



Telegrams -
BIOCINEMA,
WESTCENT,
LONDON.



Telephones -
GERRARD
5287 & 5288.



CINEMA TRADERS LTD

SCIENTIFIC and
ILLUMINATING ENGINEERS

(Incorporating JOHN WRENCH & SONS)

Associated With

SCIENTIFIC & PROJECTIONS, LTD.

AND KAMM & CO., LTD.

26, CHURCH STREET,

CHARING CROSS ROAD, LONDON, W.1

Departments :-

A
Optical Lanterns
and Accessories.

B
Photographical
and Optical
Illuminants.

C
Stage Lighting
and Dance Hall
Apparatus.

D
Cinematograph
Machinery &c.

E
Electrical
Charging Sets

Terms of Business

and

Trade Discount

for

Season 1928-1929.



PRIVATE AND CONFIDENTIAL.

Terms of Business.

SEASON 1928-1929.

All Prices in this Catalogue are subject to revision without notice, but it should be understood that we will endeavour to maintain these prices for Season 1928-1929.

As we may from time to time alter and improve our apparatus we reserve the right to depart from the Catalogue specifications and illustrations without notice.

ACCOUNTS.

All accounts are payable *monthly*, and can only be opened by special arrangement, after we have been supplied with three approved trade references.

CARRIAGE.

Some of the goods listed in the Catalogue we are prepared to send *Carriage Paid*, and others *Carriage Forward*. Therefore, underneath the prices of every article will be found the words *Carriage Paid* or *Carriage Forward*, as the case may be, and this applies to Great Britain only.

If goods are to be sent *Passenger Train* or *Express Parcel Post* the cost of same will be charged to customer.

PACKING.

All Packing will be *free*, except Packing Cases, costing 1s. 6d. or over, and these will be credited, provided they are returned to us within one month *Carriage Paid*.

RETURN OF GOODS.

We cannot accept goods back for credit unless an arrangement has been made *in writing* to this effect.

DAMAGE IN TRANSIT.

We do not hold ourselves responsible for damage to goods in transit, and all goods received should be immediately examined, and a claim lodged with the Carrier, for breakage, within 24 hours of delivery.

EXPORT ORDERS.

All Export Orders must be accompanied by full remittance, or arrangements made that we can be paid in London, on presentation of Shipping Documents or Invoices to Persons named on the Order.

If Export Orders are to be despatched by Parcels Post, the remittance must include the Postal Charges.

SHIPPING CHARGES.

All Shipping Charges, Customs Duties, Insurances, etc., are extra, and unless Remittance sent is sufficient to cover cost of same, these charges will be collected on delivery.

DISCOUNT.

The Discounts indicated by the Code letter in our Catalogue are only allowed on Condition that goods are sold at *Retail Prices* as specified in our list. We do not allow Trade Discounts to users, and to protect the interests of legitimate dealers, we require reasonable proof from persons or firms claiming trade discount, that they are dealing in the class of goods on which discount is allowed.

DISCOUNT CODE.

Our code word is "**CINEMA.**" One of these letters will be found against each article in the Catalogue, which indicates the following Discounts :

C	I	N	E	M	A
33 $\frac{1}{3}$ %	25%	20%	15%	10%	5%

No further Discounts can be allowed except 2 $\frac{1}{2}$ per cent. for accounts settled by the 30th of each month.

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16	17	18	19	20	21	22

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ASSOCIATED WITH
KAMM & CO., Ltd.,
27, Powell Street,
London, E.C.

AND

**SCIENTIFIC &
PROJECTIONS, Ltd.,**
5, Crawford
Passage, E.C.



CINEMA TRADERS LTD

SCIENTIFIC and
ILLUMINATING ENGINEERS,
(INCORPORATING JOHN WRENCH & SONS)

TELEPHONES:
GERRARD 5287 - 5288.

TELEGRAMS:
BIOCINEMA-WESTCENT-LONDON.

HEAD OFFICE and SHOWROOMS:

26, Church Street, *Charing Cross
Road,* **London, W.1.**



IN ASSOCIATION
WITH

**THE BRIGHTON
CINEMA SUPPLIES,**

18,
Margaret Street,
Brighton.

PHONE: 3450.

Stocks of our Goods are
kept at above address.



WAG/AS/W

September 1928.

Dear Sirs,

We have much pleasure in herewith enclosing our New Catalogue for Season commencing September 1st 1928, which we know by past experience will be useful, and we hope beneficial in helping to increase business between us.

As hitherto, we are printing the Catalogue in Sections without our name and address, and we shall be pleased to provide you with a supply of those which will interest you, on receipt of the enclosed post-card duly filled in, with number of leaflets required.

We are also enclosing our "Terms of Business" and Discount Sheet, which has various amendments thereon, so we shall esteem it a favour if you would be good enough to peruse same.

Various articles have been reduced in price, and also the following new goods placed on the market:-

New Optical Lantern No.6 and Light Iron Stand.	(Section A)
Focuslite Outfits have been re-designed.	(Section B)
New Batten Lighting and New Stands.	(Section C)
New Cinematograph Stand and Rewinder.	(Section D)
New Cinema Rectifier.	(Section E)

We are in a position to manufacture all kinds of apparatus that may be required by our customers, and we shall be pleased to receive enquiries, whether large or small.

Please accept our appreciation and thanks for your valued patronage in the past, and trust that we shall have the pleasure of your further business, which shall receive our very best attention.

Yours faithfully,

For and on behalf of
CINEMA TRADERS LIMITED.

CINEMA TRADERS LTD

SCIENTIFIC and
ILLUMINATING ENGINEERS,

(INCORPORATING JOHN WRENCH & SONS)

ASSOCIATED WITH

KAMM & CO., LTD. and SCIENTIFIC & PROJECTIONS, LTD.

Section "A"

Optical Lanterns
and all
Accessories.

Section "B"

Focuslite Outfits
Projector Lamps
Resistances
Transformers

Section "C"

Mirror Bowls
Spotlights
Stage Boxes
&c.

Complete Illustrated Catalogue



SEASON
1928 - 1929

Section "D"

Cinematograph
Projectors and
all Accessories

Section "E"

Cinema Rectifiers
and
Charging Sets

In Association with

THE
BRIGHTON CINEMA SUPPLIES,

18, MARGARET STREET,
BRIGHTON, Sussex.

Head-Office and Showrooms:

26, CHURCH STREET, LONDON, W. 1

(CHARING CROSS ROAD, near PALACE THEATRE).

FACTORIES:

CRAWFORD PASSAGE, E.C. &
POWELL STREET, E.C.

TELEPHONES:

Gerrard 5267 - 5269.

TELEGRAMS:

Biocinema, Westcent, London.

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W.D.
8°
160
BR



WD C74/1085

TERMS OF BUSINESS.

Season 1928-1929.

All Prices in this Catalogue are subject to revision without notice, but it should be understood that we will endeavour to maintain these prices for Season 1928-1929.

As we may from time to time alter and improve our apparatus, we reserve the right to depart from the Catalogue specifications and illustrations without notice.

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Packing.—All packing will be *free*, except Packing Cases charged at 1s. 6d. or over, and these will be credited, providing they are returned to us within one month *Carriage Paid*.

Return of Goods.—We cannot accept goods back for credit unless an arrangement has been made in writing to this effect.

Damage in Transit.—We do not hold ourselves responsible for damage to goods in transit, and all goods received should be immediately examined, and a claim lodged with the Carrier, for breakage, within 24 hours of delivery.

Export Orders.—All Export Orders must be accompanied by full remittance, or arrangements made that we can be paid in London, on presentation of Shipping Documents or Invoices to Persons named on the Order.

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Shipping Charges.—All Shipping Charges, Customs Duties, Insurance, etc., are extra, and unless remittance sent is sufficient to cover cost of same, these charges will be collected on delivery.

Hire Purchase Terms.

We have now made arrangements and prepared a scale of charges for supplying apparatus listed in our Catalogue on the Hire Purchase System, and this will apply to all orders to the value of £5 and upwards, except Projector Type Lamps, which must be purchased outright.

Goods will be supplied at Catalogue prices, a small deposit being required, and the balance spread over a period. We shall be pleased to forward full particulars to any customer on receipt of a postcard.



MANUFACTURING AND REPAIRS

We undertake repairs of any description, also the manufacturing of all kinds of Sheet Metal Work, Gearing, Stage Lighting and Cinematograph Machines and Accessories.

Your kind enquiries will be welcomed.

HIRE TERMS FOR APPARATUS. (N)

	Per Night	Per Week
Optical Lantern, complete (without illuminant) ...	10/-	45/-
Optical Lantern, complete with Focuslite Outfit (no lamp) ...	12/-	50/-
Optical Lantern, complete with Focuslite Outfit (no lamp) 8 ft. Calico Screen and Stand ...	18/-	65/-
Stage Box, complete with Arc Lamp and Carbons (resistance extra) ...	7/6	30/-

A deposit is required in all cases except regular customers who have a ledger account.

We cannot under any circumstances let out on Hire, Projector type electric lamps, for any of the above articles.

Should any of the above articles be returned in damaged condition, cost of repairing will be charged.

CINEMATOGRAPH & LANTERN EXHIBITIONS.

Optical Lantern, complete with Focuslite Outfit, 8 ft. Screen and Operator...	Per Night 45/-
Portable Cinematograph Machine, complete with Screen and Operator...	65/-

The above named prices do not include the necessary Carriage and Travelling Expenses (taxi and railway fares) incurred in conveying the apparatus to and from the place of Exhibition, which are extra.

Additional charges are made when Operator is compelled to stay overnight. Ample notice should be given, so that apparatus is available.

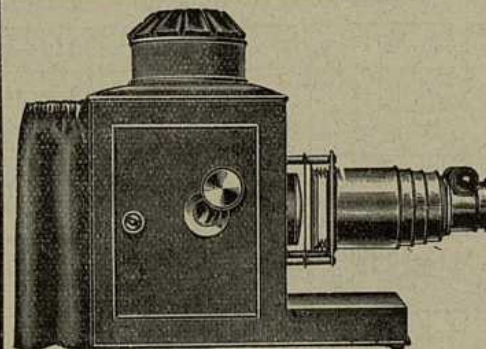
When an Operator is required, at least 7 clear days' notice should be given. The following information is always required:—

- Voltage of Electric Supply,
- Maximum Amperage available,
- Size of Screen,
- Distance from Screen to the position the apparatus will be placed.

Season, 1928-1929.

OPTICAL LANTERNS LANTERN LENSES SCREENS

LANTERN
STANDS.



LIME
PASTILS.

AND ALL
Lantern Accessories

FOR

Focuslite Outfits	see Section "B"
Spotlights, Floodlights, &c.	" "C"
Cinematograph Projectors & Accessories	" "D"
Electrical Charging Sets and Rectifiers	" "E"

Section "A."

Sept., 1928.

REFERENCE TABLES

showing at a glance the Focus of Lens required to give a certain size picture at a given distance from the screen

LANTERN LENSES

Screen Distance in feet	FOCUS OF LENS IN INCHES									
	6	8	10	12	14	16	18	20	22	24
10	5.0	3.9	3.0	2.6	2.2	1.10	1.8	1.6	1.4	1.3
15	7.6	5.8	4.6	3.9	3.3	2.10	2.6	2.3	1.11	1.10
20	10.0	7.6	6.0	5.0	4.3	3.9	3.4	3.0	2.9	2.6
25	12.6	9.4	7.6	6.3	5.4	4.8	4.2	3.9	3.5	3.2
30	15.0	11.3	9.0	7.6	6.5	5.7	5.0	4.6	4.0	3.9
35	17.6	13.1	10.6	8.9	7.6	6.6	5.10	5.3	4.9	4.4
40	20.0	15.0	12.0	10.0	8.6	7.6	6.8	6.0	5.10	5.0
45	22.6	16.10	13.6	11.3	9.8	8.5	7.6	6.9	6.1	5.7
50	25.0	18.9	15.0	12.6	10.9	9.5	8.4	7.6	6.10	6.3
60	30.0	22.6	18.0	15.0	12.11	11.3	10.0	9.0	8.1	7.6
70	35.0	26.3	21.0	17.6	15.1	13.1	11.8	10.6	9.6	8.9
80	40.0	30.0	24.0	20.0	17.3	15.0	13.4	12.0	11.10	10.0
90	45.0	33.9	27.0	22.6	19.5	16.10	15.0	13.6	12.2	11.3
100	50.0	37.6	30.0	25.0	21.7	18.9	16.8	15.0	13.7	12.6

APPROX. SIZE OF PICTURE

CINEMATOGGRAPH LENSES

Screen Distance in feet	FOCUS OF LENS IN INCHES									
	2	2½	3	3½	4	4½	4¾	5	5½	6
10	4.8	3.9	3.2	2.8	2.4	2.1	2.0	1.11	1.8	1.7
15	7.0	5.8	4.8	4.0	3.6	3.2	3.0	2.10	2.7	2.4
20	9.5	7.6	6.3	5.4	4.8	4.2	4.0	3.9	3.5	3.2
25	11.9	9.5	7.10	6.8	5.10	5.3	4.11	4.8	4.3	3.11
30	14.0	11.3	9.5	8.0	7.0	6.3	5.11	5.8	5.1	4.8
35	16.5	13.2	10.11	9.5	8.2	7.4	6.11	6.7	6.0	5.5
40	18.9	15.0	12.6	10.9	9.5	8.4	7.11	7.6	6.10	6.3
45	21.1	16.11	14.0	12.1	10.7	9.5	8.11	8.5	7.8	7.0
50	23.5	18.9	15.8	13.5	11.9	10.5	9.10	9.5	8.6	7.10
60	28.2	22.6	18.9	16.0	14.0	12.6	11.10	11.3	10.3	9.5
70	32.10	26.3	21.11	18.9	16.5	14.7	13.10	13.2	11.11	10.11
80	37.6	30.0	25.0	21.4	18.9	16.8	15.9	15.0	13.8	12.6
90	42.2	33.9	28.2	24.1	21.1	18.9	17.9	16.11	15.4	14.1
100	46.11	37.6	31.3	26.9	23.5	20.10	19.9	18.9	17.0	15.8

APPROX. SIZE OF PICTURE

LANTERN STANDS. (C)

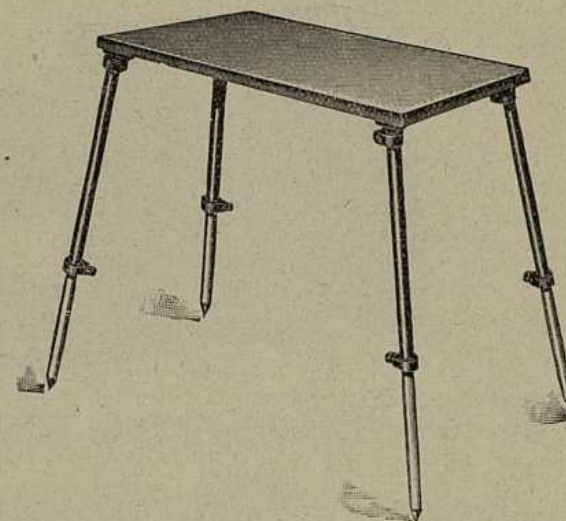
This Stand, which has been specially designed for Lantern use consists of a polished Oak top, 24 in. × 12 in. × 1 in. thick, fitted on to telescopic legs, consisting of steel tubes which are removable from the top for transit purposes. Can be tilted, raised or lowered to any position.

Lowest position ... 24 ins.
Highest position ... 45 ins.
Weight ... 19 lbs.

Price

£2 5 0

Carriage Forward.



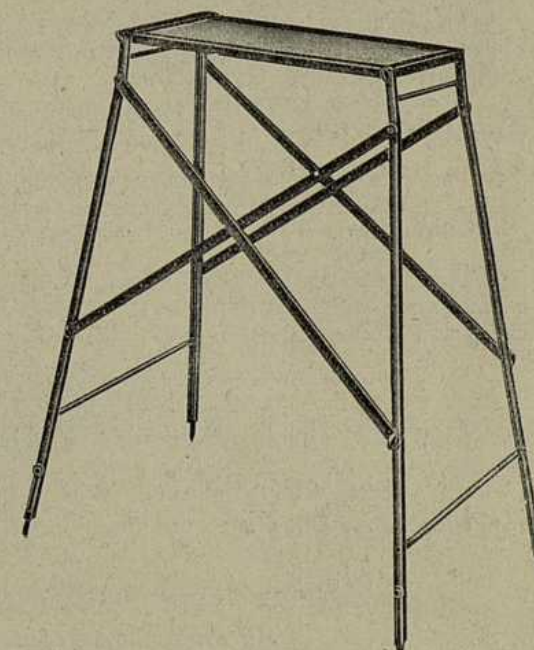
LANTERN STANDS. (C)

This is a very light Stand, and when dismantled is easily packed for transport. Constructed of flat and channel iron, fitted with stained wood top. All iron parts crystalline enamelled.

Price

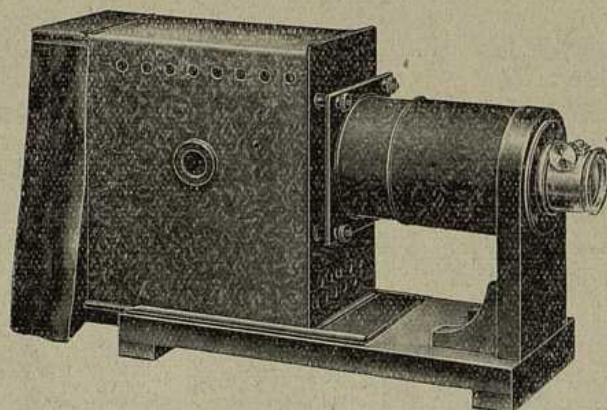
£1 13 0

Carriage Forward.



OPTICAL LANTERN. (C)

No. 6.



ENTIRELY NEW MODEL

Body.—6 ins. centre, made of sheet metal, fitted with eyepiece, back door, and fireproof curtain and curtain rod. The front of the body carries the stage and front tube, the slide carrier being held by four brass milled nuts.

The body slides in a tray fixed to the wood base, thus enabling the focussing to be adjusted in an easy manner. This body is large enough to take any focus lamp up to 500 watts, acetylene jet, scissors arc lamp or limelight jet.

The front of the base has an upright to which the flange carrying the objective is secured, this method ensuring *absolute rigidity*.

To use lenses longer than 8 ins. focus, extension tubes must be used (For prices see page 16).

The slide carrier can be fitted under the base for transport.

Condenser.—4 ins. diameter plano-convex lenses in spring cell.

This lantern is beautifully finished, the body being crystalline stove enamelled, is light, and therefore should appeal to all users, who require a cheap and efficient lantern.

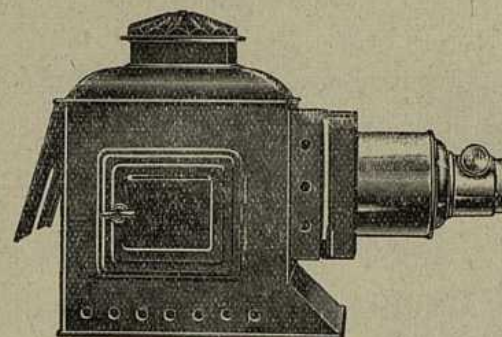
Prices :

With No. 1 Objective 6 ins. or 8 ins. focus ...	£3 5 0
With No. 2 Objective 6 ins. or 8 ins. focus ...	£3 17 6
With No. 4 Objective 7 ins. focus ...	£4 0 0

Extra. Carrying Case, with handle, 10s. 6d.

All Prices Carriage forward.

JAPANNED OPTICAL LANTERNS. (C)



No. 7A.—Japanned Optical Lanterns.
Centre, 5 inches.

Price :

With No. 1 Objective, Condenser,
Cowl and Tray,

£2 15 0

As above, but with No. 1a
Objective,

£2 17 6

Carriage Forward.

