

to the eye, and it is given off by hot objects, such as heated metal, etc. Precisely at what temperature the photography of a hot object is possible depends to some extent upon the aperture of the lens and the length of exposure, but with, say, a flat iron at a temperature of 400° C.—one at which it cannot be seen in the dark—an exposure of some six to eight hours, with a lens aperture of $f/4.5$, a few feet away, would be necessary. But there are more efficient infra-red light sources than a hot iron, and the ordinary metal filament lamp is one of them. These lamps of high candle power can be encased in spot lights or other forms of lamp house, and the lens or window can be covered with a filter permitting infra-red light to pass freely, with only a small proportion of ordinary red light, so that a dull red glow is alone visible. Three or four or more such lamps may be used in the balcony of a theatre or cinema, and a photograph of the unsuspecting audience obtained with an exposure of 2 or 3 seconds. The amount of light must, of course, be considerable, and a consumption of 8,000 to 10,000 watts is necessary for this brief period.

The invisibility of infra-red light has led to its use during spiritualistic seances, and even cinema pictures have been made in complete darkness. One of the first of these was taken at a meeting of the British Kinematograph Society in October, 1933.

Infra-red light produces a greater heating effect than white light when it is absorbed by any object, but green foliage rejects infra-red light to a great extent, probably as an act of self-protection. For this reason, green leaves, grass, etc., photograph as white, especially in sunshine, producing the well-known "snow in summer" effect. The same holds good with other materials. Black paper, such as is used for wrapping photographic goods, contains carbon black as a pigment, and carbon is one of the best absorbers of infra-red light known. Consequently, this paper can be of great use when dealing with infra-red materials in general, for patching up weak places in the camera, lining dark slides and other purposes.

Graphite is a form of carbon, and for this reason it is possible to photograph pencil writing underlying writing in ordinary ink, but not the reverse. This fact has found a few interesting applications in criminal procedure.

Dyed materials again differ greatly in the way in which they reflect or absorb infra-red light, and it is interesting to photograph a number of black fabrics and see the wide differences in the results. Certainly, that one which reflects this light the most and gives the blackest image on the negative should be the coolest wear for summer.

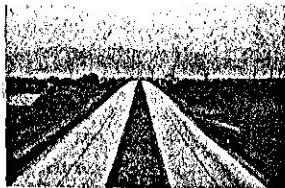
Just as infra-red light can penetrate haze, so also it can penetrate such substances as skin, hair, etc., a little more deeply than ordinary light, and advantage has been taken of this property in the microscopy of a number of subjects and in the clinical photography of skin diseases. Photographs of cases of eczema reveal the varicose condition of the veins beneath the skin, and a study of lupus during a course of treatment enables the healed portions to be distinguished beneath the overlying layer of still apparently diseased skin.

These are some of the applications of infra-red photography whose recent development has added another successful tool to the photographer's workshop.

"MINITOGRAPHY"

NEW KINE-EXAKTA

The Kine-Exakta is the sole example among all miniature cameras in which a negative size of 24 × 36 mm. is combined with safe and certain focussing and image composition on a ground glass screen. The troubles of parallax, inevitably to be found in twin-lens types when exposures are made at short range, are entirely absent in the Kine Exakta.



This is the size it takes

PRICES :

	Cash Price	24 Monthly Payments of
with Exaktar lens, $f/3.5$, focal length 2 in. (5 cm.) ...	£27 10 0	£1 4 8
with Tessar lens, $f/3.5$, focal length 2 in. (5 cm.) ...	£34 10 0	£1 10 11
with Tessar lens, $f/2.8$, focal length 2 in. (5 cm.) ...	£38 10 0	£1 14 7

Kine-Exakta for night work (with ultra-fast lens) :

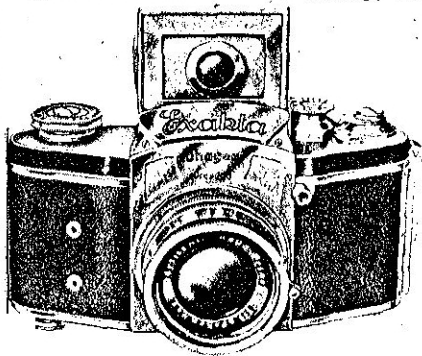
with Zeiss Biotar lens, $f/2$, focal length 2½ in. (5.8 cm.) ...	£55 0 0	£2 9 4
with Primoplan lens, $f/1.9$, focal length 2 in. (5 cm.) ...	£45 0 0	£2 0 5

