frac{1}{2}$	$\frac{1}{2}$	10×8	12×10	15×12
328	Double Dry Slides	9/6	14/6	22/6	30/-	42/-	50/-
329	Wet Plates	8/6	13/-	19/-	25/-	40/-	45/-
	Carriers		1/6	2/6	3/-	3/6	4/-

If with Rectigraph Lens and Shutter in place of Instantaneous Lens and Shutter, EXTRA COST—

$\frac{1}{4}$, 22/6; $\frac{1}{2}$, 37/6; $\frac{1}{2}$, 47/6; 10×8, 57/6; 12×10, 75/-

THE 1890 INTERNATIONAL

See page 16.

Is a great improvement on the original pattern. It has double swing back, brass runners on tail board, and in every way is a

PERFECT APPARATUS.

COMPLETE SETS, including International Camera, best Instantaneous Lens and Elliptical or See-Saw Shutter, and Portable Tripod with Brass Top

330	PRICE COMPLETE for $\frac{1}{4}$ plate ($4\frac{1}{2} \times 3\frac{1}{2}$)	£2 10 0
331	" " 5×4	4 0 0
332	" " $\frac{1}{2}$ plate ($6\frac{1}{2} \times 4\frac{3}{4}$)	5 0 0
333	" " $7\frac{1}{2} \times 5$	6 6 0
334	" " $\frac{1}{2}$ plate ($8\frac{1}{2} \times 6\frac{1}{2}$)	7 10 0
335	" " 10×8	9 9 0
336	" " 12×10	11 11 0
337	" " 15×12	13 13 0

FIRST QUALITY SETS.

See Pages 18-24.

LANCASTER'S SPECIAL PATENT CAMERA, Brass Bound, Double Dry Slide, Instantaneous Lens with Patent Adjustable Diaphragms, Instantaneous Shutter, and best Mahogany Folding Stand, &c.

$\frac{1}{4}$ 338A	$\frac{1}{2}$ 339A	$\frac{1}{1}$ 340A	10 x 8 341A	12 x 10, 342A
£4 0 0	£6 0 0	£8 0 0	£10 0 0	£12 12 0

LANCASTER'S PATENT CAMERA, &c., &c., as above, but having Rectigraph Lens, and Lancaster's Patent Elliptical Shutter in place of Instantaneous Lens and Shutter. This is a perfect Camera and Lens.

$\frac{1}{4}$ 338B	$\frac{1}{2}$ 339B	$\frac{1}{1}$ 340B	10 x 8 341B	12 x 10 342B
£5 0 0	£7 10 0	£10 0 0	£12 12 0	£15 0 0

FIRST QUALITY COMPLETE SETS, INCLUDING

LANCASTER'S PATENT CAMERA, Double Swing, &c., &c., three Brass-bound Double Dry Slides, best Camera Stand, Rectigraph Lens, best Leather Case for Camera, Lens, Instantaneous Shutter, and three Slides, Lancaster's Patent Ruby Lamp, three Ebonite Dishes, Plates, Scales and Weights, Measures, Vignette Glass, Printing Frame, Cutting Shapes, Light-tight Plate Box, Compound Focuser, Sensitised Paper, and large Stock of Chemicals in Stoppered Bottles, &c.

$\frac{1}{4}$ 338c	$\frac{1}{2}$ 339c	$\frac{1}{1}$ 340c	10 x 8 341c	12 x 10 342c
£8 8 0	£12 12 0	£16 16 0	£21 0 0	£25 0 0

CHANGING BOXES.

See Page 45.

Carrying 12 Plates	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{1}{1}$	10 x 8	12 x 10
For Merveilleux or Meritoire	16/-	27/6	37/6	47/6	57/6
For Instantograph	21/-	31/6	42/-	52/6	63/-
For Special Patent brass bound	25/-	37/6	50/-	63/-	75/-

Lancaster's Lenses.

LANDSCAPE LENSES.

See Page 35.

Mounted in Brass with Sliding Tube. The Lenses are of the Meniscus form, giving perfect definition from centre to margin.

Size	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{1}{1}$	10 x 8	12 x 10	15 x 12
Focus	5-in.	9-in.	12-in.	16-in.	20-in.	24-in.
Price (No. 374)	5/-	10/-	15/-	20/-	25/-	30/-
" (No. 375) in Rack Mounts	7/6	15/-	22/6	30/-	37/6	45/-

SILVER RING RAPID RECTIGRAPH WITH PATENT ADJUSTABLE DIAPHRAGMS.

See Page 36.

Diam. of Lens	$1\frac{1}{8}$	$1\frac{3}{8}$	$1\frac{5}{8}$	$2\frac{1}{8}$	$2\frac{3}{8}$	$2\frac{5}{8}$
Focus	5-in.	8 $\frac{1}{2}$ -in.	11 $\frac{1}{2}$ -in.	14-in.	18-in.	24-in.
Price	40/-	60/-	80/-	100/-	120/-	140/-

376 W. A. RECTIGRAPH.

See Page 38.