RUSSIAN IRON OPTICAL LANTERNS. (C)

Prices :

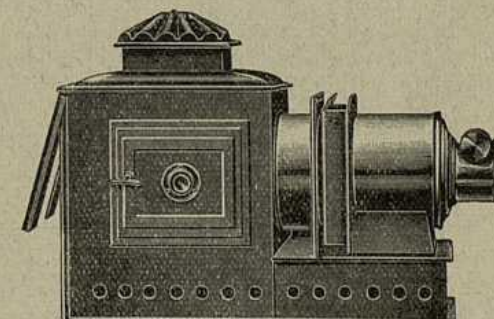
With No. 1 Objective, Condenser,
Cowl, and Tray,

£3 10 0

As above, but with No. 1a
Objective,

£3 12 6

Carriage Forward.



No. 7D.—Russian Iron Optical Lantern and Stage.
Centre, 5 inches.

RUSSIAN IRON OPTICAL LANTERNS. (C)

Prices :

No. 10A.—Fitted with No. 1 Objective
Condenser, Cowl and Tray,

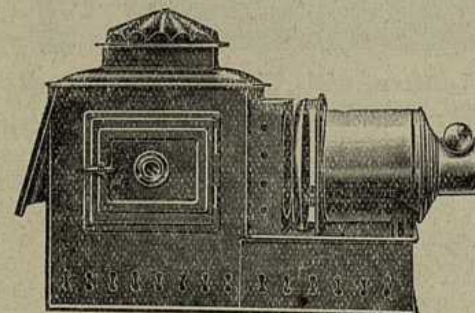
(No. 1 Thread) ... £4 7 6

Fitted with No. 2 Objective £5 0 0

No. 10B.—Similar to No. 10a, but
fitted with two draw brass tubes
(suitable for any focus up to 9½ ins.),
and No. 2 Objective,

(No. 2 Thread) ... £5 18 0

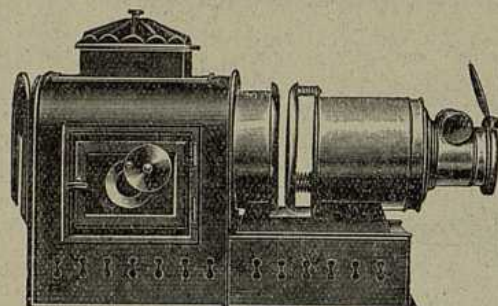
Carriage Forward.



No. 10A.—Russian Iron Optical Lantern, with Open Stage.

We can only supply the above while present stock lasts.

RUSSIAN IRON OPTICAL LANTERNS. (C)



Price :

With Objective, Condenser, Cowl and Tray,

No. 1 Objective £5 5 0

No. 2 Objective £5 17 6

No. 15AA.—Russian Iron Optical Lantern, with Circular Open Stage. Centre $5\frac{1}{2}$ inches.

Body.—Made of Russian iron with panelled door fitted with fibre handle, and polished and lacquered brass eyepiece with sliding shutter. There is a hinged door at the back, which is panelled and slotted to take the tray when illuminants carried on an upright are used. The condenser cell is made of brass, and is firmly attached to the front of the body.

Stage and Front Table.—Made of brass, highly polished and lacquered. It has a circular brass spring plate for holding the carrier in position. The front tube slides within the jacket-tube, and carries a cast brass flange. (No. 2 Thread.)

Condenser.—Compound Plano-Convex, 4 ins. diameter lenses in spring cell.

Case extra, if required.—Russian iron, fitted with leather carrying-handle, and brass fasteners fitted to the case 12/6

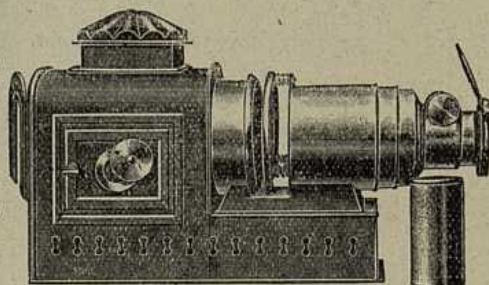
Price :

With No. 2 Objective (any focus, 6 ins., 8 ins. and $9\frac{3}{4}$ ins.), Condenser, Cowl and Tray,

£6 15 0

As above, but with No. 2a Rack Jacket and Lens Cylinder (any focus 6 ins., 8 ins. and $9\frac{3}{4}$ ins.),

£7 7 6



No. 15AAA.—Russian Iron Optical Lantern, with Circular Open Stage and Telescopic Front. Centre $5\frac{1}{2}$ inches

Body, Stage, Condenser } Similar to No. 15AA, except the Condensers are Meniscus and plano-convex, 4 ins. diameter.

Case extra, if required (similar to No. 15AA) 12/6

Telescopic Tubes (two-draw).—These are constructed so that they are rigid even when fully extended, and are suitable for lenses not exceeding $9\frac{3}{4}$ ins. focus. (No. 2 Thread.)

All Prices on this page, Carriage Paid.

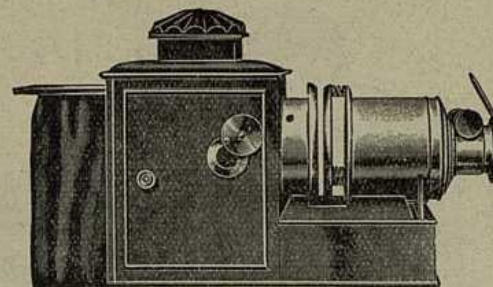
RUSSIAN IRON OPTICAL LANTERNS. (C)

Prices :

Condenser, Cowl, with No. 2 Objective and Tray, £6 11 0

As above, but with No. 4 Objective, 7-14 ins. focus. £7 6 0

with 6 ins. focus lenses (extra special quality) ... £8 1 0



No. 15E.—Russian Iron Optical Lantern, with Improved and Ventilating Circular Open Stage. Centre $6\frac{1}{2}$ ins.

Body.—Made of Russian iron with all the openings wired. As an aid to complete ventilation, the bottom of the lantern has a large hole in it and is mounted on two brass feet; these, in conjunction with the tilting screws, keep the body from the table. The Side Door, which is almost the size of the body, is light tight when closed. It is fitted with brass eyepiece and sliding shutter. There is a hinged flap at the back, which rests on a sliding rod provided with a black fire-proof curtain. When not in use, the rod and curtain can be pushed back into the body. The front is fitted with a brass cell, which is bored with four large holes to ventilate the Condenser.

Stage.—Similar to No. 15AA, but heavier pattern, and fitted with single draw tube. No. 2 Thread.

Condenser.—Double Convex and Meniscus, 4 ins. diameter, in brass spring cell.

Case extra, if required.—Similar to No. 15AA 14/-

Prices :

with No. 2A Rack Jacket and No. 2A Lens,

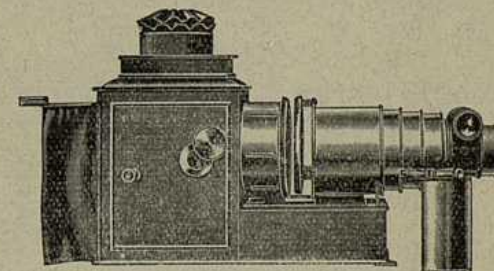
Cylinder, any focus 6-14 ins. Cowl, Condenser and Tray.

£8 11 0

As above, but with No. 4A Rack Jacket and Lens,

Cylinder, any focus 7-14 ins., £9 6 0

with 6 ins. focus lenses (extra special) ... £10 1 0



No. 15F.—Russian Iron Optical Lantern, with Improved and Ventilating Circular Open Stage and Telescopic Front. Centre $6\frac{1}{2}$ ins.

Body, Stage, Condenser, similar to No. 15E.

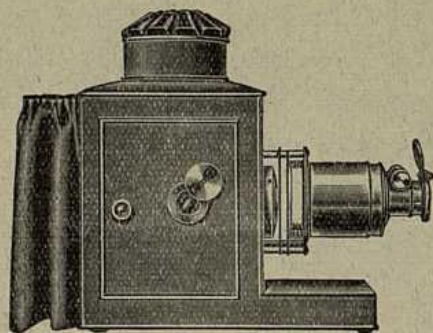
Case extra, if required.—Similar to No. 15E 14/-

Telescopic Tubes.—The Single Draw Tube is replaced by a set of three draw brass telescopic tubes which are very rigid, suitable for lenses not exceeding 12 ins. focus. No. 2 Thread (No. 5 by removing O.G.)

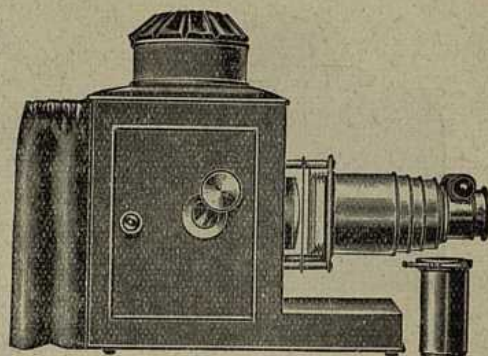
Special attention is drawn to the centre of the above Lanterns, which has now been increased to $6\frac{1}{2}$ ins. to accommodate Focuslite Lamps, etc.

All prices on this page, Carriage Paid.

RUSSIAN IRON OPTICAL LANTERNS. (C)



No. 29E.



No. 29F.

Body.—8 ins. centre. Similar, in so far as construction is concerned, to the No. 15E, except that it is larger, and the front, sides and base are strengthened on the inside with sheet iron, rivetted to the body. The light-tight door is also larger, and the domed top is fitted with Russian iron Cowl of neat design. The foot is elongated, as shown in the illustration, and fitted with two tilting screws. The eyepiece is fitted with two glasses, red and green, and sliding shutter. These Lanterns will take any projector type Lamp, and also the No. 4A Arc Lamp, illustrated on page 27.

Stage and Front Tubes.—All brass, ventilated stage. (No. 2 Thread.)

Condenser.—Double-convex and Meniscus, $4\frac{1}{2}$ ins. diameter, in spring cell.

Case extra, if required.—Wood, fitted with leather handle and bridge fasteners, with removable door. ... Price 20/-

		£	s.	d.
No. 29E Lantern (Single Draw Tube)	No. 2 Objective, 6 ins. Focus	10	0	0
	No. 4 Objective, 7 ins. Focus	10	15	0
	No. 4 Objective, 6 ins. Focus (special quality) ...	11	10	0
No. 29F Lantern (Telescopic 3-Draw)	No. 2A Jacket and 2A Lens Cylinder, 6-22 ins. Focus	12	0	0
	No. 4A Jacket and 4A Lens Cylinder, 7-18 ins. Focus	12	15	0
	No. 4A Jacket and 4A Lens Cylinder, 6 ins. Focus (extra special quality)	13	10	0
	No. 5A Jacket and 5A Lens Cylinder, 10-22 ins. Focus	16	5	0

N.B.—Single-draw Tube Fronts are suitable for Lenses up to 7 ins. Focus.
Telescopic 3-draw Fronts are suitable for Lenses up to 14 ins. Focus.
Longer Focus require Extension Tubes.

Longer Focus Lenses can be supplied if required, up to 24 ins. Focus.

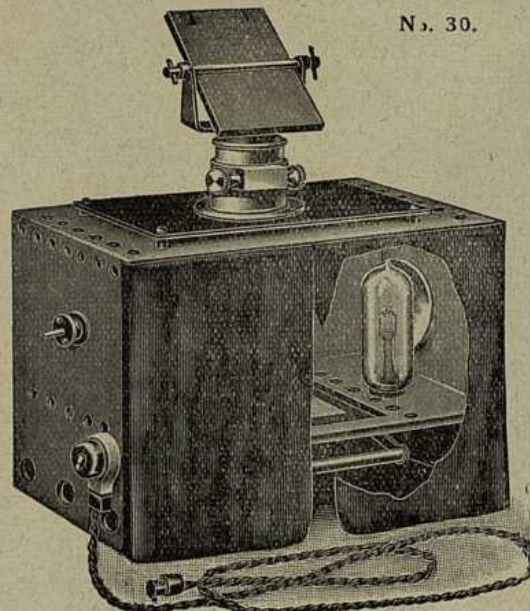
For Prices of Extension Tubes, see page 16.

„ „ Lenses see pages 17 and 18.

All prices on this page, Carriage Paid.

OPAQUE PROJECTING LANTERN. (C)

No. 30.



This Lantern has been produced to meet a long felt want, and is specially designed to project Book Illustrations, Post Cards and Opaque Objects. It consists of an Oak body, asbestos lined, the size of the projection aperture is 6" square, and the illustration is laid on a table kept in position by means of a spring. The Illuminant is procured by means of two focus lamps, fitted with adjustable reflectors. The Projection element consists of a Petzval combination lenses $3\frac{3}{16}$ " diameter mounted in a cylinder, sliding into a rack focussing jacket. The Mirror is surface silvered, mounted in a metal adjustable frame. Body is well ventilated and fitted with black curtain at rear. A switch plug is fitted to side of Body and 12 feet of flex. With two 400 Watt Lamps, pictures up to 8 feet square can be projected.

Price, complete as described, £14 10 0

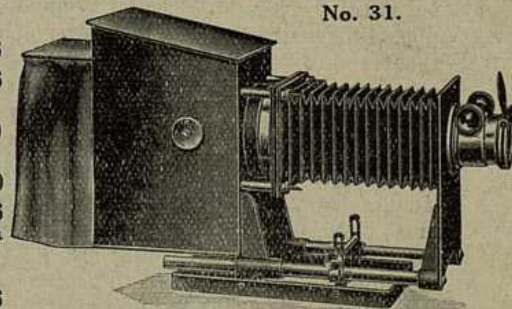
Lamps (extra)	250 Watt	500 Watt	
100/110 volts	21/-	100/110 volts	27/6 (N)
200/250 volts	23/6	200/250 volts	27/6

RUSSIAN IRON OPTICAL LANTERN. (C)

PRICES

No. 31.

with No. 2 Objective (6"-18" focus), £8 15 6
 *with No. 4 Objective (7"-18" focus), £9 10 6
 with No. 2A Jacket and Cylinder (6"-18" focus) £9 8 0
 *with No. 4A Jacket and Cylinder (7"-18" focus) £10 3 0
 *If with No. 4 or No. 4A 6" focus lens, 15/6 extra
 Case extra, if required, wood, fitted with leather handle and bridge fasteners with removable door ... 17/6



£No. 31 (Centre 6 $\frac{3}{4}$ "). Body constructed of Russian Iron, the Condenser and Objective Support being made of aluminium, stage plates made of brass, best quality leather bellows, back door and black curtain. The Objective Front (No. 2 Thread) slides in a pair of telescopic brass tubes, allowing for any lenses from 6" to 18" focus to be used, the leather bellows have metal ends, sliding into grooves on the stage plate and front, so that this can be easily removed when required. The Lantern is mounted on a metal base and has a tilting arrangement which can be locked by means of a large brass milled nut. Base plate, lantern body and lense support best crystalline finish. Will accommodate any Focuslite lamp up to 1000 watts.

Condenser. Bi-convex and Meniscus $4\frac{1}{2}$ ins. diameter, in spring cell.
Lantern when closed measures 19" long, 14 $\frac{3}{4}$ " high, 6 $\frac{3}{4}$ " wide.

THE SMARTEST OPTICAL LANTERN ON THE MARKET.

All prices on this page, Carriage Paid.

RUSSIAN IRON SCIENCE LANTERNS. (I)

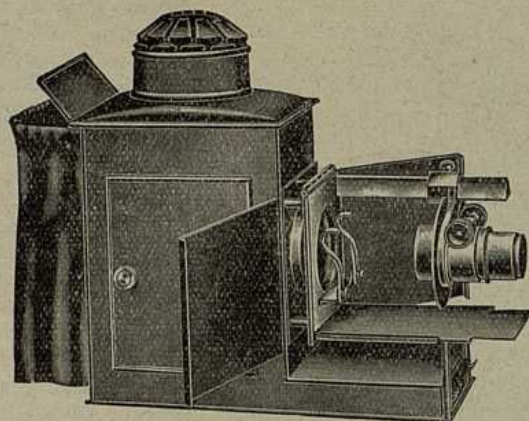


Fig. I.

Demonstrator "Universal" Optical Lantern (Patent) for Horizontal and Vertical Projection. 8-inch Centre.

Body.—Made of Russian iron, strengthened and wired throughout, in order to make it as strong as possible. Fitted with oblong dome top and oval rose cowl. The door is large and when closed fits into a frame, thereby making it perfectly light-tight. The size allows the operator to put both hands inside the body for changing the carbons or limes. Fitted with a brass eyepiece and shutters polished and lacquered, and this is attached with screws and nuts so that it can be easily removed for replacing the glass should it at any time become broken. It has a knurled fibre handle, and a substantial lever catch. The eyepiece, whilst being in the optical axis, is placed forward so that the operator is enabled to look back, so to speak, on the carbons or limes. The back is fitted with a hinged metal flap, and curtain rod with an opaque fireproof curtain. When the lantern is in use the flap rests on the curtains and so prevents leakage of light. When not in use, the rod with the curtain attached can be pushed into the body.

Stage.—The front of the body is fitted with a brass plate, bronzed and lacquered, which carries a cell for taking one half of the condenser. A second brass plate, bronzed and lacquered, is fixed to it by brass columns and bolts. To this is hinged, by a long pin with a milled head, another brass plate, carrying the second half of the condenser. This plate is fitted with a long triangular section polished brass rod on which the objective slides when using various foci lenses, and is blocked by means of a large clamping screw at the side of the plate which carries the jacket or rack-mount. This is a distinct advantage over the old type of demonstrator, as the slide is much more accessible when being used in a vertical position. On the front foot of the lantern body are fitted two upright rods on which the mirror rests for horizontal projection as shown in Fig. 1. There are also two grooved projections for the large mirror plate to rest in when used for opaque projections as shown in Fig. III. There is a stage plate with adjustable brass springs, with milled head screws, for taking an ordinary slide carrier or chemical tank. This stage is attached by "key-hole" fittings so that it can be easily removed.

(Continued next page)

RUSSIAN IRON SCIENCE LANTERNS—Continued.

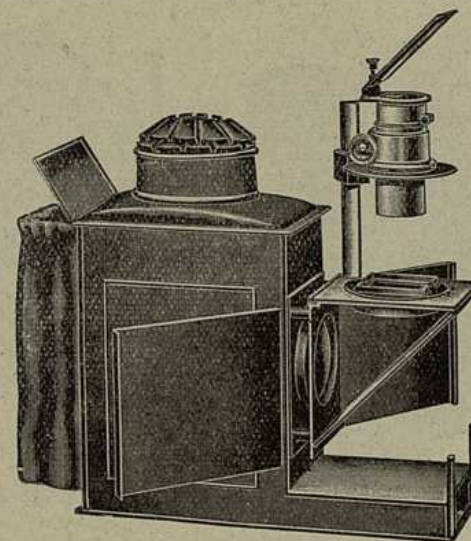


Fig. II.

Hinged to the front plate is a large mirror, mounted in brass, the back of which forms the foot of the stage when projecting apparatus. Should a higher centre be required, the mirror can be removed by releasing the front catch and withdrawing the hinge pin when the base of the lantern may be used as a table on which to stand the apparatus. The front, to which the light-shield is attached, is threaded to take the jacket or rack-mount.

Vertical Projection.—To alter from horizontal to vertical projection, the stage is pulled forward and raised. The edge of the mirror frame rests on a brass ledge fixed to the front plate. By this means it will be seen that the mirror is brought into position at an angle of 45° with the condenser, the stage plate is removed and the lantern slide plate, which is also key-holed, substituted. This plate has a ridge for taking an ordinary size lantern plate, and is held firmly by a side spring. The adjustable objective mirror is then placed in position. The mirror is hinged to a metal ring and is provided with a long milled head screw for adjusting the angle to a nicety. The side doors can then be closed to prevent any leakage of light as shown in Fig. II.