Special interchangeable lenses :

Tele-Tessar, $f/6.3$, focal length 7¼ in. (18 cm.) ...	£31 10 0	£1 8 3
Tele-Megor, $f/5.5$, focal length 6 in. (15 cm.) ...	£16 0 0	14 5
Tele-Megor, $f/5.5$, focal length 7½ in. (18 cm.) ...	£20 0 0	17 11
Tele-Megor, $f/5.5$, focal length 10 in. (25 cm.) ...	£30 0 0	£1 6 11

Ever-Ready Carrying Case £1 0 0

Specification : Die-cast light metal body ; folding finder hood, opening by pressure on a button ; frame finder ; built-in ground glass screen and combined magnifier ; accessory magnifier for critical focussing ; rewinding and film-cutting devices ;



mechanical inter-connection between shutter and film wind ; picture counter to 36 exposures. Focal-plane self-capping shutter, giving exposure between 12 sec. and 1/1,000th sec. normally, and 6 sec. and 1/1,000th sec. with delayed-action mechanism. Interchangeable lenses in bayonet fitting. Precision helical focussing from infinity to 3 ft. Automatic shutter lock, which only allows shutter to be released when the finder hood is erect. Precision film channel in camera back. Tripod bush, leather neck sling, flexible wire release, and connection sockets for flash-bulb work included.

FAULTS IN NEGATIVES

How often do you get a negative which is not 100 per cent., and having such a negative, how often do you know exactly what is wrong with it? Negative faults, broadly speaking, come into two categories: faults in exposure and faults in development. Each of these can be divided into under- and over- and it is very easy to distinguish between, for example, under-exposure and under-development.

The amount of detail recorded on your film is governed solely by the exposure that the film has received, and if your negative is very thin you should first inspect it to see whether there is detail everywhere where detail was to be seen in the original object. More particularly, look into the darker shadows (the clear parts of the negative) and see whether these are full of detail but weak in contrast; or whether they are actually devoid of detail. If the latter, your negative is definitely under-exposed. If the detail is present but very weak in contrast the exposure is evidently sufficient, but the negative is probably under-developed.

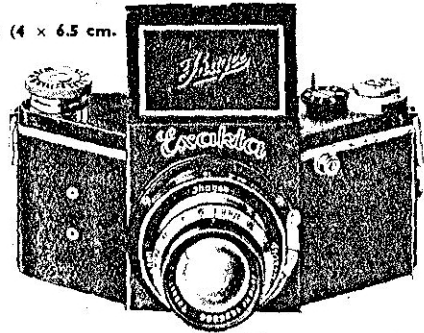
A correctly exposed and developed negative should show detail in what will be the deepest shadows and also in what will be the highest lights; in other words, there should be no part of the negative entirely transparent, nor entirely opaque. The degree of contrast exhibited in the negative (which is controlled solely by the length of time it is in the developer), should be less, or, as they say in the laboratories, the "gamma" should be lower, in the case of miniature negatives than in larger negatives which are going to be printed by contact. The reason for this is that enlarging to a considerable extent, as is general with miniature films, increases contrast slightly.

The over-exposed negative will be easily identified if it is normally or under-developed, by the fact that there is insufficient contrast between high lights and shadows, and that it seems almost uniformly full of detail. If it has been over-developed, the contrast will be better, but the negative will be so thick and dense all over, including the shadows, that it will be necessary to examine it over a very bright light to be able to see clearly the detail even in the shadows. A negative such as this will print quite well, but will be very difficult to enlarge, owing to its density, and can often be remedied by reduction in "Farmer's" reducer. Under-exposed negatives cannot be improved by intensifying. Negatives which are correctly exposed but under-developed, on the other hand, can.