Focus of W. A.	3 $\frac{1}{4}$ -in.	5-in.	6 $\frac{1}{2}$ -in.	8-in.	9-in.	11-in.
" Back Lens	7-in.	10 $\frac{1}{2}$ -in.	14-in.	18-in.	20-in.	24-in.
Price	30/-	42/-	50/-	63/-	70/-	80/-

377 WIDE ANGLE LENS.

See Page 39.

Of Good Quality, for Interiors, &c.	10/6	15/-	21/-	25/-	30/-
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LANCASTER'S PATENT INSTANTANEOUS LENSES

For Groups, Portraits Landscapes, or Architectural work, with our Patent Shutter, giving any length of exposure, and Patent Adjustable Diaphragms.

See Page 40.

Focus	5-in.	8 $\frac{1}{2}$ -in.	11-in.	14-in.	17-in.	21-in.
Price	21/-	30/-	42/-	52/6	63/-	84/-

FIRST QUALITY RAPID PORTRAIT LENSES.

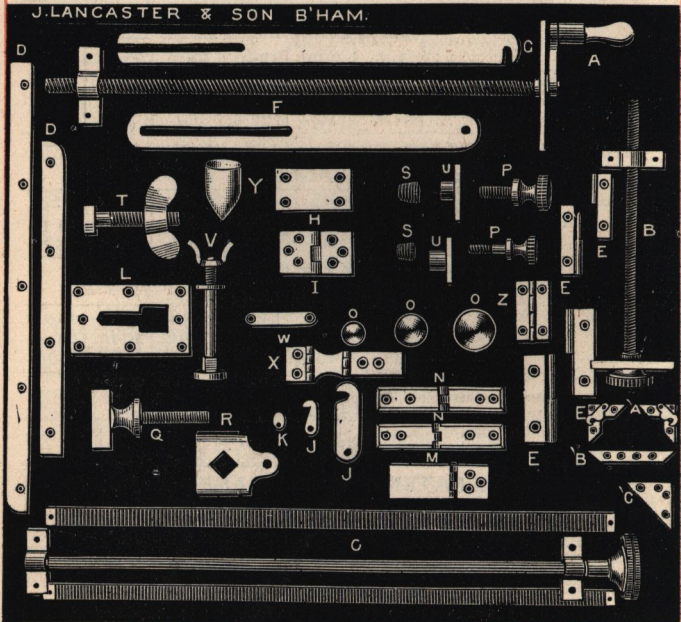
See Page 41.

381	VERY RAPID CARTE LENS, with Set of Waterhouse Diaphragms	...	...	...	...	£3 15 0
382	VERY RAPID CABINET LENS, with Set of Waterhouse Diaphragms	...	...	...	...	5 10 0
383	Ditto ditto Full Plate	...	...	...	...	10 0 0
384	Ditto ditto 12 x 10	...	...	...	...	18 18 0

———— J. LANCASTER & SON, ————

MESSRS. J. LANCASTER & SON INCLUDE A LIST OF SUNDRIES, CONTAINING
SCREWS, &C., &C., WHICH SOMETIMES ARE LOST.

Sundries.



BELLOWS OF ANY SIZE MADE TO ORDER.
DARK SLIDES MADE TO ORDER.

———— Opticians, BIRMINGHAM. ————

SUNDRIES.