Opaque Objects.—In order to exhibit Opaque Objects, the end of the large mirror is placed within the brass grooves on the front foot and the lantern slide plate is removed. The front half of the condenser lens must also be removed. This is held on to the stage plate by studs, and is easily detached by giving the lens cell a twist, which will release the lens. The front part carrying the objective is lowered so as to allow it to be within focal range of the object placed on the table. The table can be raised or lowered and clamped in any position by a binding nut, and is mounted on a heavy iron stand.

(Continued next page)

RUSSIAN IRON SCIENCE LANTERNS—Continued.

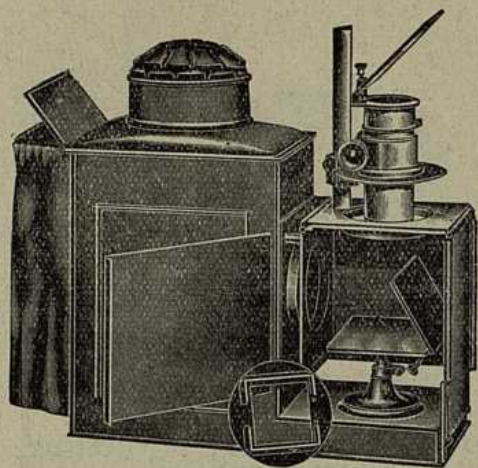


Fig. III.

The mirror is also adjustable to any angle. As already mentioned there are two swing side doors attached to the body. When closed they connect the sides of the lantern with the upright mirror thus enclosing the space occupied by the adjustable table, as shown in Fig. III.

Mirrors.—All the mirrors are made of English plate glass, very carefully silvered, and are provided with Russian iron envelope sheaths so as to prevent them getting broken or scratched.

Condenser.—Double Convex and Meniscus, $4\frac{1}{2}$ ins. diameter, but each half mounted in a separate cell. The meniscus lens inside the lantern body is mounted in a brass spring cell. The double convex lens is also mounted in a separate cell.

Case.—Made in black stained wood, with strong leather handle or according to requirements.

NOTE.—Opaque objects are best projected with a powerful illuminant. By withdrawing the hinge pin, the whole of the front brass stage can be removed, leaving the lantern body with one half of the condenser only, so that it can be used as a theatrical lime box.

Centre.—The height of the optical centre is 8 ins.

Prices :

No. 23A.—Demonstrator Science Lantern, complete as specified, with No. 4D Lens Cylinder (any focus up to 10 ins.) No. 2 Thread £24 10 0 (I)

Longer Focus Lenses can be used by inserting Extension Tubes (No. 2 Series, Page 16) between Lens Arm and Jacket.

Carriage Forward.

PRISMS (for Demonstrator Lanterns). (I)

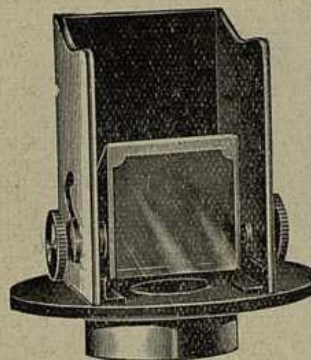


Fig. I.

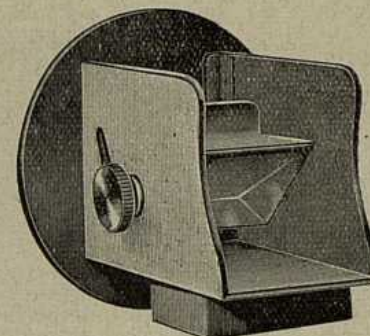


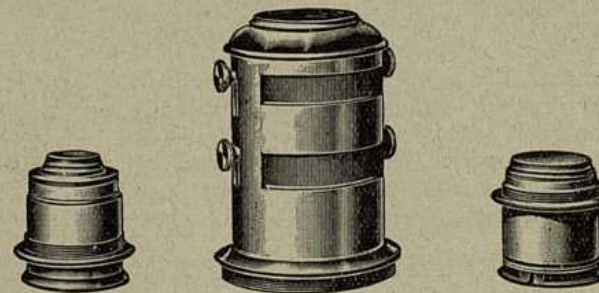
Fig. II.

Silvered Prism.—Mounted in brass, bronzed and lacquered, in such a manner that it can be moved on its bearings so as to bring it into use either for reflecting (as shown in Fig. I), or erecting purposes (as shown in Fig. II.). The Prism is of large size and perfectly accurate, being hand ground and polished, and therefore gives an image on the screen without distortion. One side of the Prism is carefully silvered. The Prism fits on the No. 4D Lens Cylinder in place of the Mirror.

Prism, fits No. 4D Lens Cylinder £6 6 0

Carriage Forward.

PROJECTION MICROSCOPES. (I)



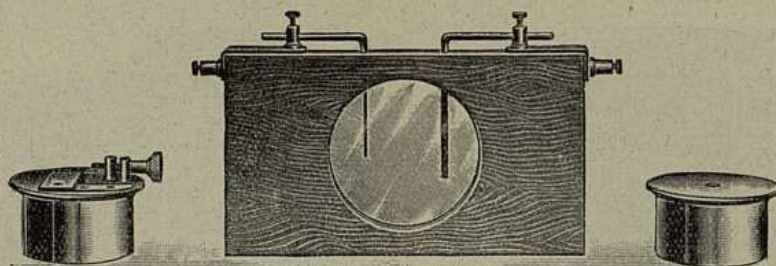
No. 1 Projection Microscope.—Made to screw on to the flange of the sliding tube of the lantern body in place of the objective, and can therefore be used with any lantern, and with any illuminant. Made of brass, highly polished and lacquered, with two slots and diaphragm, mounted on internal spring. This holds the slide, live box or animalculae tank, in position. Complete with two powers, 1-inch and $\frac{1}{2}$ -inch non-achromatic, mounted in sliding tubes and carried in brass jackets. (No. 2 Thread).

Price :

No. 1.—Projection Microscope £2 5 0

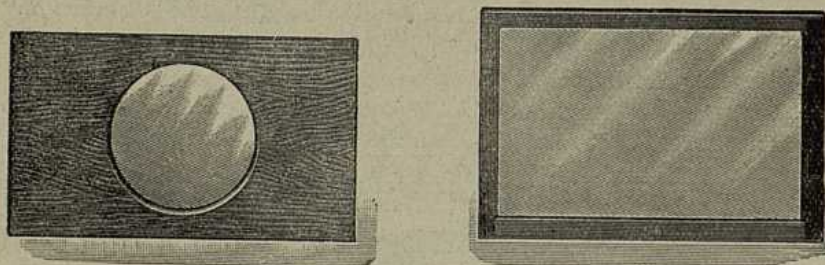
Carriage Forward.

NOZZLES AND ELECTROLYTIC TANK. (I)



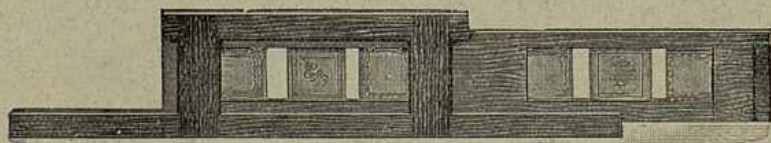
Parallel Beam Nozzle. Made of brass and adapted with adjustable slit. To slide on the No. 4D Lens Cylinder. **Price 25/6.**
Pencil Beam Nozzle. Made of brass with circular opening at the top. To slide on the No. 4D Lens Cylinder. **Price 7/6.**
Electrolytic Tank. Similar to the No. 1 Chemical Trough, described below, but fitted with terminals and copper electrodes. **Price 15/-.** (*Platinum wire supplied if required.*)

CHEMICAL AND ALUM TROUGHS. (I)



No. 1 Chemical Trough. Made in unpolished mahogany $7 \times 4\frac{1}{2}$ ins. with circular opening 3-inch diameter. Provided with two glasses and separated by stout india-rubber. **Price 5/6.**
No. 2. Alum Trough. Made of glass and bound at the edges with japanned tinned iron. Absolutely water-tight. Size, $7 \times 4\frac{1}{2} \times \frac{3}{4}$ inches, (inside space). **Price £1 1 0.** *Other sizes to order.*

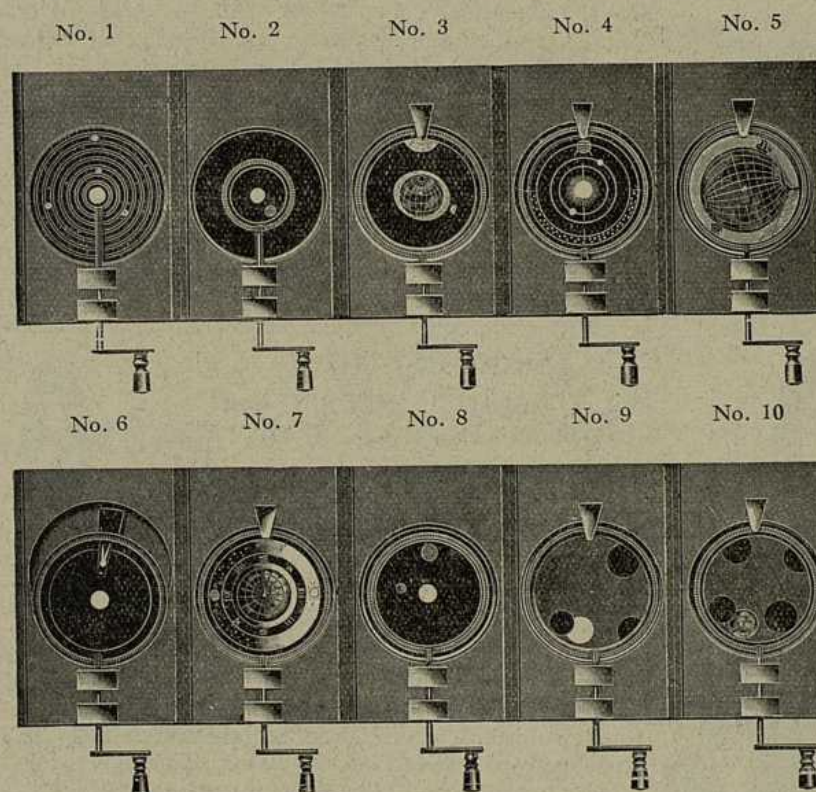
MICRO. SLIDE CARRIER. (I)



Micro. Slide Carrier. Made of unpolished mahogany, thoroughly well made and finished, to carry 3×1 -inch microscopic slides. It is of the double sliding pattern and intended for use with any projection microscopes. **Price 4/-.**

All prices on this page, Carriage Forward.

RACKWORK ASTRONOMICAL SLIDES. (I)



A comprehensive series of mechanical slides for illustrating the science of physiography. They are carefully made, and the movements are accurately timed so as to work in correct ratios. The slides have 3-in. diameter pictures, hand painted, carefully coloured, and are carried in unpolished mahogany frames. The rackwork adjustment works smoothly, and each slide is fully described. They are supplied either in box or separately as detailed below.

SPECIFICATION.

RACKWORK ASTRONOMICAL SLIDES, as described.		Price each		
No.	Description	£	s.	d.
No. 1.	The Solar System, showing the revolution of all the Planets with their Satellites round the sun	1	7	6
No. 2.	The Earth's annual motion round the Sun, showing the parallelism of its axis, producing the seasons	1	0	0
No. 3.	To illustrate the cause of Spring and Neap Tides and show the Moon's phases during its revolution	12	0	0
No. 4.	To illustrate the apparent direct and retrograde motion of Venus and Mercury, and also their stationary appearance	12	0	0
No. 5.	To prove the Earth's Rotundity	12	0	0
No. 6.	To illustrate the eccentric revolution of a Comet round the Sun, and show the appearance of its Tail at different points of its orbit	1	2	0
No. 7.	The Diurnal Motion of the Earth, showing the Rising and Setting of the Sun, illustrating the cause of Day and Night	12	0	0
No. 8.	To illustrate the Annual Motion of the Earth round the Sun, with the monthly lunations of the Moon	1	7	6
No. 9.	To show the various Eclipses of the Sun, with the Transit of Venus	12	0	0
No. 10.	To show the various Eclipses of the Moon	12	0	0
	Special Box to hold 10 Slides	5	6	0
	Complete Set of 10 Slides as above, in Wood Box	8	10	0

Carriage paid.

EXTENSION TUBES. (I)

No. 1.—Extension Tube, $2\frac{3}{8}$ ins. diameter, made of brass, polished and lacquered, and threaded for Lanterns Nos. 7A—7D—10A.

No. 2.—Extension Tube, 3 ins. diameter, as above, but threaded for all Lanterns, with the exception of those mentioned above.

Length	2"	3"	4"	6"	8"	10"
No. 1	6/-	6/6	7/-	8/6	10/-	13/6
No. 2	8/-	9/-	10/-	12/-	16/-	19/-



FLANGES. (I)

No. 1 Thread, 6/- No. 2 Thread, 7/-

ADAPTOR. (I)

No. 2 Thread to No. 1 Thread, 5/-



FLANGE.

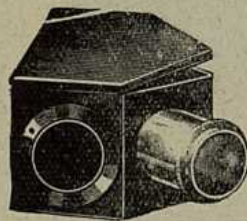


ADAPTOR.

APHENGESCOPE. (I)

An instrument which, when attached to a Lantern, will exhibit opaque objects, cartes-de-visite, etc. Made in japanned tinned iron, and fitted with a brass flange to carry the objective. In use, the objective is unscrewed from the lantern body, and the Aphengoscope screwed into its place. The objective is then fitted into the second tube of the instrument and the lantern body is turned round so that the objective shall face the screen.

Price 15/-

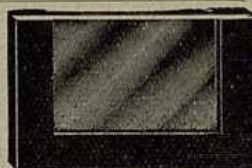


MICRO TANK. (I)

Made entirely of glass suitable for No. 1 Projection Microscope.

$3\frac{1}{8}$ " long \times $1\frac{3}{4}$ " high \times $\frac{1}{2}$ " thick.

Price 12/6.



LECTURER'S READING LAMP. (I)

This is for use with electric light and consists of a square telescopic metal body with hood, complete with B.C. lamp holder, 24 ft. of flex and B.C. Adaptor,

Price 30/-

ELECTRIC DISTANCE SIGNAL. (I)

This enables the lecturer to signal to the operator, the lecturer having the lamp push handy, and the operator having the lamp near the lantern.

This consists of a shielded lamp, operated by means of a dry cell in a polished wood case, with 80 ft. of flex and push button.

Price 40/-

All Prices on this page, Carriage Forward.

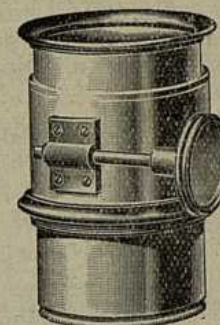
OBJECTIVES FOR OPTICAL LANTERNS. (C)

No. 1 Lantern Objective.—This is a good quality objective, and is fitted with double combination achromatic lenses, 2 ins. diameter, mounted in a polished brass tube, which slides in a brass jacket. (No. 1 Thread.)

Prices :

6 ins. focus... £1 1 0
Any other focus over 6 ins. £1 2 6

Carriage Forward.



No. 1A Lantern Objective.—Similar to No. 1, but in addition, has a sliding shutter, which is attached to the brass flange, as well as a stop to keep it open. (No. 1 Thread.)

Prices :

6 ins. focus... £1 5 0
Any other focus over 6 ins. £1 7 6

Carriage Forward.

No. 2 Lantern Objective.—The jacket which is polished and lacquered, carries an inner tube in which are mounted double combination achromatic lenses, 2 ins. diameter. A brass collar is arranged with tinter slot and is fitted with a hinged flap shutter, made of brass, bronzed and lacquered. Any focus supplied, 6 ins. to 20 ins. (No. 2 Thread.)

No. 1 Thread supplied to order.

Price £1 12 6

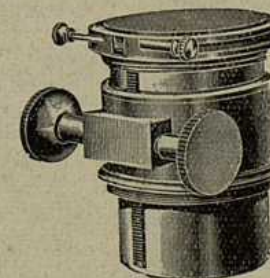
No. 4 Lantern Objective.—Similar to No. 2, but it contains best quality double combination achromatic lenses, $2\frac{3}{8}$ ins. diameter, which passes more than twice the amount of light than the No. 2 series. (No. 2 Thread.)

Prices :

7 ins. to 18 ins. focus ... £2 7 6
6 ins. focus (special quality) £3 3 0

Carriage Forward.

For Lantern Lenses Table see page 2.



JACKETS OR RACK MOUNTS AND (C) LENS CYLINDERS.

No. 2D—Lens Cylinders, without Flashers.

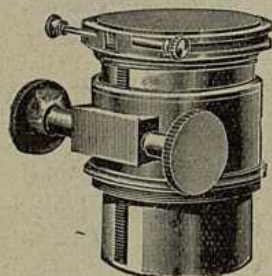
Similar to the No. 2A Lens Cylinders, but without hinged flasher and tinter slot. 6-in. to 24-in. focus.

Price £1 0 0

No. 4D, Lens Cylinder, without flasher, similar to the No. 2D Lens Cylinders, but fitted with $2\frac{3}{8}$ in. diameter double combination achromatic lenses.

7-in. to 24-in. focus ... £1 10 0

6-in. focus (special quality) ... £2 5 0



No. 2D—Jacket or Rack Mount with Flasher.

Substantially made in brass, highly polished and lacquered to carry No. 2D Lens Cylinder. No. 2 Thread.

Price £1 5 0

No. 4D, Jacket or Rack Mount, with flasher, similar to No. 2D, but to carry No. 4D Lens Cylinder. No. 2 Thread.

Price £1 10 0

No. 2A—Jacket or Rack Mount without Flasher.

Substantially made in brass, highly polished and lacquered, to carry 2A or 2D Lens Cylinder. No. 2 Thread.

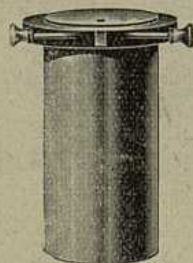
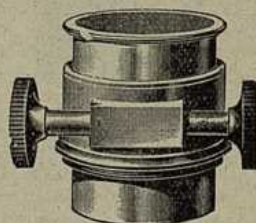
Price £1 0 0

No. 4A, Jacket or Rack Mount without flasher, similar to No. 2A, but to carry 4A or 4D Lens Cylinder. No. 2 Thread.

Price £1 5 0

No. 5A, Jacket or Rack Mount without flasher, similar to No. 2A Jacket, but constructed for No. 5A Cylinders, carrying lenses of $3\frac{1}{8}$ ins. diameter and long focus. Thread fits third drawer of Telescopic Lantern fronts.

Price £2 0 0



No. 2A—Lens Cylinders, with Flashers.

Fitted with best quality double combination achromatic lenses, 2 in. in diameter. The cylinders are made of polished brass with circular brass casting screwed to the front, with a slot at the side to carry tinting colours; also provided with a hinged flasher affixed to a spindle on the front.

Focus, 6-in. to 18-in. ... Price £1 5 0

No. 4A, Lens Cylinder, similar to No. 2A, but fitted with $2\frac{3}{8}$ in. diameter double combination achromatic lenses; fits No. 4A Jacket illustrated above.

7-in. to 24-in. focus ... Price £1 15 0

6-in. focus (special quality) ... Price £2 10 0

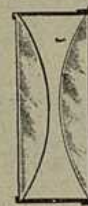
No. 5A Lens Cylinders, fitted with $3\frac{1}{8}$ in. diameter lenses of any focus from 10 ins. upwards. Price £4 10 0

For Lantern Lenses Table see page 2.
All prices on this page, Carriage Forward.

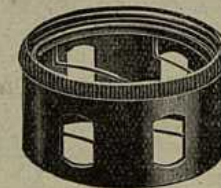
CONDENSERS AND CONDENSER MOUNTS. (C)

FOR

Cinematograph Machines, Optical Lanterns, Enlargers,
:: Lime Boxes, Stage Projectors and Spotlights. ::



Plano Convex.



4" & 4½" Condenser Mounts are supplied with Spring Separator Rings.