EXAKTA FOCAL PLANE REFLEX

FOR ROLL FILMS
Full-Size Pictures on V.P. Film (4 x 6.5 cm.)
 Size Overall: 6 x 3 x 2 1/2 in.
 Weight: 26 oz.

The "Exakta" being a direct Reflex Camera, the picture seen in the finder mirror is exactly the same as the one produced on the film. The knob that winds the film also sets the shutter, double exposures are quite impossible. The Ihagee Patent safety blind Focal Plane Shutter allows for speeds from 1/25th to 1/1,000th sec., also T. and B.
 The picture can be seen at eye level by means of an auxiliary mirror; and a magnifier is incorporated for extra fine focusing, also frame finder.
 The focussing is engraved up to 3 ft. It is leather covered, and fitted with Tripod Bush and Cable Release.



PRICES: MODEL A	Cash Price	24 Monthly Payments of
8150BR "Exakta" Anastigmat, f/3.5, 7.5 cm. focus ...	£15 0 0	13 6
8150Q Zeiss Tessar, f/3.5, 7.7 cm. focus ...	£19 0 0	17 0
8150E Zeiss Tessar, f/2.8, 7.5 cm. focus ...	£23 0 0	£1 0 7
8150SS Dallmeyer Super Six, f/1.9, 3 in. focus ...	£31 10 0	£1 8 3

PRICES: MODEL B, as above, but incorporating SLOW speeds from 1/10th to 12 sec., in addition Delayed Action (12 seconds) for all speeds from 1/1,000th sec. to 6 sec.

Exakta f/3.5 lens ...	£19 10 0	17 6
Zeiss Tessar, f/3.5 ...	£23 10 0	£1 1 1
Zeiss Tessar, f/2.8 ...	£27 10 0	£1 4 8
Dallmeyer Super-Six, f/1.9 ...	£36 0 0	£1 12 4
Case ...	£1 0 0	
Case, with division for tele lens and filters ...	£1 5 0	
New "plate back model" with 3 slides and f/2.8 Zeiss lens	£30 10 0	£1 7 5
f/3.5 Zeiss lens	£26 10 0	£1 3 9

Model B and Plate Back also supplied. Chrome finish, 30/- extra.

INTERCHANGEABLE LENSES FOR EXAKTA CAMERA

Long Focus Ihagee Anastigmat f/4.5, 10.5 cm. focus ...	£5 15 0
Telephoto Lens "Dallon" Anastigmat f/5.6, 6 in. focus ...	£8 15 0
Tele-Meget Hugo Meyer Anastigmat f/5.5, 15 cm. focus ...	£11 10 0
Tele-Tessar Anastigmat f/6.3, 12 cm. focus ...	£15 10 0
Wide-angle Tessar f/8, 5.5 cm. focus ...	£13 10 0
Wide-angle Dallmeyer f/11, 2 1/2 in. focus ...	£6 6 0

For Easy Payment Terms, see page 3.

filters issued under the D.1 code number are required as follows:—
 D1/2 ... for half-watt Light (including high-efficiency or projector type lamps) and Pointolite.
 D1/3 ... for Photoflood and similar types of lamps.
 D1/4 ... for Sashalite and similar types of bulbs. No filter for daylight.
 For type D.2 (flat film) filters are as follows:—
 D.2/1 ... for Daylight.
 D.2/2 ... for Half-watt Light (including high-efficiency or projector type lamps) and Pointolite.
 D.2/3 ... for Photoflood and similar types of lamps.
 D.2/4 ... for Sashalite and similar types of bulbs.
 D.2/5 ... for Arc Light (white flame carbons).

Filters can also be supplied for other special purposes on request, but full details must be given when ordering.

Normally a type D.2/1 filter is supplied with the Flat Film material free of charge, but any alternative code filter can be supplied instead without extra charge provided it is ordered at the same time as the material.

It will be noticed that flashlight is not mentioned above, because different makes of flash powders differ greatly in the colour of the emitted light. Flash bulbs of the Sashalite type are preferable and more reliable.

SPEED AND LATITUDE

Dufaycolor film is so fast that in the summer months it will give successful results with the simplest of cameras, while those instruments with large aperture lenses will enable colour pictures to be taken all the year round. The rich tones of autumn and the delicate hues of winter offer as many opportunities for the making of exquisite colour pictures as do the more vivid colours and strong light of summer time. Added to this the film has considerable latitude, thus ensuring that practically every exposure will be a good one.