	1/2	3/4	1	10x8	12x10	15x12
A. Strong Screw for Cameras	2/6	4/-	6/6	8/6	10/6	12/6
B. Lighter " " "	2/-	3/6	5/6	7/6	8/6	10/6
C. Racks and Pinion	3/-	5/-	7/6	10/6	12/6	15/-
D. Brass Strips for Camera Backs, per pair	-/6	-/9	1/-	1/3	1/6	2/-
E. Pull-off Hinges, per pair	-/2	-/2	-/3	-/3	-/3	-/3
F. Stretcher for Meritoire	1/-	1/6	2/-	2/6	3/-	3/6
G. " for Instantograph	1/-	1/6	2/-	2/6	3/-	3/6
H. Plates for Stands	-/1	-/1	-/2	-/2	-/2	-/2
I. Hinges for Tail Boards, per pair ..	-/2	-/3	-/4	-/4	-/6	-/6
J. Hooks for Slides, per pair	-/1	-/1	-/1	-/1	-/1	-/1
K. Turn Buttons for Slides, per pair ..	-/2	-/2	-/3	-/3	-/4	-/4
L. Plates for bottom of Cameras	1/-	1/-	1/3	1/3	1/6	1/6
M. Clip Hinges for Dark Slides, per pair	-/2	-/2	-/3	-/3	-/4	-/4
N. Hinges for Focussing Glass, per pair	-/2	-/2	-/3	-/3	-/4	-/4
O. Rising Front Screws, each	-/4	-/5	-/6	-/8	-/8	-/8
P. Screws for Bottom of Camera	-/4	-/6	-/6	-/6	-/9	-/9
Q. T. Screws for Stands	-/6	-/8	-/8	1/-	1/-	1/-
R. Ears for Stands, per set of 6	-/4 1/2	-/6	-/9	1/-	1/-	1/4
S. Bushes for Screws, per pair	-/1	-/1	-/2	-/2	-/2	-/2
T. Screw and Butterfly for Stands	1/-	1/-	1/-	1/6	1/6	1/6
U. T Bushes for Cameras, each	-/1	-/2	-/2	-/3	-/3	-/3
V. Screws for Stands, set of 3	1/-	1/3	1/6	1/6	1/9	2/-
W. Straps for Focussing Frame, set of 4	-/2	-/3	-/4	-/4	-/4	-/4
X. Double Hinges for Focussing Frame ..	-/3	-/3	-/4	-/4	-/6	-/6
Y. Toe Caps all in one piece	-/3	-/4	-/4	-/6	-/6	-/6
Z. Hinges for Dark Slides, &c., pair ..	-/2	-/3	-/4	-/4	-/6	-/6
A' Corner plates for revers'g b'k, &c., pr.	-/3	-/4	-/4	-/6	-/6	-/6
B' Corner plates for Slides, &c., pr. ..	-/2	-/2	-/3	-/3	-/4	-/4
C' Angle plates for revers'g b'k, &c., pr.	-/2	-/2	-/3	-/3	-/4	-/4
Cloth Bellows, ordinary length	1/6	3/-	4/6	6/-	9/-	12/-
" " " square	2/-	3/9	5/6	7/6	10/-	13/-
" " " Kinnear	2/6	5/-	7/6	10/-	15/-	18/6
Leather Bellows, " oblong	2/6	4/6	6/6	8/6	12/6	15/-
" " " square	3/-	6/-	8/6	10/6	15/-	20/-
" " " Kinnear	4/-	8/-	12/6	15/-	21/-	30/-
Complete Set of Brass Work for 1889 Merveilleux	5/6	7/6	10/6	12/6	15/-	
Ditto, for 1889 Meritoire	7/6	10/6	12/6	15/-	18/-	
Ditto, for 1889 Instantograph	10/6	15/-	21/-	25/-	30/-	
Focussing Glass	-/6	1/-	1/6	2/-	2/6	3/-
Merveilleux Lens, unmounted	3/-	6/-	10/-	15/-	20/-	30/-
Instantograph " "	12/6	21/-	30/-	40/-	50/-	60/-
Brass Tops for Stands	1/6	2/-	2/6	3/-	3/6	4/-
Triangle " "	2/6	3/-	4/-	5/-	6/-	7/-
Leather Caps for Lenses	-/6	-/6	-/8	-/8	1/-	1/-
Black Cardboard for Slides, per doz... ..	-/6	-/9	1/-	1/6	2/-	2/6
Springs for Printing Frames, per pair ..	-/3	-/4	-/6	-/8	-/10	1/-
Flanges to Lenses	1/-	1/6	2/-	2/6	3/-	3/6
Extra Fronts	1/-	2/-	2/6	3/-	3/6	4/-

Sundries.

	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	10x8	12x10	15x12
Waterproof Camera Cases	5/-	7/6	10/-	12/6	15/-	17/6
Leather Bound "	7/6	10/6	15/-	21/-	25/-	30/-
Best Leather "	17/6	25/-	35/-	42/-	45/-	50/-
Camera Stands	5/-	7/6	10/6	12/6	15/-	20/-
Mahogany "	6/-	10/6	12/6	15/-	17/6	22/6
Strong Ash "	12/6	15/-	21/-	25/-	30/-	35/-
Patent Universal Stands	10/6	15/-	21/-	25/-	30/-	35/-
3-Fold Stand	6/6	10/-	12/6	15/-	21/-	25/-
Ordinary Plates	1/3	3/-	5/6	8/6	12/-	16/-
Extra Rapid "	1/6	3/6	6/6	9/6	13/-	17/-
Ebonite Developing Dishes	-/6	1/-	2/-	3/-	4/-	6/-
Porcelain " "	-/9	1/6	2/3	3/-	4/-	5/-
Enamelled Dishes	-/4	-/8	1/-			
Printing Frames	-/6	1/-	1/6	2/-	3/-	4/-
Best Quality "	-/9	1/6	2/3	3/-	4/3	5/3
Triple Pressure Printing Frames	1/6	2/3	3/6	4/9	6/-	7/6
Plate Boxes, hold 12	1/-	1/9	2/6	4/-	5/-	7/-
" " " 25	1/6	2/3	3/6	5/6	7/-	9/6
" " " 50	2/-	3/-	4/-	6/6	8/-	10/6
Draining Racks	1/3	1/6	2/-	2/6	3/-	3/6
Vignette Glasses	-/9	1/6	2/3	3/-	4/6	6/-
Retouching Desks	5/-	7/6	10/6	15/-	21/-	
Cycle Clips	5/-	7/6	10/-	12/6	15/-	15/-
" " Best	7/6	10/6	15/-	21/-	25/-	30/-

RUBY LAMPS, with Oil Burner, 2/- Candle, 3/-

PATENT FOLDING RUBY LAMPS, 5/- RUBRALUX, 7/6 & 10/6.

Illustrated Catalogue, 4 Stamps.

Opticians, BIRMINGHAM.