Biconvex & Meniscus.

Diameter	SINGLE LENSES ONLY.		CONDENSER MOUNTS ONLY.	COMPLETE CONDENSERS.	
	Plano Con.	Biconvex & Men.		Plano Con.	Biconvex & Men.
2½"	3/-	3/6	6/-	12/6	13/-
4"	3/-	4/-	6/6	12/6	14/6
4½"	3/6	4/6	8/-	15/-	17/-
4¾"	3/6	4/6	8/6	15/6	17/6

ENLARGING CONDENSERS. (I)

DIAMETER.	SINGLE LENSES.	MOUNTS ONLY.	COMPLETE CONDENSERS
5½"	8/6	9/-	25/-
6"	9/6	14/6	32/6
6½"	11/6	17/6	40/-
7"	16/-	18/-	50/-
7½"	18/6	20/-	55/-
8"	21/-	22/-	60/-
8½"	25/-	25/-	75/-
8¾"	27/6	30/-	85/-
9"	32/6	35/-	100/-
11"	70/-	105/-	240/-

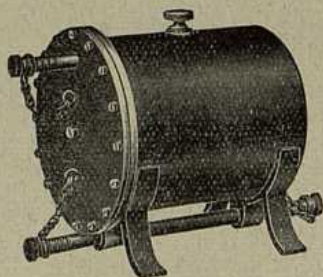
SINGLE LENSES. (C)

For Stage Boxes and Projectors, Spotlights, Universal Lanterns, etc.



Diameter	Focus	Price	Diameter	Focus	Price
4"	—	3/-	6"	10"	11/6
4½"	—	3/6	6"	9"	12/6
5"	9"	7/6	6"	8"	14/-
6"	12"	10/6	6"	6"	22/6
4"	Special Spotlight Attachment Lenses.				5/6

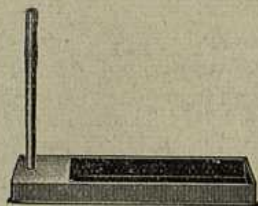
All prices on this page, Carriage Forward.



ETHER SATURATOR. (I)

Made in brass, bronzed and lacquered, of a new and improved shape, being in the form of a cylinder, mounted on cast brass feet. The inlet and outlet tubes are fitted with gauze valves to prevent back firing, and they have screw caps which are attached to the body by means of chains, so as to avoid their being lost.

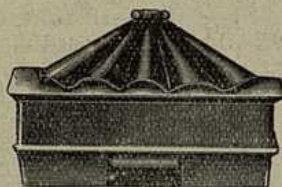
Price £3 10 0



Japanned Tin Tray & Post. (C)

Price 1/6

LANTERN COWLS. (C)

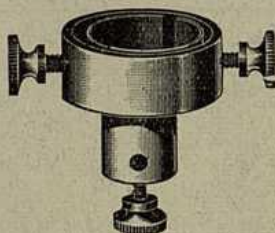


As illustrated, Standard size, $5\frac{1}{8} \times 2\frac{3}{8}$ ins.

Price 3/-

Other sizes made to order only.

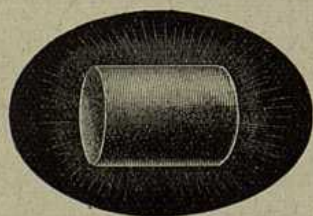
PASTIL HOLDERS. (C)



Ferrule Pattern,

Price 2/6

LIME PASTILS. (C)



Best Quality, in Special Wood Box.

Large size ... 3/- each
Small ,, ... 2/6 ,,

All prices on this page, Carriage Forward.

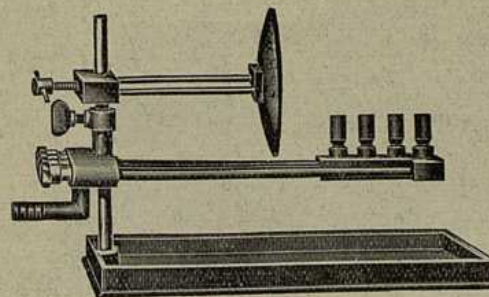
LIMES. (C)



Best quality Hard Limes in sealed tins

6 large in a tin ... 3/-
12 small in a tin ... 4/-

ACETYLENE JETS. (C)



Neatly and substantially made in brass. The burners are carried on a gas chamber which is connected by brass tubes to another chamber carrying the upright and thumb-screw. This chamber also carries the screw-down valves and inlet tube. The silvered reflector can be adjusted to any position, and is clamped on the upright of the tray. It has a sliding adjustment for focussing. The great feature of this jet is that each burner is fitted with a screw-down valve, so that each burner can be regulated separately.

Price: Jet and Reflector, 18/6

Japanned Tin Tray, with Removable Upright, 1/6

Aluminium Tray with Upright, 3/-

ACETYLENE GENERATOR. (C)

(DISPLACEMENT TYPE)

This type of Generator gives gas at a steady even pressure, without bobbing of lights. Pressure can be increased if desired by placing weights on gas-holder, but it is usually found that they work normally at sufficient pressure.

No. 1C will work 4-burner jet for one hour.

No. 2C will work 4-burner jet or oxy-acetylene jet for $2\frac{1}{2}$ hours.

No. 4C will give sufficient gas for two shows a night, 4 to 5 hours.

Prices:

No. 1C.
£1 15 0

No. 2C.
£2 15 0

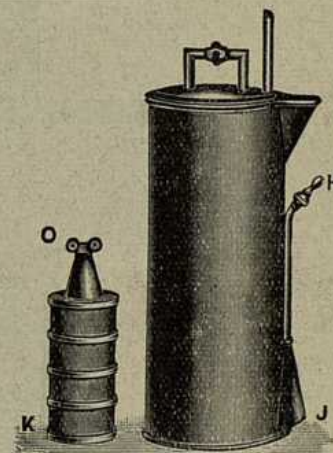
No. 4C.
£4 5 0

Spare Carbide Holders.

11/6

15/6

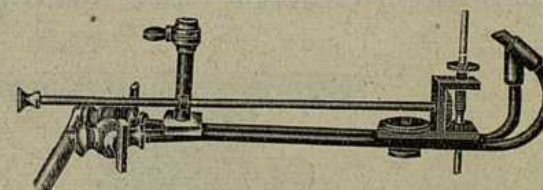
£1 2 0



LIME JETS. (I)

Oxy-Hydrogen Blow Through Jets. For oxygen under pressure and coal gas from house supply.

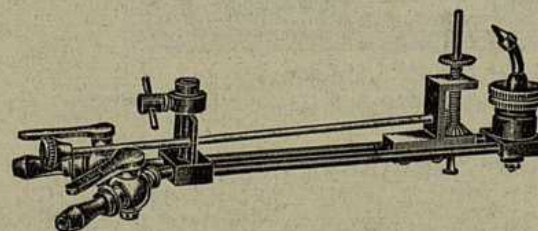
Price £1 7 6



Injector High-power Oxy-Hydrogen Jet. (I) Superior Quality.

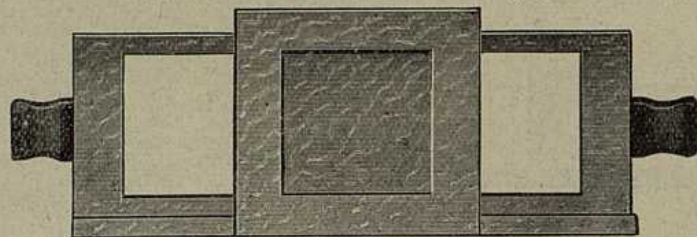
Can be worked with only one gas under pressure as above, or with both gases under pressure, giving a very economical and powerful light. It is supplied with screw-down valves.

Price £2 5 0

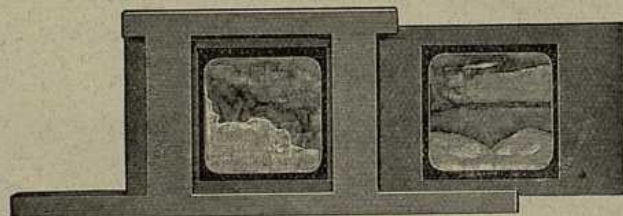


All prices on this page, Carriage Forward.

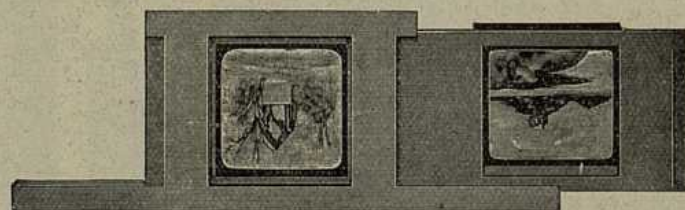
SLIDE CARRIERS. (C)



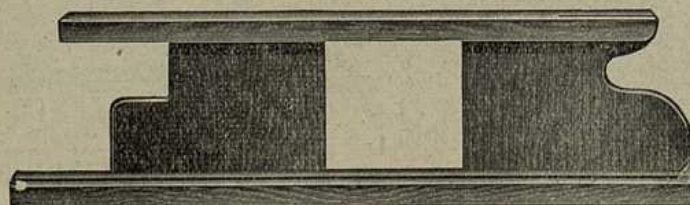
Solid Brass or Nickel Slide Carrier, for $3\frac{1}{4} \times 3\frac{1}{4}$ Slides,
With Light Cut-off and Strong Fibre Handles at Each End.
Price 15/-



No. 1.—Double Sliding Carrier, for $3\frac{1}{4} \times 3\frac{1}{4}$ ins. Slides.
Made of well-seasoned, unpolished Mahogany.
Price 3/-



No. 4.—Double Sliding Carrier, with Lifter, for $3\frac{1}{4} \times 3\frac{1}{4}$ ins. Slides.
Made of well-seasoned, unpolished Mahogany. (Also stocked for $4 \times 3\frac{1}{4}$)
Price 4/-



No. 5.—“Push-Thro” Carrier.
A new and improved type, and takes English and French slides. Made of unpolished mahogany
Price 3/-

ECLIPSE CARRIERS.

Wooden Pattern ...	15/-	Brass Faced ...	17/6	Aluminium ...	42/-
Self-centreing ...	18/-	Self-centreing ...	20/-	Self-centreing ...	45/-

All prices on this page, Carriage Forward.

SLIDE BOXES. (C)

GROOVED SLIDE BOXES.

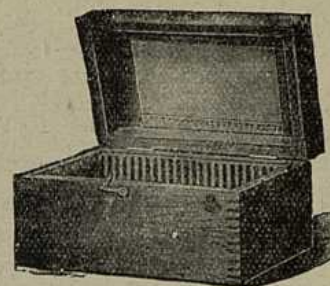
Superior Dovetailed Boxes, made of American white wood, with grooves and numbers.

These boxes are only intended for storing slides.

Made to hold 12, 24, 50 & 100 Slides.

Prices :

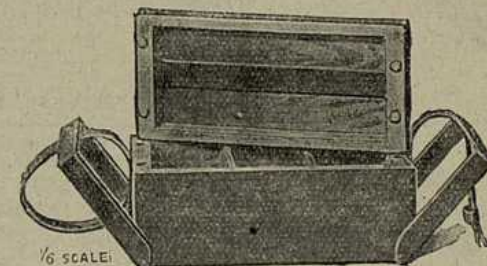
Size 12	Size 24	Size 50	Size 100
2/9	4/6	5/6	9/-



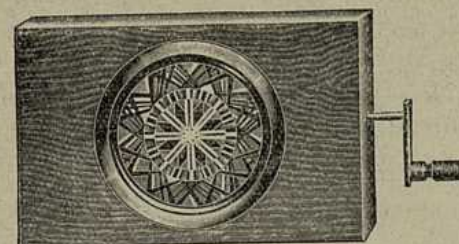
TRANSIT BOXES. (C)

Tongued and screwed American white wood, stained black, with padded removable partitions, top and bottom fitted with rubber pads, lid secured by three dowels, and brass catches, fastened with strong leather strap.

Price 7/6
Without Metal Clasps 5/6



CHROMOTROPES. (I)



Best quality, 3 ins. diameter in a variety of patterns mounted in Mahogany Frame, 7 ins. by $4\frac{1}{2}$ ins.

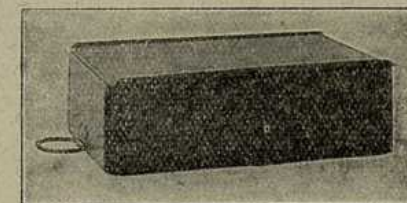
Price 21/- each.

Platform for Raising Centre. (I)

Made of Russian iron and provided with two grooves for the illuminant.

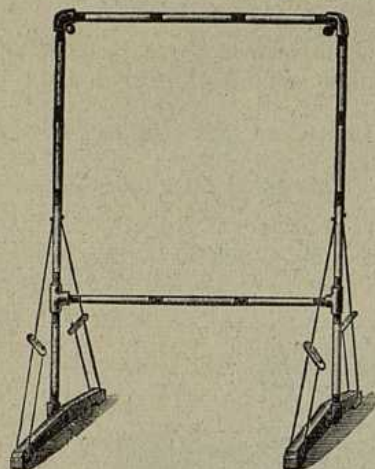
It is intended for use in Lantern bodies with high centres, for illuminants with fixed low centres.

Price 5/6



All prices on this page, Carriage Forward.

SCREEN STANDS. (C)



Each Set of Screen Supports consists of 4 Metal Angle Pieces, Pine Rods as per List, Pair of Supports with Guy Ropes and Cleats, complete in Black Wood Boxes.

(Elevators extra as per List.)

When ordering please state whether 1" or 1½" rods are required.

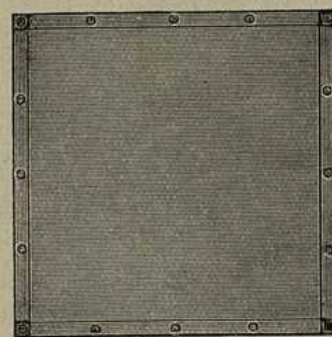
SIZES AND PRICES.

No.	SIZE OF SCREEN	Each Frame consisting of Pine Rods as Under	1-inch Rods	1½-inch Rods
1	6 ft. × 6 ft. ...	4 4-ft. and 4 2-ft.	3 15 0	4 2 6
2	8 ft. × 8 ft. ...	8 4-ft. ...	4 5 0	4 15 0
3	10 ft. × 10 ft. ...	8 4-ft. and 4 2-ft.	4 18 6	5 10 0
4	12 ft. × 12 ft. ..	12 4-ft. ...	5 5 0	5 15 0
5	14 ft. × 14 ft. ...	12 4-ft. and 4 2-ft.		6 10 0
6	16 ft. × 16 ft. ...	16 4-ft. ...		7 5 0
7	18 ft. × 18 ft. ...	16 4-ft. and 4 2-ft.		8 5 0
8	20 ft. × 20 ft. ...	20 4-ft. ...		8 10 0
Elevators, consisting of 2 T pieces and 2 2-ft. rods			17/6	20/-
" " " 2 T pieces and 2 3-ft. "			18/6	21/-
Angle Pieces (per pair) ...			10/-	11/-
T Pieces (per pair) ...			15/-	17/-
2-ft. Rods with Brass Ferrules ...			4/-	5/6
3-ft. " " " ...			5/-	6/6
4-ft. " " " ...			6/-	7/6
6-ft. " " " ...			7/-	8/6
2-ft. Elevator Rods (per pair) ...			2/6	3/6
3-ft. " " " ...			3/6	4/6
4-ft. " " " ...			4/-	5/-
Cleats (per set of 4) ...			1/6	1/9

Bamboo Pointers (8 ft. in 2 sections), 9/6.

All prices on this page, Carriage Paid.

SCREENS.



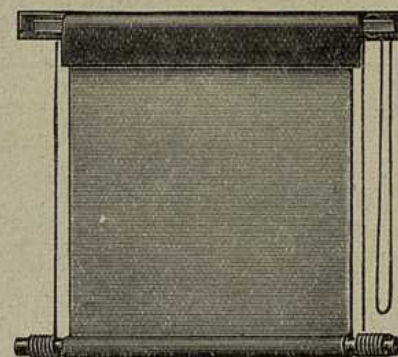
CALICO SCREEN.

CALICO SCREENS. Made of the best material, hemmed all round and fitted with brass eye-lets, or tapes as may be required.

SPECIAL WHITE OPAQUE SCREENS. Made of strong woven material, and fitted with a roller at the bottom, and a batten at the top, and are provided with pulley wheels and cords, by which they can be rolled up and down. When rolled up and not in use, are protected from the dust by a waterproof cloth cover. These Screens can also be supplied complete in box, the box being fixed on the wall or ceiling, and the screen can then be rolled up into the box. **Delivery 7 days.**

SILVER SCREENS. Made of stout material, and painted with the very finest silver paint. Surrounded by black border, and mounted on roller and batten. Sizes over 6 ft. can be supplied with cords and pulleys at extra cost as mentioned below. Sizes over 6 ft. made to order only. **Delivery 5 days.**

TRANSPARENT SCREENS. These screens are made of very best material, and are the only screens that are suitable for back projection. Made to order only. Delivery 7 days.



OPAQUE SCREEN.

PRICES.

Lantern Sizes.

Size in feet	Calico (C)	Opaque (I)	Opaque in box (I)	Silver (C)	Transparent (I)
5 × 5	15/-	45/-	69/-	33/-	37/6
6 × 6	16/-	50/-	80/-	50/-	52/-
7 × 7	20/-	60/-	94/-	78/-	77/-
8 × 8	27/-	70/-	108/-	99/-	100/-
9 × 9	33/-	84/-	124/-	126/-	126/-
10 × 10	39/-	100/-	140/-	175/-	175/-
12 × 12	48/-	150/-	195/-	—	—
14 × 14	72/-	200/-	260/-	—	—
15 × 15	80/-	230/-	380/-	—	—
16 × 16	92/-	260/-	—	—	—
18 × 18	125/-	320/-	—	—	—
20 × 20	135/-	400/-	—	—	—
22 × 22	165/-	—	—	—	—

Cinematograph Sizes.

Size in feet	Calico (C)	Opaque (I)	Opaque in box (I)	Silver (C)	Trans- paren- (I)
3½ × 2½	8/6	25/-	42/6	15/-	17/6
4 × 3	10/6	30/-	50/-	18/-	20/-
5 × 4	12/6	40/-	63/-	21/-	25/-
6 × 4½	13/9	47/-	77/-	35/-	37/6
7 × 5	15/-	55/-	89/-	55/-	55/-
8 × 6	18/-	65/-	103/-	80/-	85/-
9 × 7	26/-	75/-	115/-	105/-	105/-
10 × 8	31/6	90/-	130/-	150/-	—
12 × 10	45/-	130/-	175/-	200/-	—
14 × 11	54/-	160/-	220/-	—	—
15 × 12	59/-	200/-	270/-	—	—
16 × 13	69/-	225/-	315/-	—	—
18 × 15	92/-	280/-	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—

CORDS & PULLEYS. (C)

Silver and transparent Screens over 6 feet can be supplied with Split Rollers and Battens, Cord and Pulleys at following additional cost :—

$\left. \begin{matrix} 7' \times 5' \\ 7' \times 7' \end{matrix} \right\} 25/-$	$\left. \begin{matrix} 8' \times 6' \\ 8' \times 8' \end{matrix} \right\} 30/-$	$\left. \begin{matrix} 9' \times 9' \\ 9' \times 7' \end{matrix} \right\} 35/-$
$10' \times 8' \quad 36/-$	$10' \times 10' \quad 36/-$	$12' \times 10' \quad 37/6$

All screens value £5 and over, Carriage Paid.