Every package of Dufaycolor film contains a comprehensive exposure guide, a copy of which we print below:—

	f/4	f/5.6	f/8	f/11	f/16
Beach and sky scenes	1/200	1/100	1/50	1/25	1/10
Normal subjects in sunlight	1/100	1/50	1/25	1/10	1/5
Normal subjects with light clouds	1/50	1/25	1/10	1/5	1/2
Dull days and subjects in shadow	1/25	1/10	1/5	1/2	1

These exposures are correct for the middle hours of the day during the summer months. For other times and seasons multiply by the following factors:—

Time of Day (not summer time)	April, May, June, July, August	March, September	February, October	November, December, January
a.m. — p.m.				
10 — 2	1	2	2	4
8—10 or 2—4	1	2	8	
6—8 or 4—6	2	4	—	—

This is followed by a list of speeds to be used with the various makes of exposure meters, the information having been supplied by the meter manufacturers.

EXPOSURE METERS

Photo Electric Meters	Daylight Speed
Avo	400 H. & D.
Blendux	17° or Class C.
Bowl	17° Scheiner.
Electrodrem	24° Scheiner.
Hellos	20° Scheiner.
Ilford	Group C.
Leicameter	17° Wescon Scheiner
Ombrux	17° Scheiner.
Photoscop	17° Scheiner.
Prinsen	400 H. & D.

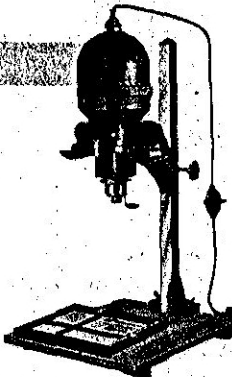
ENLARGERS

LUMIMAX ENLARGERS

The Lumimax Enlarger M1 is specially designed for use with V.P. Exakta and Kine-Exakta cameras.

The Lumimax Enlarger M2 is suitable for all negatives up to 6 x 6 cm.

The range of enlargement is approximately 1½ to 6 diameters on the baseboard, while if the lamphouse is turned round on its pillar enlargements up to 14 diameters may be made. Complete with baseboard, pillar, flex and plug but without lamp.



- No. 6401 For use with lens of Exakta Camera 4 x 6.5 cm. ... £7 15 0
 15 Monthly Payments of 10/11
- No. 6402 For use with lens of Kine-Exakta Camera 24 x 36 mm. ... £7 15 0
 15 Monthly Payments of 10/11
- No. 6450 Complete with f/4.5 Anastigmat Lens ... £8 15 0
 15 Monthly Payments of 12/3
- Takes negatives up to 6x6 cm.
 100-watt Opal Lamp (state voltage when ordering) 2 9

Other Models include:

THE EXAKTA. No. 5950 designed for use with lens from Exakta camera. Enlargements from 4 x 6½ cm. (V.P.) negatives can be made up to 12 x 10 in., or even larger.

Baseboard and pillar are included in the price (lamp extra) £5 15 0
 15 Monthly Payments of 8/11
 100-watt Opal Lamp (state voltage when ordering) extra 2 9

By courtesy of Ilford Ltd.
No. 6040. This enlarger is designed to take the lens of the Kine-Exakta ... £5 15 0
 15 Monthly Payments of 8/11

THE LUMIMAX No. 6260 for all negatives up to 3½ in. x 2½ in. With Ihagee Anastigmat f/4.5 and f/6.3 stop, 10.5 cm. focus £9 12 6
 15 Monthly Payments of 13/6



Photo Electric Meters

Sixcus	Daylight Speed
...	15/10 Din in full sunlight.
...	9/10 Din other exposures and indoor.
Smethurst Highlight	7
Tempaphot	19° Scheiner.
Weston	8° Normal Subject.
Extinction Meters	
Leudl	22° Scheiner.
Justophot	16-19° Scheiner.
Justodrom	20-23° Scheiner.
Sensitive Paper Meters	
Wynne's Infallible	F.78
Wackin's Bee	65
Calculator	
Burroughs-Wellcombe	1

ARTIFICIAL LIGHT

Dufaycolor is particularly suitable for artificial light photography and very beautiful and accurate results can be obtained.