SCREEN PAINT. (I)

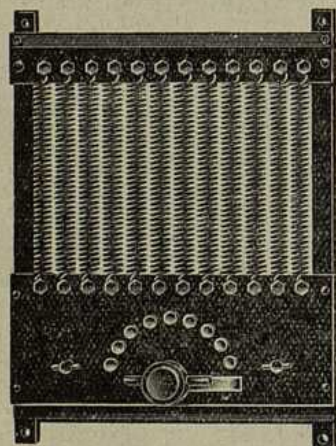
		Silver	Transparent	White Opaque
$\frac{1}{2}$ Gall.	...	25/-	25/-	22/6
$\frac{1}{1}$ "	...	45/-	45/-	42/-
1 Gall.	Silver Paint will cover a screen 20 by 18			
1 "	Trans. Paint " " "			12 by 10
				(both sides)
1 "	White Opaque, " " "			12ft.

OXYGEN AND HYDROGEN GAUGES AND REGULATORS, &c. (I)

Oxygen or Hydrogen Regulators	Combined Regulators, and Gauges for Oxygen and Hydrogen Price £3 7 0 For Oxy-Acetylene with fine adjustment Price £4 14 6	Oxygen or Hydrogen Gauges with Coupling £1 5 0 without Coupling £1 1 0
Fine Adjustment Valves Price 10/6	T Connections Price 10/6	Combined Cylinder Key & Lever. Price 4/6

ARC REGULATING RESISTANCES. (E)

(When ordering, exact voltage must be stated.)



Amperes	Volts 60-75	Volts 100-120	Volts 200-220	Volts 230-250
5-15	2 15 0	3 3 0	4 10 0	5 0 0
5-20	3 0 0	3 10 0	5 0 0	5 10 0
10-30	3 7 6	3 18 0	5 12 6	6 5 0
10-40	3 15 0	4 10 0	6 15 0	7 10 0
20-50	4 0 0	4 15 0	8 5 0	9 0 0
20-60	4 7 6	5 15 0	10 12 6	11 0 0
30-70	4 10 0	6 5 0	12 0 0	13 2 6
30-80	4 17 6	6 12 6	13 17 6	15 0 0
30-100	6 0 0	8 5 0	16 10 0	19 5 0

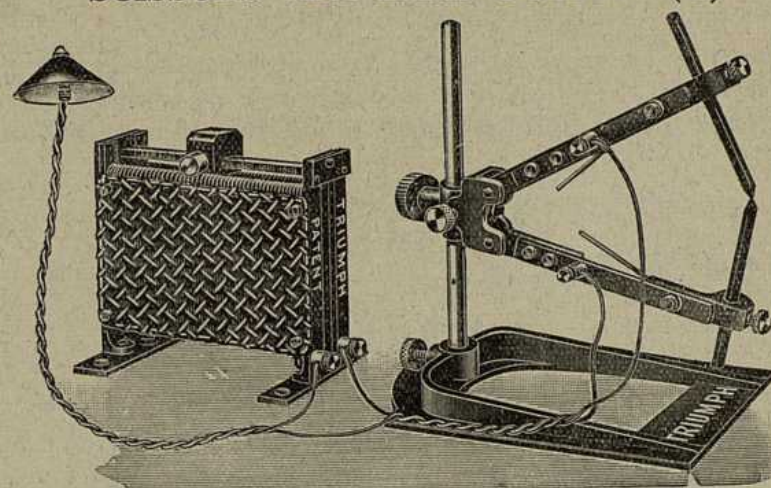
Duplex and Dissolving Resistances for fading and controlling two arc lamps, Parallel type with change-over switches, 75% on above prices; Rotary type 100% on above prices.

Wall Type (Non-Regulating). (E)

Amps	60/75 VOLTS	100/110 VOLTS	200/220 VOLTS	230/250 VOLTS
10	£1 17 6	£2 12 6	£3 17 6	£4 10 0
15	£2 0 0	£2 15 0	£4 10 0	£4 17 6
20	£2 2 6	£2 17 6	£4 15 0	£5 0 0
25	£2 5 0	£3 0 0	£5 5 0	£5 10 0

All Prices on this page, Carriage Forward.

THE "TRIUMPH" SCISSORS ARC LAMP OUTFIT. (C)

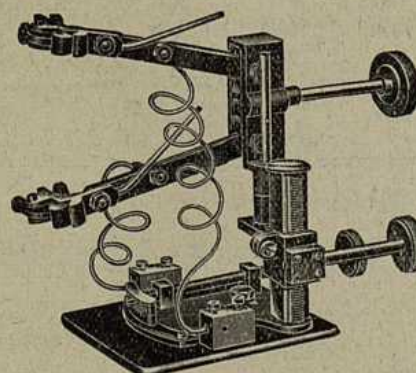


This outfit is designed to enable the arc lamp to be used on any ordinary house lighting circuit from 60 to 250 volts.

The outfit is complete as illustrated with Arc Lamp, Wire, Adaptor, Resistance and supply of Carbons. 5 mm. solid and 6 mm. cored for direct current, or 6 mm. cored for alternating current.

	£	s.	d.
Complete Outfit, as illustrated, on Plain Tray	3	3	6
Complete Outfit, on Mechanical Tray	4	11	0
Arc Lamp and Tray only	1	1	0

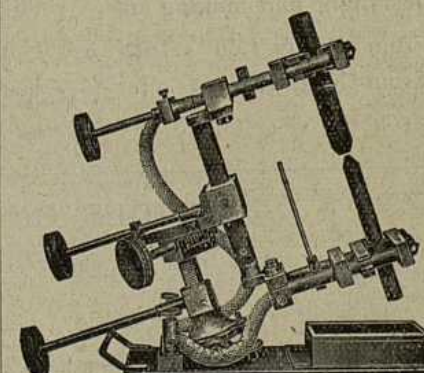
Superior Scissors Arc Lamp. (I)



10 to 20 Amps with horizontal and vertical adjustments, Arc Leads and Terminal Blocks.

Price £3 10 0

No. 4A Arc Lamp. (I)



For 10 to 50 Amps. With four adjusting handles and tilting device, complete with Leads and Terminal Block.

Price £5 17 6

All prices on this page, Carriage Forward.

LANTERN SLIDES. (I)

We are Agents for Messrs. Aero Films, Ltd., and have negatives of nearly every town and interesting place in the United Kingdom.

These Slides are unique and help a Lecturer considerably as they give a panoramic view of the place in question owing to the photograph being taken from aeroplanes, and are naturally therefore **Up-to-Date**. Lists on application.

Prices :

Per Slide, 2/- each.

Lecture Sets of 50 Slides in Transit Box with Leather Handle.

£5 0 0

Carriage Forward.

STANDARD LANTERN SLIDES. (I)

We can supply Slides (Coloured or Plain) from stock negatives, *i.e.*, Travel, History, Educational, Religious, etc. Lists on application.

Prices :

Plain, 2/- each.

Coloured, 4/- each.

Carriage Forward.

SLIDES MADE TO ORDER. (E)

SPECIAL ANNOUNCEMENTS AND ADVERTISEMENTS.

Designing and making up
From Prints (No setting up)
From Negatives.

FIRST COPY

REPEAT COPIES.

Black and White	Coloured	Black and White	Coloured
4/-	5/-	2/-	3/-
2/6	3/6	1/3	2/3
1/9	2/9	1/-	2/0

Carriage Forward.

SLIDES ON HIRE. (E)

We are prepared to let out on hire Aero Film Slides only at the following rates :—

Set of 50 Slides 7/6 per night

Each consecutive night 3/- "

Above 50 Slides, 1/6 per dozen per night extra.

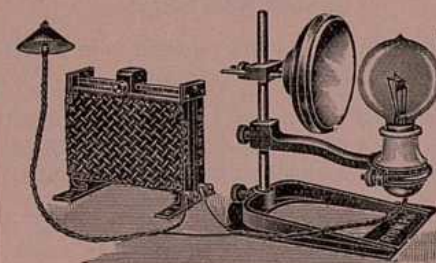
Detailed List of Slides and Hiring Conditions will be sent on application.

Carriage Forward.

Season, 1928-1929.

"TRIUMPH" FOCUSLITE OUTFITS

"TRIUMPH" RESISTANCES



FOCUS
LAMPS

SPARE
PARTS

"TRIUMPH" TRANSFORMERS

Optical Lanterns, &c.	FOR	see Section "A"
Spotlights, Floodlights, &c.		"C"
Cinematograph Projectors & Accessories		"D"
Electrical Charging Sets and Rectifiers		"E"

Section "B."

Sept., 1928.

PROJECTOR TYPE LAMPS for FOCUSLITE OUTFITS.

CONDITIONS OF SALE.

PLEASE READ CAREFULLY.

Lamps cannot be supplied on approval.

Lamps cannot be credited or exchanged.

When ordering please give following details :

Voltage, Wattage and Type of Lamp. If these particulars are not given, execution of orders may be delayed.

GUARANTEES.

We test every Lamp and guarantee to deliver it in sound condition either at our premises or at our customers' premises.

We do not guarantee the life of any Lamp, as this mostly depends upon the care exercised in using and handling it, and we do not accept responsibility for breakages in use, no matter through what cause it may arise.

Any person returning a Lamp for any reason other than breakage in transit, as provided below, do so at their own risk.

DAMAGE IN TRANSIT.

Lamps damaged in transit will only be replaced on the following STRICT CONDITIONS.

Customers must immediately on arrival of the Lamp, examine it carefully to make sure that the Filaments are not broken or displaced, the Bulb cracked or broken, and that the Lamp is correct according to the order given.

If any fault exists the Lamp must be returned *immediately* by our messenger. In the case of postal packets, the Lamp must be returned by the next post, carefully packed, carriage paid. If any Lamp is used or the number removed, or any delay occurs in returning the Lamp, we shall decline to replace it, and no correspondence will be entered into respecting the said Lamp.

If for any reason a Lamp appears faulty, we are prepared to return it to the manufacturers for report, and their decision will be accepted as final.

If they decline to credit or replace, we shall be quite pleased to pass same on to our customer.

PRICES AND PARTICULARS OF FOCUSLITE LAMPS.

For Conditions on which lamps are sold, see Page 30.

When ordering, please state exact Voltage, Wattage and Series No. of Lamp.

Suitable for Outfits	On Page	Voltage	Amps	Watts	Height of Filament centre	PRICES	
						Below 200 Volts	200/250 Volts
0A & No. 7	34 & 36	12	5	60	—	4/6	—
0C	34	100/250	—	100	—	10/9	—
0D	34	100/250	—	250	—	20/-	22/6
1A & No. 7	34 & 36	100/250	—	100	4 $\frac{3}{4}$ ins.	10/9	12/-
1B & No. 7	34 & 36	100/250	—	250	4 $\frac{3}{4}$ ins.	20/-	22/6
1C & No. 7	34 & 36	100/250	—	500	4 $\frac{1}{2}$ ins.	26/-	26/6
1E	34	100/250	—	1,000	6 $\frac{1}{2}$ ins.	33/6	33/6
1F & No. 7	34 & 36	30	5	150	4 ins.	12/6	—
1G & No. 7	34 & 36	50	4 $\frac{1}{4}$	250	4 $\frac{1}{4}$ ins.	15/-	—
2A	35	30	2	60	3 $\frac{1}{2}$ ins.	7/-	—
2B	35	30	5	150	4 $\frac{1}{2}$ ins.	12/6	—
2C	35	30	10	300	4 $\frac{1}{2}$ ins.	20/-	—
2D	35	30	20	600	6 $\frac{1}{2}$ ins.	38/-	—
2E	35	30	30	900	6 $\frac{1}{2}$ ins.	38/-	—
3A & No. 7	36	6	4	24	3 $\frac{1}{2}$ ins.	4/6	—
3B	36	12	5	60	3 $\frac{1}{2}$ ins.	4/6	—
3C & No. 7	36	12	8	100	4 ins.	11/3	—
3D	36	30	10	300	4 $\frac{1}{2}$ ins.	20/-	—
5A	37	50	4 $\frac{1}{4}$	250	4 $\frac{3}{4}$ ins.	15/-	—
5B	37	100/110	2 $\frac{1}{2}$	250	4 $\frac{3}{4}$ ins.	20/-	—
6A	38	30	5	150	4 ins.	12/6	—
6B	38	30	10	300	4 ins.	20/-	—
6C	38	30	20	600	6 $\frac{1}{2}$ ins.	38/-	—
6D	38	30	30	900	6 $\frac{1}{2}$ ins.	38/-	—

All above Lamps are fitted with standard E.S. Caps except Nos. 1E, 2D, 2E, 6C, 6D, which have G.E.S. Caps.

Height of Filament Centre is measured from bottom of Lamp-holder to centre of Filament.

NOTICE.

To help our customers in selecting the correct size Focuslite lamp, under favourable conditions, it is advisable to allow at least **5 watts per square foot** of screen surface for standard size slide Projection and **7 watts per square foot** of screen surface for standard size cinematograph Projection. Extra wattage must be allowed for densely coloured slides or tinted films, also extra long throws.


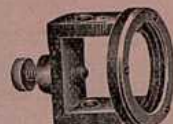




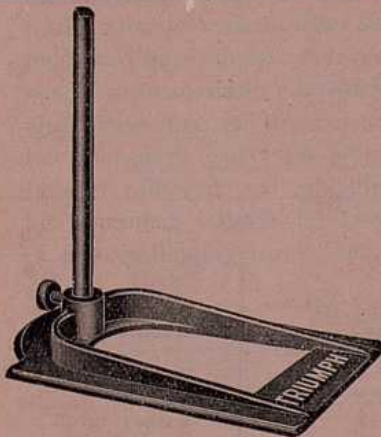
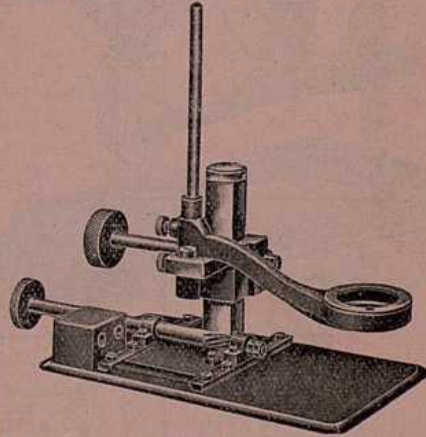
Spare Parts for
"TRIUMPH" FOCUSLITE OUTFITS. (C)

		
No. 1 B.C. Bakelite Adaptor, 1/-	No. 2 B.C. Holder, 1/6	No. 3 E.S. Holder. 1/6
		
No. 4 E.S. Holder (best quality), 3/6 1929 pattern, 3/-	No. 5 G.E.S. to E.S. Adaptor, 3/6	No. 6 G.E.S. Holder (best quality), 6/6
		
No. 7 Mirror Clip, 2/3	No. 8 4-inch Mirror in Holder, 5/6	No. 9 4-inch Mangin Mirror, 5/6
		
No. 10 Clamp for No. 8, 1/6	No. 11 Lamp and Arm Screws, (1927 pattern), 3/6	No. 12 'O' Lamp Arm &c (1927 pattern), 3/-

Mangin Mirrors 6-inch diameter, 12/6; 8-inch diameter, 35/-

All Prices on this page Carriage Paid.

SPARE PARTS for
"TRIUMPH" FOCUSLITE OUTFITS. (C)

	
No. 13. Lamp Arm and Screws. (1929 Pattern.) 3/6	No. 14. 'O' Lamp Arm, etc. (1929 Pattern). 3/-
	
No. 15. Lamp Arm. 6d.	No. 16. Lamp Arm for No. 7 Outfit. 9d.
	
No. 17. 1929 Lamp Arm for No. 6 Holder. G.E.S. 3/-	No. 18. Flex. 2½/5 Amps. 6d. yd. 10 Amps. 1/- yd.
	
No. 19. Aluminium Tray and Post. 3/-	No. 20. Mechanical Tray. 35/-

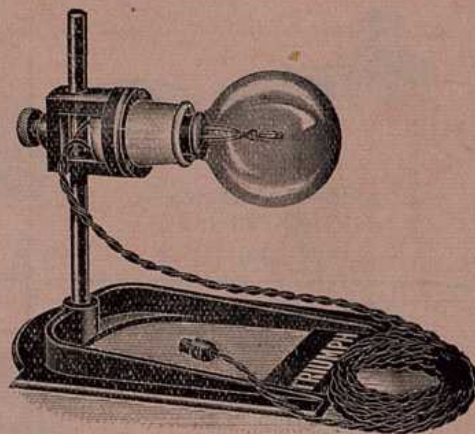
All Prices on this page Carriage Paid.

"TRIUMPH" FOCUSLITE OUTFITS: (C)

No. O Series

For use on any circuit without resistance.

The lamps burn in the position illustrated. The Outfits will be found very useful for home Cinematograph Machines, Optical Lanterns, Enlargers and numerous other purposes. They can be used off any lighting circuit without a Resistance, on alternating or direct current.



Type or Outfit	Voltage of Lamp	Approx. Watts.	Outfit without Lamp	
			Plain Tray	Mechan. Tray
No. 0A	12	60	11/6	40/-
No. 0C	100/250	100		
No. 0D	100/250	250		

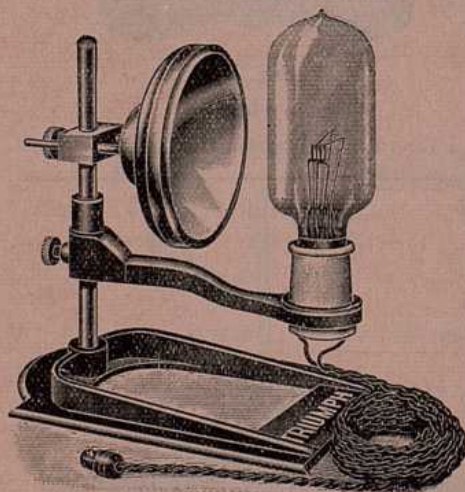
For price of lamps, see page 30.

"TRIUMPH" FOCUSLITE OUTFITS. (C)

No. I Series.

For use on any circuit without Resistance.

These outfits are designed for those who desire to work direct from the current supply without employing a Resistance or Transformer. They are particularly suitable for Stage Projectors and Spotlights, but may also be employed for Optical Lanterns and Home Cinematograph Projectors.



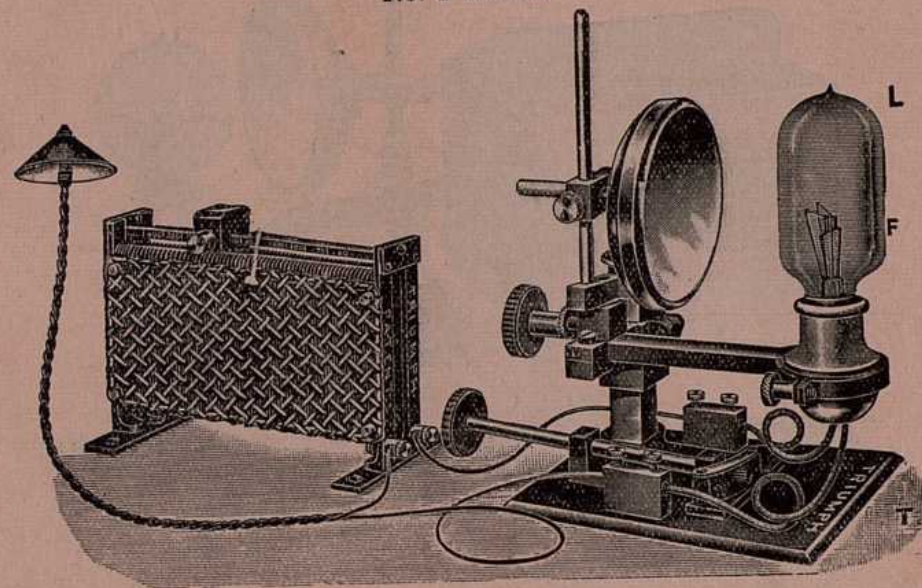
Type of Outfit	Voltage of Lamp	Consumption in Watts.	ADJUSTMENTS			Outfit without Lamp	
			T to F Min.	T to F Max.	F to L	Plain Tray	Mechan. Tray
No. 1A	Any voltage 100/250 can be supplied	100	4 3/4"	8"	2 1/2"	20/-	49/6
No. 1B		250	4 3/4"	8"	3 3/4"	20/-	49/6
No. 1C		500	4 3/4"	8"	3 3/4"	20/-	49/6
No. 1E		1000	6 1/2"	9"	4 1/2"	26/6	56/-
No. 1F		150	4 1/2"	8"	3"	20/-	49/6
No. 1G	50	250	4 1/2"	8"	2 1/2"	20/-	49/6

For price of lamps, see Page 30.

All prices on this page, Carriage Paid.

"TRIUMPH" FOCUSLITE OUTFITS. (C)

No. 2 Series.



These Outfits have a very fine point of light and are specially designed for those who desire to possess equipment capable of being used on various electric circuits (A.C. or D.C.) with resistance to regulate the voltage and control the candle power of the lamp. Some clients only need equipment to control low voltages, whilst others require control up to 250 volts. Some require a low power Outfit, and others need a powerful Outfit. The price therefore depends on what customers may choose from the table below. We strongly advise a Mechanical Tray for high power Outfits and in all cases where frequent adjustment is necessary.

Type of Outfit	Voltage of Lamp	Watts	MEASUREMENTS			OUTFIT WITHOUT LAMP			
			T to F Min.	T to F Max.	F to L	on Plain Tray 10/120V. 20/250V.		Mechanical Tray 20/120V. 20/250V.	
No. 2A	30	60	3 1/2"	7"	1 1/2"	51/-	58/-	80/-	87/6
No. 2B	30	150	4 1/2"	8"	3"	58/6	66/-	88/-	95/6
No. 2C	30	300	4 1/2"	8"	3"	71/6	111/6	101/-	141/-
No. 2D	30	600	6 1/2"	9"	4"	109/-	180/-	138/6	209/6
No. 2E	30	900	6 1/2"	9"	4"	155/-	235/-	184/6	264/6

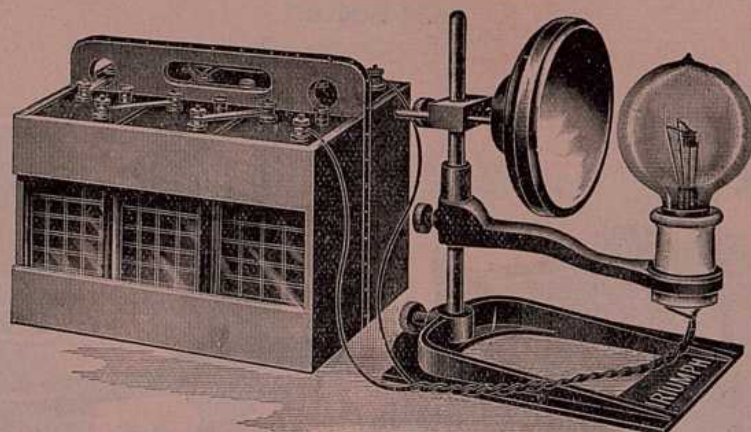
NOTE.—No Adaptor is supplied with No. 26. No Adaptor or Cable is supplied with No. 2D and No. 2E, as these Outfits cannot be used off lighting circuits as illustrated.

For price of lamps see page 30.

All prices on this page, Carriage Paid.

"TRIUMPH" FOCUSLITE OUTFITS. (C)

No. 3 (Accumulator) Series.



These Outfits are designed for those who have no electric current or who prefer to run off batteries. Our accumulators are supplied complete in strong teak cases and suitable for 4 or 5 hours run after each charge.

Type of Outfit	Voltage of Lamp	Watts	MEASUREMENTS			OUTFIT WITHOUT LAMP		Price of Accum. (N)
			T to F	F to L		on Plain Tray	Mechanical Tray	
No. 3A ...	6	24	3 1/2"	7"	1 1/2"	20/-	49/6	50/-
No. 3B ...	12	60	3 1/2"	7"	1 1/2"	20/-	49/6	85/-
No. 3C ...	12	100	4"	8"	2"	24/-	53/6	150/-
No. 3D ...	25	300	4 1/2"	8"	3"	24/-	53/6	300/-

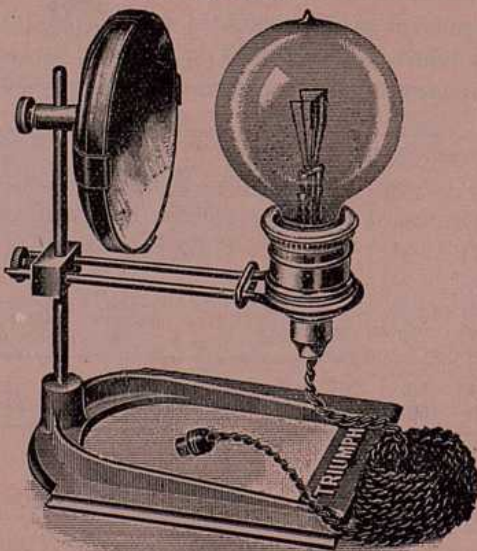
For price of lamps, see Page 30.

"TRIUMPH" FOCUSLITE OUTFITS. (C)

No. 7 Series.

For
Optical Lanterns,
Enlargers,
Projectors, etc.

These Outfits are for the same purpose as others in our list but are constructed in a simpler manner for those who need an inexpensive outfit.



Price :

Outfit
complete,
as illustrated,
Without Lamp

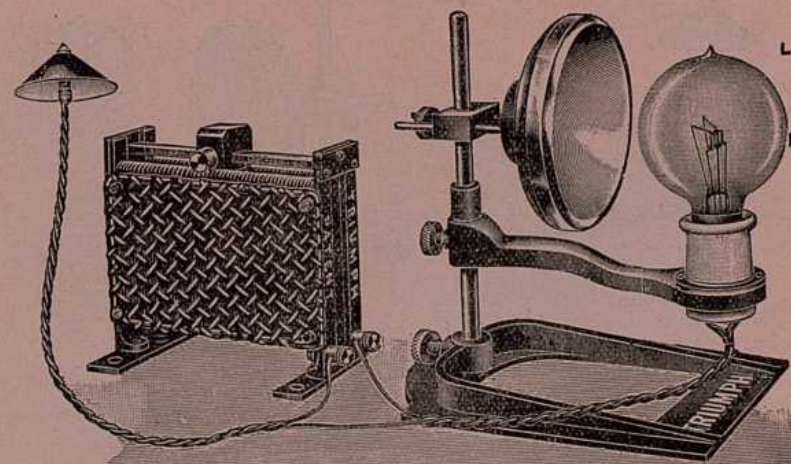
15/6

For prices of
lamps see
Page 30.

All prices on this page, Carriage Paid.

TRIUMPH FOCUSLITE OUTFITS (C)

No. 5 Series.



These Outfits are recommended to those who require a powerful concentrated light which can be used on any ordinary house lighting circuit without risk to the installation.

The Bulb is only 3 ins. diameter and thus enables the Outfit to be used in almost any lantern body, but reference should be made to the dimensions below before ordering. The filaments are tough and well concentrated and a good life can be expected from this lamp if treated properly and not overloaded. The resistance is our well-known Triumph pattern with **Roller Contact** which enables the 5A Lamp to be used on any circuit from 50 to 250 Volts, and the 5B on any circuit from 110 to 250 Volts.

A locking ring to prevent the lamp being overloaded by accident is also provided. The resistance has guards on both sides to prevent the wires being touched when working in the dark.

Type of Outfit.	Voltage of Lamp	Watts	MEASUREMENTS			OUTFIT WITHOUT LAMP	
			T to F	F to L		on plain Tray	on mechan. Tray
No. 5A	50/55	250	4 1/2"	6 1/2"	1 1/2"	61/-	90/6
No. 5B	100/110	250	4 1/2"	6 1/2"	1 1/2"	56/6	84/6

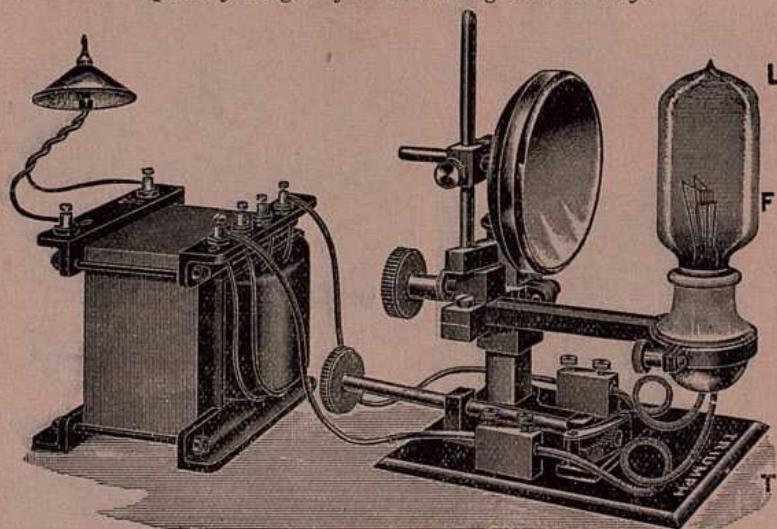
All prices on this page, Carriage Paid.

For price of lamps, see Page 30.

"TRIUMPH" FOCUSLITE OUTFITS (C)

No. 6 (Transformer) Series.

Specially designed for Alternating Current only.



Great economy is effected by employing low Voltage, high Amperage Lamps with concentrated filaments, and a special Transformer to reduce the Voltage to that required by the Lamps, and this is accomplished without any appreciable loss of current.

One of the special features is that every set, except those marked with a star, can be employed off ordinary Lamp Holders. Another advantage is that those persons possessing one of the higher power Outfits, can always employ any of the lower power Lamps with the Outfit. For example, a person possessing a No. 6B Outfit, can also use No. 6A Lamps. Each Transformer is provided with three tappings, and this enables the brilliancy of the illuminant to be decreased or increased to suit various requirements.

Wherever Alternating Current is available, we strongly advise the use of these Sets, and particularly draw attention to the very high candle-power obtainable from the low current consumption, as shown by the scale below.

Type of Outfit	Type of Lamp volts	Type of Lamp amps	Approximate Current Consumption on		Measurements T. to F.			OUTFIT WITHOUT LAMP	
			100/150 volts	200/250 volts	Min.	Max.	F to L	on Plain Tray	on Mechanical Tray
6A	30	5	1 1/2 amps	3/4 amp	4 1/2"	8"	3"	75/-	104/-
6B	30	10	3 "	1 1/2 amps	4 1/2"	8"	3"	88/-	117/-
6C	30	20	6 "	3 "	6 1/2"	9"	4"	116/6	146/-
6D	30	30	9 "	4 1/2 "	6 1/2"	9"	4"	157/6	187/-

All above prices are for 50/100 periods. 25 periods plus 20%.

Important.—It is absolutely necessary when ordering to state the exact Voltage and Periodicity (if under 50) of the Current on which the Outfit is to be employed. Twelve feet of Flex is supplied to connect Mains to Transformer, and 6 ft. of Cable to connect Transformer to Outfit. Other sizes of Transformers can be supplied on receipt of data.

For price of lamps, see Page 30.

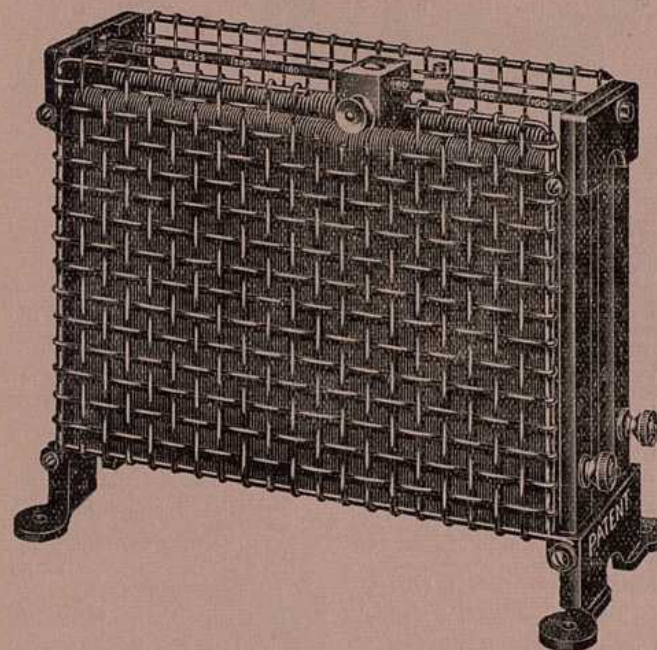
For price of transformers only, see Page 40.

All prices on this page, Carriage Paid.

"TRIUMPH" PORTABLE RESISTANCES. (C)

For Arc or Focus Lamps.

(Patent No. 26361/1913)



These Resistances are our own special patent and manufacture, composed of an Iron Frame, asbestos covered, wound with best quality Resistance Wire, fitted with Brass Bar across the top, on which runs our Patent Roller Contact and Rocker Bearings. A Wire Guard is fitted to each side of Resistance.

FOCUS LAMP RESISTANCES.

REGULATING From To		MAXIMUM CARRYING CAPACITY AND APPROX. RESISTANCE IN OHMS											
		Ohms	2 Amps	Ohms	4 Amps	Ohms	5 Amps	Ohms	10 Amps	Ohms	20 Amps	Ohms	30 Amps
Volt	Volts												
30	120	45	30/-	—	—	18	37/-	9	45/-	50	85/-	3	130/-
30	250	110	37/6	—	—	45	45/-	22	85/-	11	155/-	9	210/-
50	250	110	37/6	55	40/-	45	45/-	22	85/-	11	155/-	—	—
100	250	75	37/6	40	40/-	30	45/-	15	80/-	—	—	—	—

ARC LAMP RESISTANCES.

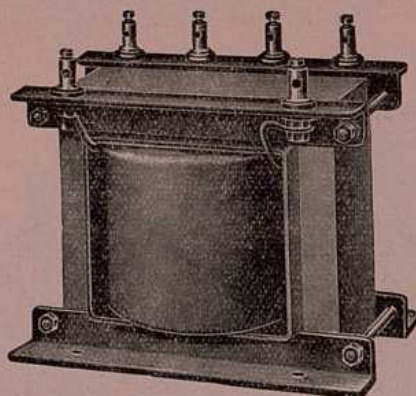
REGULATING From To		MAXIMUM CARRYING CAPACITY				
		4 Amps	5 Amps	10 Amps	20 Amps	30 Amps
Volts	Volts					
50	120	1 17 6	2 0 0	2 5 0	4 5 0	6 10 0
50	250	2 0 0	2 5 0	4 5 0	7 15 0	10 10 0

Each Resistance is supplied with engraved label on which is marked the lamp voltage and amperage and the range of voltage on which the Resistance can be used.

Special Calibration to Order.

All prices on this page, Carriage Paid.

"TRIUMPH" TRANSFORMERS. (AIR-COOLED—SINGLE-PHASE).



Primary Voltage	SECONDARY		Auto Wound Price (C)	Primary Voltage	SECONDARY		Auto Wound Price (C)
	Volts	Amps			Volts	Amps	
100/110	22/25/30	5	50/-	100/110	25	5	40/-
100/110	22/25/30	10	60/-	100/110	50	5	45/-
100/110	22/25/30	20	80/-	100/110	50	10	70/-
100/110	22/25/30	30	120/-	100/110	50	15	75/-
200/220 or 230/250	22/25/30	5	53/-	200/220 and 230/250	25	5	50/-
200/220 or 230/250	22/25/30	10	66/-	200/220 and 230/250	50	5	55/-
200/220 or 230/250	22/25/30	20	88/-	200/220 and 230/250	50	10	77/-
200/220 or 230/250	22/25/30	30	130/-	200/220 and 230/250	50	15	90/-

Above suitable for Focus Light Lamps Nos. 2 and 6 (Section B), Models, Laboratory Work, Charging Sets &c.

Above suitable for Rectifier Outfits Charging Sets (Section E). 50 volt Secondary, suitable for Arc Lamps. (With Resistance in circuit).

All Prices on this page are for 50—100 Periods	Primary Voltage	SECONDARY		Double Wound (E)	Extras 40 Periods + 10% 25 " + 25%
		Volts	Amps		
	any named voltage 100/250	70-75	30	120/-	
		70-75	40	150/-	

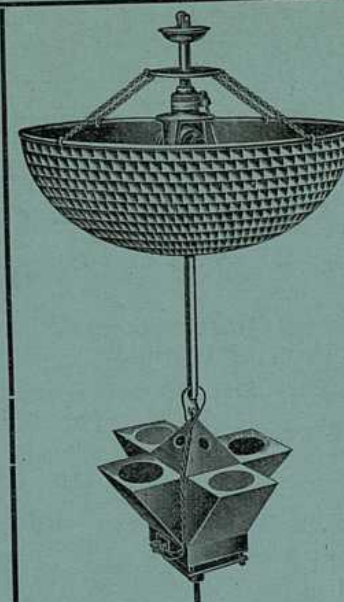
3-PHASE TRANSFORMERS quoted on receipt of particulars.

Any Transformer required not in above list, including **Double Wound**, quoted for on receipt of following particulars:—**Primary Voltage**, Phase and Periodicity, **Secondary Voltage** and Amperage.

All Prices on this page, Carriage Forward.

SEASON, 1928-29.

STAGE PROJECTORS SPOTLIGHTS MIRROR BOWLS



SELF-CONTAINED
PRISMATIC
MIRROR BOWL
(Patent).

STAGE,
BALL-ROOM
AND
STUDIO
LIGHTING.

SHOP
WINDOW
AND
SHIPS
LIGHTING.

FOR.

Optical Lanterns, see section "A"
Focuslite Outfits "B"
Cinematograph Projectors "D"
Electrical Charging Sets and Rectifiers, see section "E"

Section "C."

Sept, 1928

SELF-CONTAINED PRISMATIC MIRROR BOWL. (I)

Patent.

This entirely self-contained outfit is the most remarkable instrument ever conceived for producing an ever changing multi-coloured spotting effect. It can be switched off or on at will, and needs only one lamp to provide the effect, ordinarily produced with similar bowls employing three to four expensive spotlights, and incidentally saves the cost of these and operators, and an enormous amount of electric current, as the lamp itself need only be one of 250 watts or 500 watts, according to choice.

The Bowl is made of spun aluminium, 24" wide, 8" deep, and is studded with hundreds of small mirrors. Approximately 2 feet below the Bowl is suspended a special scientifically constructed lantern, containing one lamp only. The lantern, however, is provided with 4 lenses, which project four distinct coloured beams on to the Bowl. The lantern revolves, causing myriads of coloured moving spots to be thrown all over the room, with a brilliance equal to that normally obtained with high power projectors.

The lantern is made to revolve by means of a special electric motor, concealed inside the Bowl, this being provided with special means of preventing the electric wires from twisting.

The length over all is approximately 3 ft. 6 in., and therefore suitable for any room where the ceiling is sufficiently high to allow the bottom of the lantern to clear the heads of the persons in the hall. One lantern will be found suitable for rooms up to 60 or 70 ft. wide.

PRICES.

Complete Outfit, including Mirror Bowl with Chains, Lantern,
Reflectors, Lenses, Lamp Holders, Colours and Special
Electric Motor and Fittings £19 10 0

Carriage Forward.

When ordering, the voltage and periodicity of the electric supply must be stated.

PROJECTOR TYPE LAMPS CLASS A1.