It is impossible to provide definite exposure instructions to meet every case since conditions will vary so widely, but photo-electric exposure meters can be used to calculate exposure in half-watt or photo floodlight in the following manner—

The subject is lit as required and a large piece of white blotting paper held in front of the principal part of the picture. The meter is then brought up to the paper until a maximum reading is obtained. This reading is then multiplied by 40. The meter should be set for use with Dufaycolor in daylight.

The Smethurst high-light meter in half-watt light has a factor of 1, and in photo-flood of 2½.

PROCESSING

For exposure your films can be handed back to your usual Branch, who will send them direct to the Dufaycolor Processing Station at Elstree, where they will be handled by highly skilled workers who will ensure that you secure the best possible results. There are also a number of other processing stations throughout the world for the convenience of the traveller.

The advanced worker who prefers to do his own processing will find formulae and instructions in all but the roll film and cine film packings. The necessary information regarding the former can be obtained upon application, but in the case of cine film the cost of processing is included in the original purchase price. It is highly desirable that the manufacturer's own methods and formulae should be adhered to, as they are the results of lengthy research and experiments. The use of most ordinary developers will lead to failure.

OTHER SERVICES

When your films are returned to you by the processing station they will be accompanied by a set of notes making suggestions which will assist you in your future work. You can also obtain copy transparencies from your original Dufaycolor transparencies and also monochrome negatives, from which excellent black-and-white prints can be prepared.

VIEWING

A Dufaycolor picture is a transparency, that is, a picture which you look through. This gives a result of beauty and accuracy impossible to obtain in a paper print, but to secure the maximum advantages from this arrangement the pictures should be viewed in the proper manner. There is available a range of Dufaycolor viewing devices, including simple mounts and albums with reflecting backs, a range of reflecting and magnifying view boxes and attractive stands and frames.

You can, if you desire, have your transparencies bound for use as lantern slides, and projection is a particularly suitable way of viewing the results obtained in your miniature camera.

ENLARGERS**PROJECTION LUMIMAX****Combination Enlarger & Projection Lantern**

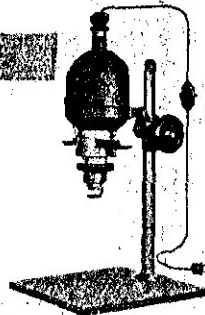
For Exakta, Kine Exakta, 6 × 6 cm. and smaller sizes enlarging to 15 times linear.

The Projection Luminax can be used in conjunction with the lens of either the Kine-Exakta or Exakta (V.P.) Cameras and is also supplied with Anastigmat f/4.5 lens for use with 6 × 6 cm. and smaller size negatives, where the existing lens of the camera is not detachable.

It can also be used as a Projection Lantern as the body swings to the horizontal position for this purpose. (When ordering state for which size required.)

Complete Outfit, including connection to lighting circuit with switch, stand, baseboard and condenser, without objective, with mount for Exakta lens (amps. extra) £11 0 0

24 Monthly Payments of 9/11

**THE RAJAH ENLARGER****Of Precision Design and Construction.**

F/4.5 Anastigmat, convenient one-hand lever rise and fall, with automatic locking. Universal negative carrier. Critical focussing is effected by a helical lens mount and an orange swing critical focussing is supplied. Large wooden baseboard, metal work finished in attractive grey lacquer.

Model 0 35 mm. 3 × 4 cm. and 4 × 4 cm. negatives, enlarges 2 to 8 times £8 8 0

15 Monthly Payments of 11/9

This Rolleiflex picture won £3,000. By courtesy of the "Daily Herald."



Model 11b up to 6 × 6 cm. negatives, enlarges from 2 to 6 times £11 10 0

24 Monthly Payments of 10/5

Model 111b up to 6.5 × 9 cm. negatives, enlarges 2 to 6 times linear £15 15 0

24 Monthly Payments of 14/3

Special Model designed to take the lenses from Leica cameras and similar specification to Model 0... £7 10 0

15 Monthly Payments of 10/6