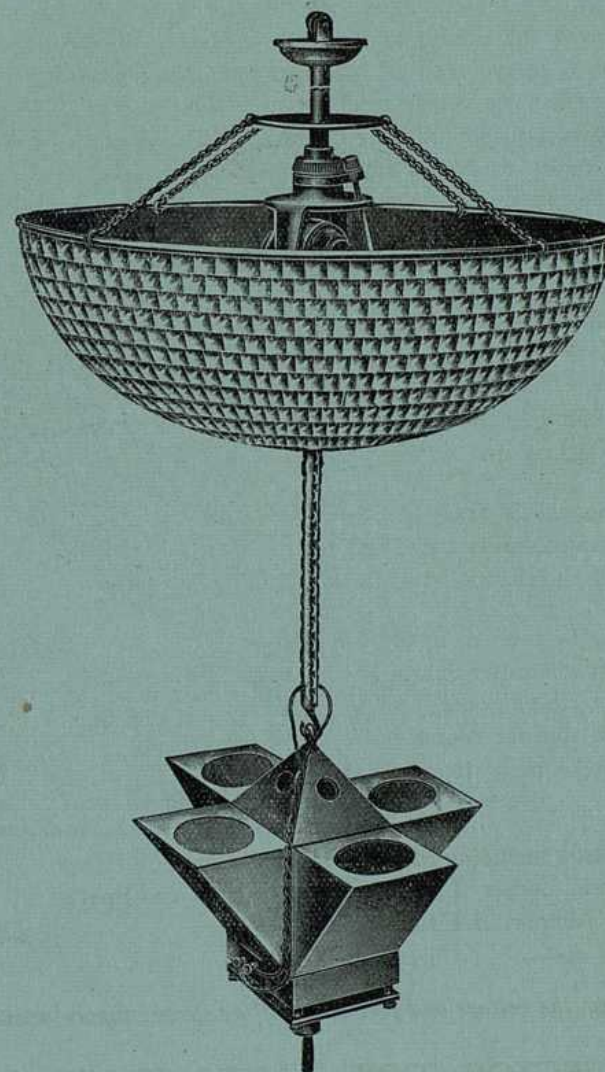
250 or 500 watts are suitable for this Mirror Bowl.

Full particulars page 67.

When ordering, the exact voltage must be stated.

THE SELF-CONTAINED PRISMATIC MIRROR BOWL.

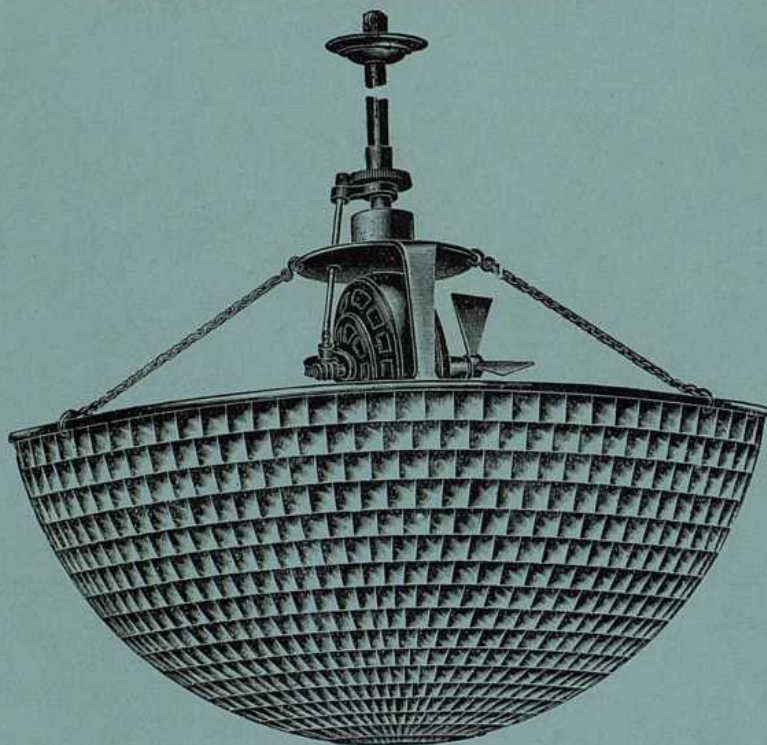
Patent.



For Dance Rooms, Theatres, Bazaars, Cinemas,
and every occasion where a wonderful colour
spectacle is desired.

PRISMATIC MIRROR BOWL. (I)

For use with SPOTLIGHT PROJECTORS.



This Bowl is for producing wonderful effects in all Rooms, Theatres and any other places where spotlights are already installed, or are to be installed.

The Bowl illustrated is an exact half Ball, 24" wide \times 12" deep, but we also supply whole Balls, 24" diameter. Made of spun aluminium, it is studded with approximately 700 small mirrors. The bowls are made to revolve slowly by means of specially constructed motors, with low speed gears.

Beams of light from several spotlight projectors are directed on to the Bowl from different angles. The light so received is reflected back into every part of the room in the form of a shower of moving spots, resembling a snowstorm, but if coloured beams are projected on to the Bowl, a wonderful multi-coloured changing effect is produced, which forms a magnificent spectacle.

PRICES.

Half Ball with Mirrors and Chains, as illustrated ...	£7	0	0
Whole Ball with ditto ...	£14	0	0
Special Electric Motor for either of above ...	£7	15	0

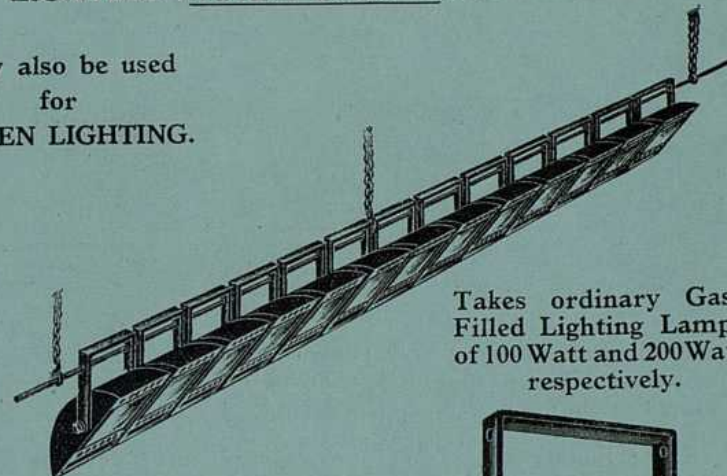
Carriage Forward.

When ordering electric motors, please state the voltage and periodicity.

UNIT FLOODS.

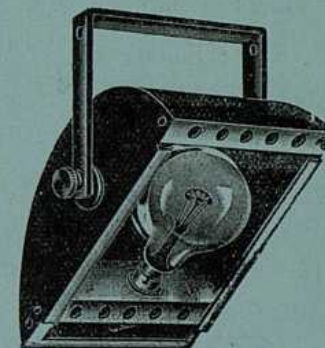
THE MOST EFFICIENT, ECONOMICAL AND EFFECTIVE LIGHTING SYSTEM EVER INTRODUCED.

May also be used
for
BATTEN LIGHTING.

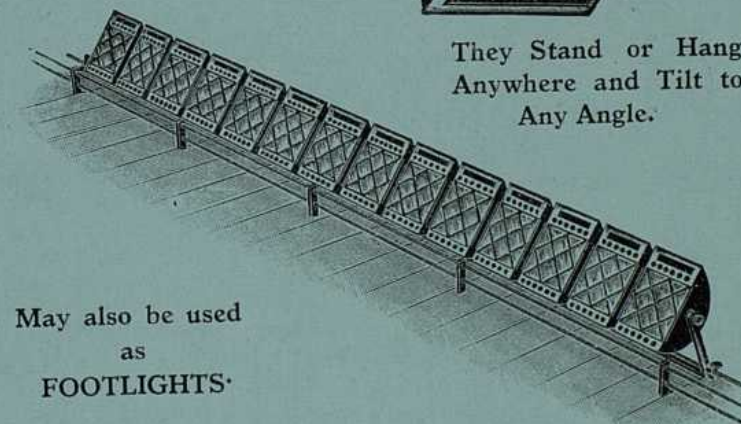


Takes ordinary Gas-Filled Lighting Lamps of 100 Watt and 200 Watt respectively.

Each Flood is enamelled all over and complete with adjustable Stirrup, Lamp Holder, Mangin Mirror, and a Diffusing Glass or glass of any desired colour.



They Stand or Hang
Anywhere and Tilt to
Any Angle.

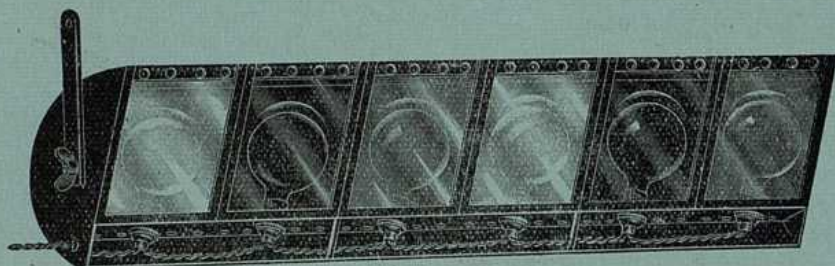


May also be used
as
FOOTLIGHTS.

100 WATT SIZE. With 4-inch Mirror.	WIRE FRAMES. If required.	200 WATT SIZE. With 6-inch Mirror.
19/6	100 Watt Size ... 2/6 200 Watt Size ... 3/6 Carriage Paid.	27/6

BATTENS AND FOOTLIGHTS. (I)

For Stage and Shop Window Lighting
— and all kinds of Colour Effects. —

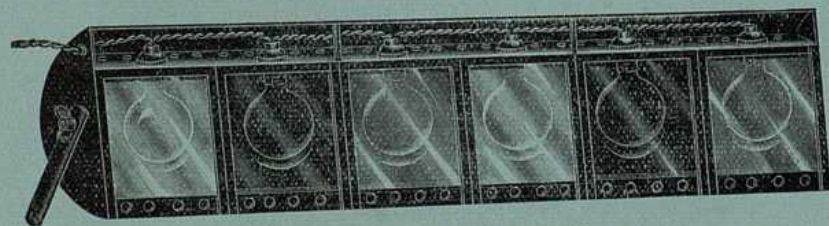


It should be more widely known and understood that if the three primary colours, red, blue and yellow are wired up alternately, it is possible to obtain almost every conceivable lighting effect.

These Floods are divided into compartments with runners to take any coloured glass or gelatine which can be changed easily.

The Floods are intended for use with ordinary 60 or 100 watt gas-filled lamps.

The body is enamelled inside and out and fitted with a Stainless Steel Reflector which increases the candle-power very considerably, therefore the light is far greater than that obtainable with ordinary floods.



PRICES.

Complete with Stainless Steel Reflector, Lamp-holder, Arm, and Diffusing Glass, or Coloured Glass or Gelatines to choice.

3 Compartments, £2 17 6	9 Compartments, £8 5 0
6 „ „ £5 10 0	12 „ „ £10 17 6

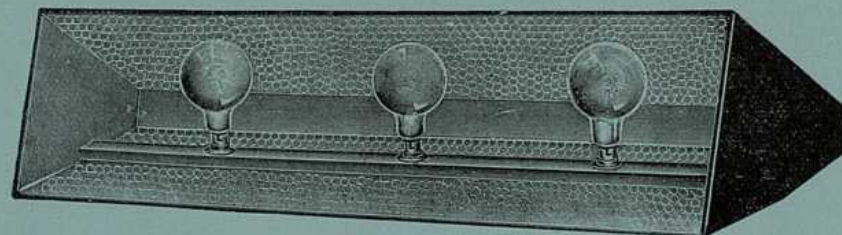
Carriage Forward.

A combination of above sizes can be made to fit into almost any space, but we make any special size to order, and also make these weatherproof for outside use at slightly increased cost.

STAGE & SHOP WINDOW LIGHTING

As will be seen from the illustrations below these new designs in Footlights and Battens are ideal for Stage Work and Shop Windows.

Footlights.

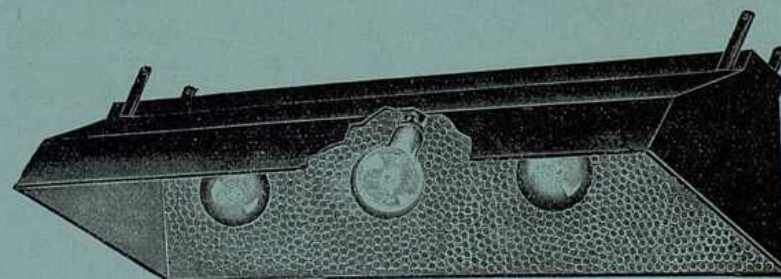


SPECIFICATION.

FOOTLIGHTS, MADE OF LEAD-COATED STEEL, CELLULOSE ENAMELLED, BLACK OUTSIDE, MATT WHITE INSIDE, WITH HAMMERED GLASS REFLECTORS, BEST QUALITY B.C. HOLDERS, FITTED WITH REMOVABLE TROUGH FOR EASY WIRING.

Suitable for 60 Watt or 100 Watt Lamps.

Overhead Battens.



These can be hung at any angle.

SPECIFICATION.

SIMILAR TO ABOVE, BUT FITTED WITH TROUGH COVER TO ENCLOSE CABLE, ALSO FITTED WITH IRON STRAPS FOR EITHER HANGING OR SCREWING IN POSITION.

Prices on Application, According to Requirements.

COMBINED SEARCHLIGHT-FLOODLIGHTS. (I)

10 ins. Diameter with Ventilated Top.

These instruments are the latest development for combined searchlight and floodlight work.

Comply with regulations for life saving at sea, and approved by the Board of Trade.

Ideal for illuminating Dock Yards, Buildings, Railway Sidings, for small Trading Vessels to locate Rocks, Harbours, etc.

Suitable for illuminating buildings, advertisements, and numerable other purposes.

They are constructed to stand all weather conditions, made of solid brass, and fitted with Quick Thread Movement, which enables light to be instantly adjusted.

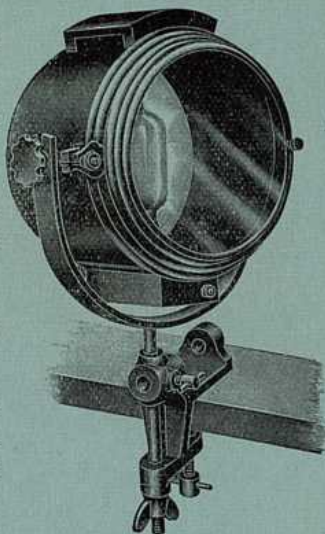


Fig. 1

Each body is fitted with special silvered 8 ins. Mangin mirror, which will not tarnish.

Prices :

As Fig. 1 without Bench Clamp...	£7 17 6
As Fig. 1 with Bench Clamp	£8 6 0
As Fig. 2 with 24 in. Stand	£8 18 6

We can also supply these searchlights on small table stand, as illustrated on Page 57.

And on Telescopic Stand, illustrated on Page 59.

Prices :

On Table Stand ...	£8 6 0
On Telescopic Stand ...	£10 2 6

For particulars of 100 Watt. and 200 Watt. Floodlights, see Page 49.

All prices on this page, Carriage Forward.

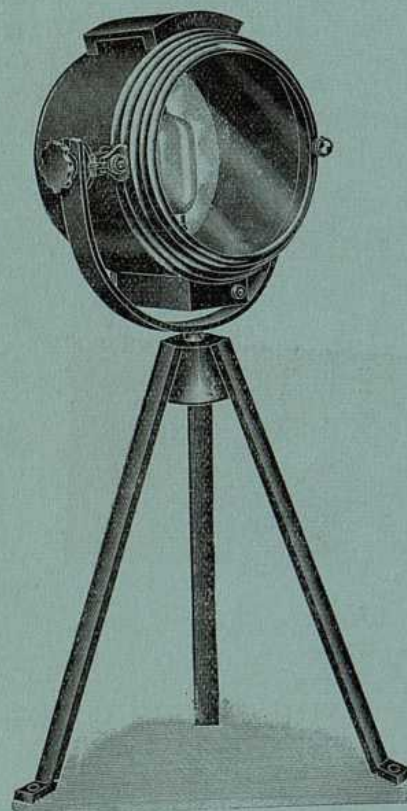


Fig. 2

WEATHERPROOF FLOODLIGHTS. (I)

Specially designed for Ships' Loading and Launching Lights, but may be used for innumerable other purposes.

These Floodlights are made entirely of **Heavy Brass** with Clamp to affix to 1" Iron Rod. Each Flood is provided with Mangin Mirror, strong Lamp Holder, Cable Gland and Diffusing Glass with Wire Guard.

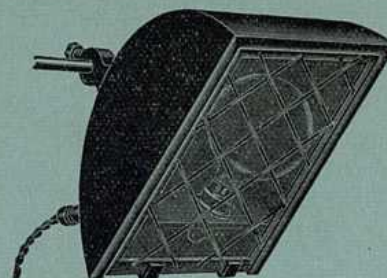
Type 1.

With 6" Mangin Mirror, for use with ordinary gas-filled Lighting Lamps of 200 watts, for throwing the light alongside or in a downward direction, with an illuminating angle of about 45° and a range of about 200 feet.

Price £4 10 0

Also made for use with 100 watt lamps, fitted with 4" Mirror, etc.

Price £2 10 0



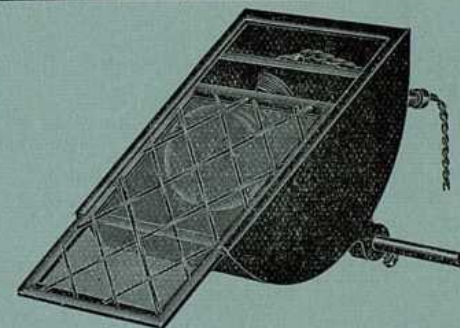
Type 2.

Similar in construction to Type 1, but is designed for throwing the light upwards only.

Price £4 10 0

Also made for 100 watt lamps, fitted with 4 inch Mirror, etc.

Price £2 10 0

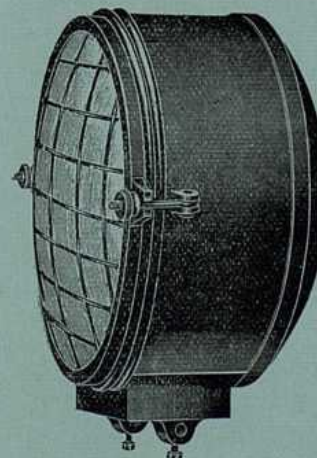


Type 3.

Fitted with 8" Mangin Mirror, for use with Projection Type Lamps of 250 watts, and for throwing the light alongside or full on to Buildings, &c.

It has an adjustable illuminating angle, varying from 10° to 45° and an effective range varying from 200 to 600 feet according to angle.

Price £5 10 0

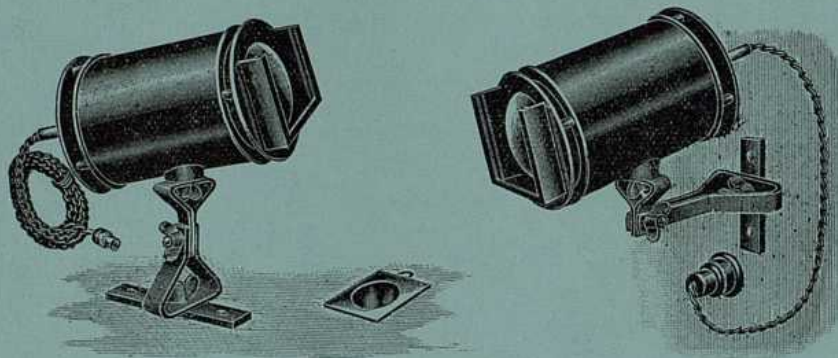


All Prices on this page Carriage Forward.

THE "BABY" SPOTLIGHT. (I)

For use with 100 watt Focus Lamps.

The "Baby" Spotlight is designed for short throws of about 2 ft. to 10 ft.



Complete with Universal Bracket 8 ft. Flex, Adaptor, Lampholder, Lens and Colour Frame. ... PRICE, 35/-

Projector Type Lamps Class A 3 100 watts are suitable for this Spotlight.

Full particulars on page 67.

NOTE.—When ordering Lamps, state the exact voltage and type.
Carriage Paid.

SPECIAL NON-BURNABLE GELATINE. (E)

Supplied in the following colours :

No. 1. Matt.	No. 4. Orange.	No. 7. Light Blue.
No. 2. Pink.	No. 5. Yellow.	No. 8. Royal Blue.
No. 3. Red.	No. 6. Green.	No. 9. Violet.

PRICES :

Sheets 24"×20"	...	3/6 each
" 20"×12"	...	2/- "
" 13"×12"	...	1/6 "
" 12"×6½"	...	1/- "
" 6½"×6"	...	9d. "

Set of 5 colours, size 6½"×6"	...	3/6 set.
" 9 " " 6½"×6"	...	6/- "

Carriage Forward.

THE "POPULAR" SPOTLIGHT. (I)

For Shop Window or Show-room Displays,
Amateur Theatricals, Small Dance Halls, &c.

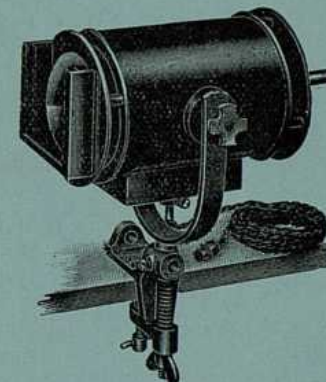


No. 1 Fittings.

This Spotlight is designed to take 100 watt or 250 watt focus Lamps.

The Body is only 10 ins. long and is of convenient size and shape for the purposes for which it is intended.

It is fitted with 4½ in. lens, 4 in. Mangin Mirrors and adjustments for projecting a brilliant beam of light of any width from about 2 ft. to 12 ft diameter and is suitable for use at any distance up to about 30 ft.



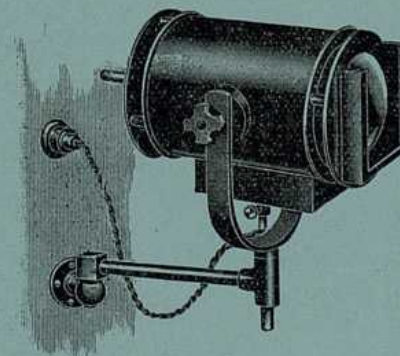
No. 2 Fittings.

PRICE.

Complete with any of the fittings illustrated also Flex, Plug, Mangin Mirror, Lens, Lamp Fittings and Colour Frame.

£3 5 0

Carriage Paid.



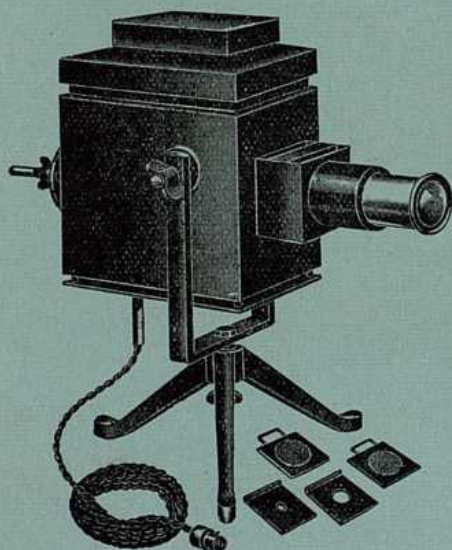
No. 3 Fittings.

Projector Type Lamps, Class A 1, 100 watt or 200 watt are suitable for this Spotlight.

Full particulars on page 67.

THE "IDEAL" SPOTLIGHT. (I)

For Window and Showroom Displays, Amateur Theatricals,
Small Dance Halls, Photographic Studios, etc.



The "Ideal" is a wonderfully efficient instrument, with 4 in. reflector fitted on universal ball socket. It is provided with a special combination of $2\frac{1}{2}$ ins. diameter Lenses for flooding and a spotting lens in sliding tube, to enable beams of light to be projected from about 1 in. diameter to about 20 ft. diameter according to the size of the diaphragm employed, and the distance from the object.

Prices :

Complete Spotlight with 12 ft. Flex, Adaptor, Lamp Holder, Reflector, Lenses, two colours in metal frames, and two spotting diaphragms on table stand, as illustrated, or wall bracket, or bench clamp £5 5 0

Accessories :—

Spare colours only ...	6d. each	Spare colour frames ...	1/6 each
Spotting diaphragms...	1/- „	Wall brackets ...	8/6 „
Table stands ...	8/6 „	Bench clamps...	8/6 „
Colour Wheel and Fittings ...	...	...	15/6

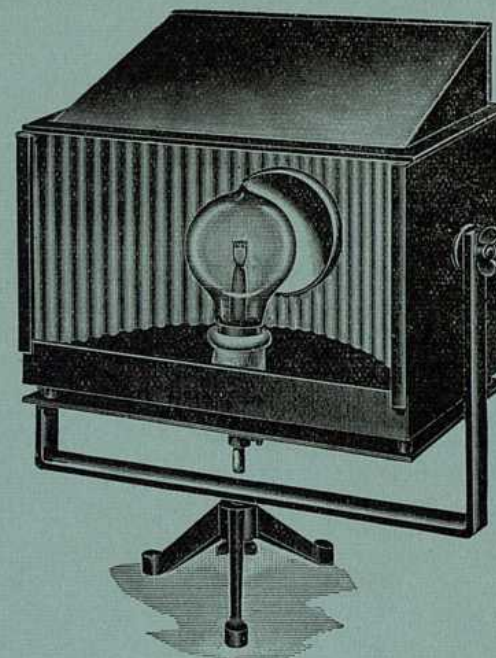
Projector type lamps, class A.1, 250 Watt. are suitable for this Spotlight. Full particulars see Page 67.

All prices on this page, Carriage Forward.

NOTE.—When ordering Lamps, state EXACT voltage.

SUPERIOR FLOODLIGHTS. (I)

For use with 500 Watt Focus Lamps.



Superior Floodlights have a very wide angle flood, and in addition to being fitted with a Mangin Mirror, which considerably increases the illumination, they are also fitted with polished Aluminium Side Reflectors.

They are also supplied with lamp fittings on sliding tray with means to adjust the lamp to the position which gives the most brilliant illumination, and when once adjusted, need no further attention.

The body is Stove Black Enamelled, well ventilated and of sufficient dimensions to enable a 500 Watt Lamp to be employed, without overheating the casing.

They are fitted in the usual Stirrup, which enables them to be used in almost any position, as illustrated elsewhere in this list.

Complete with Diffusing Glass and Wire Guard to prevent broken glass from falling when suspended overhead.

Price, £2 17 6

If fitted with Table Stand or Bench Clamp these will be extra. **Price 8/6 each.**

Carriage Forward.

Projector type lamps, class A.1, 500 Watts, are suitable for this Spotlight. Full particulars see Page 67.

"FOCUSLITE" SPOTLIGHT. (I)

For Theatre Stages, Dance Halls and Studios.

These Spotlights have been greatly improved in design, larger doors being fitted at the back, larger handle for operating the body, and various other improvements.

Each body is complete with lamp fittings for use with Projector type focus lamps, which includes a special silvered back Mangin Mirror.

A Switch and Plug is provided, also two tinter Frames of any desired colour

The Body is Stove Black Enamelled, with cast aluminium End Plates.

The Front is fitted with a Condenser Lens, also slot to take tinter frames or Spotting Attachment. Provision is also made for using a Colour Wheel, Flicker Wheel or Rainbow Wheel.

Prices :

No. 1 size, with 5 ins. Lens, for use with 500 Watt Lamps.

	£	s.	d.
Without Stand	5	2	6
On Stand "A"	6	17	6
On Stand "B"	7	7	6
Spot Attachment, with Diaphragms	2	7	6
Rainbow Wheel and Spindle	1	10	0
Flicker Wheel and Spindle...	1	2	6
Colour Wheel and Spindle...	1	2	6
Bench Clamps	0	8	6
Table Stands...	0	8	6
Spare Tinter Frames	0	2	0
Spare Colours only	0	0	6
Condenser Lenses 5 ins. by 9 ins.	0	7	6
Lenses for Spot Attachments	0	5	6
Interior Fittings, complete...	1	10	0

Projector type lamps 500 Watt class A.1 are suitable for the No. 1 size.

Full particulars on Page 67.

No. 2 size, with 6 ins. Lens, for use with 1000 Watt. Lamps.

	£	s.	d.
Without Stand	6	7	6
On Stand "A"	8	2	6
On Stand "B"	8	12	6
Spot Attachment, with Diaphragms	2	7	6
Rainbow Wheel and Spindle	1	10	0
Flicker Wheel and Spindle...	1	2	6
Colour Wheel and Spindle...	1	2	6
Bench Clamps	0	8	6
Table Stands...	0	8	6
Spare Tinter Frames	0	2	6
Spare colours only	0	0	9
Condenser Lens, 6 ins. by 9 ins.	0	12	6
Lenses for Spot Attachments	0	5	6
Interior Fittings, complete...	1	10	0

Projector type lamps 1000 Watts class A.1 are suitable for the No. 2 size.

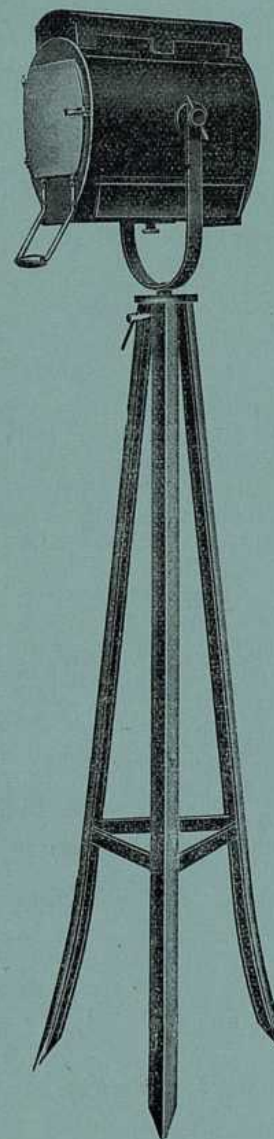
Full particulars on Page 67.

All prices on this page, Carriage Forward.

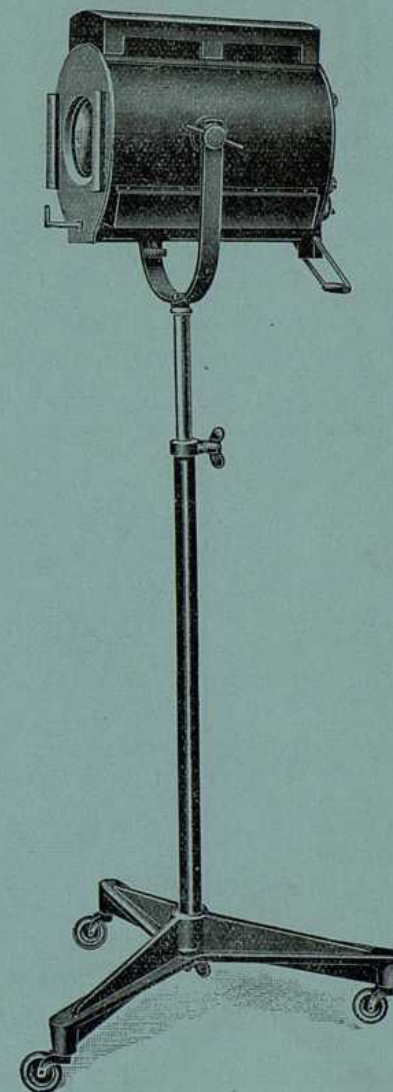
FOCUSLITE SPOTLIGHTS. (I)

No. 1 Size for 500 Watt Lamps.

No. 2 Size for 1000 Watt Lamps.



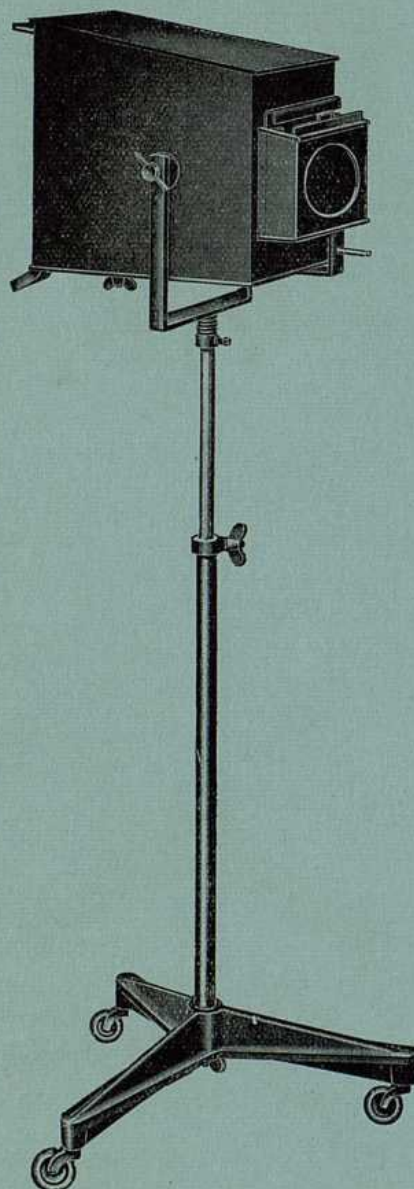
Spotlight Fitted
on Stand "A."



Spotlight Fitted
on Stand "B."

STAGE PROJECTORS. (I)

Ordinary type for use with Arc Lamps.



This type of Projector is usually described as a stage arc or lime box, and generally used in theatres, for ordinary spotting or flooding, with white or coloured light, and with colour wheels, flicker wheels or rainbow wheels.

This type is not usually fitted with special appliances for the projection of fine spots or effects. The usual method being to draw the Arc Lamp in or out to widen or narrow the beam of light, but we have designed this to take our fine spotting attachment, which enables a spot of any size to be perfectly projected.

These Projectors will take any Arc Lamp up to 60 amps., each body is provided with five tinter frames and special spindle to carry the colour wheel, etc. The body is fitted with 6 in. diameter, 9 in. focus condenser.

Prices :

Without Stand	...	...	£4 10 0
On Stand "B"	...	...	£6 15 0
On Stand "A"	...	...	£6 5 0

For illustration of Stand "A"
see Page 59.

Spot Attachments and Dia-			
phragms	...	...	£2 7 6
Rainbow Wheel	...	...	£1 10 0
Colour Wheel	...	...	£1 2 6
Flicker Wheel	...	...	£1 2 6
Bench Clamps	...	...	8 6
Spare Colour Frames	...	...	2 6

Spare Condensers.

Stage Projector on Stand "B"	6 ins. diameter, 6 ins. focus	27/6
Arc Lamps, see Page 68.	6 ins. " 8 ins. "	14/-
Arc Resistances, see Page 66.	6 ins. " 9 ins. "	12/6
Projector type lamps, see Page 67.	6 ins. " 10/12 "	10/6

All prices on this page, Carriage Forward.

STAGE LIME BOX (I)

The Body is well made of 20G Iron and supported in an iron stirrup for tilting and swivelling, and handle at back.

Large Wing Nuts are fitted at the sides to firmly lock the body in any desired position.

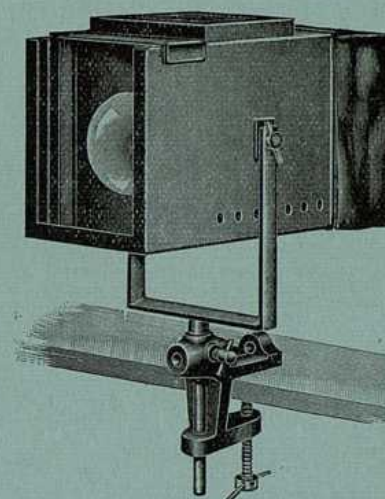
It is provided with a 6 inch diameter Condenser Lens, mounted in a separate carrier, and easily removed.

The Front is provided with Runners for Tinter Frames.

5 Tinter Frames with colours are provided and also Black Out Shield.

Asbestos Curtain is fitted at the back to prevent stray light, and the interior of the body is large enough to take any arc lamp up to 50 amps.

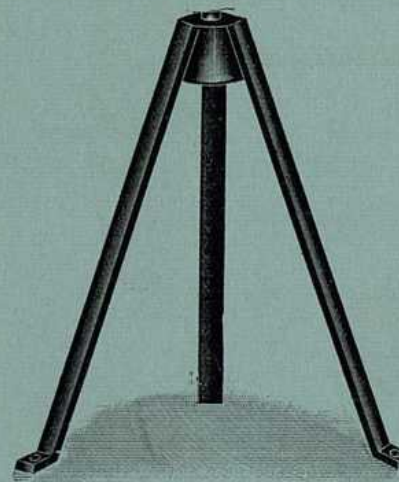
Finish : Stove Black Enamel.



Price complete, £3 15 0

For Bench Clamps, etc., see page 58

SPOTLIGHT STANDS (I)

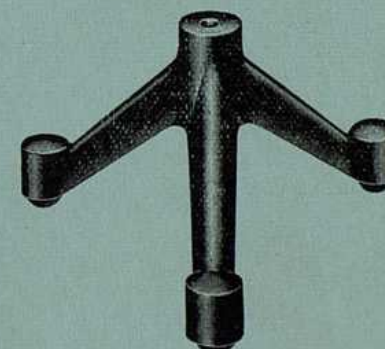


This Stand is made of Iron with substantial Top Plate, will carry any of Spotlights in this Catalogue. Crystallined Enamelled.

Height, 24 inches.

Price : £1 0 0

Carriage Forward.

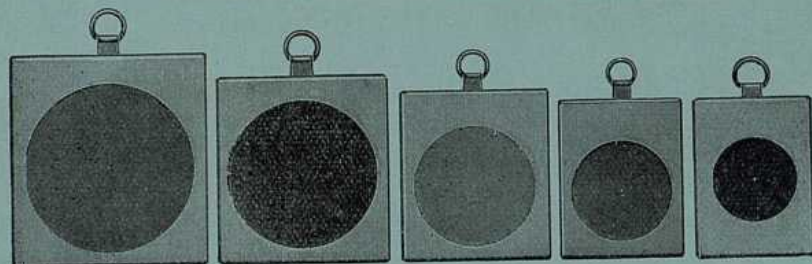


Complete Casting made of iron, suitable for any of our Spotlights. Stove Black or Crystalline Enamel. Height, 6 inches.

Price : 8/6.

Carriage Forward.

SPOTLIGHT ACCESSORIES. (I)



Frame A. Frame B. Frame C. Frame D. Frame E.

Frame	Size	Opening	Suitable for	Complete	Frame only
A	7" x 6½"	5¾"	No. 2 Spotlight Stage Projector	2/6	2/-
B	6" x 5½"	4½"	No. 1 Spotlight	2/-	1/6
C	5¼" x 4½"	3⅝"	Popular Spotlight	1/9	1/6
D	4¾" x 4"	3¼"	Baby Spotlight	1/6	1/3
E	4¼" x 3¼"	2¼"	Ideal Spotlight	1/3	1/-

Any other size Frames made to order.



Colour Wheel, 22/6



Rainbow Wheel, 30/-



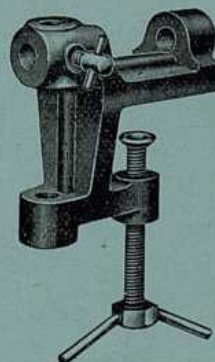
Wall Bracket, 8/6



Spotting Attachment and Four Diaphragms, £2 7 6



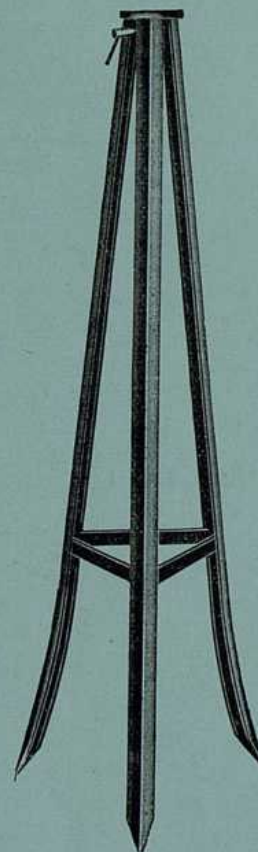
Flicker Wheel, 22/6



Bench Clamp, 8/6

All Prices on this page, Carriage Paid.

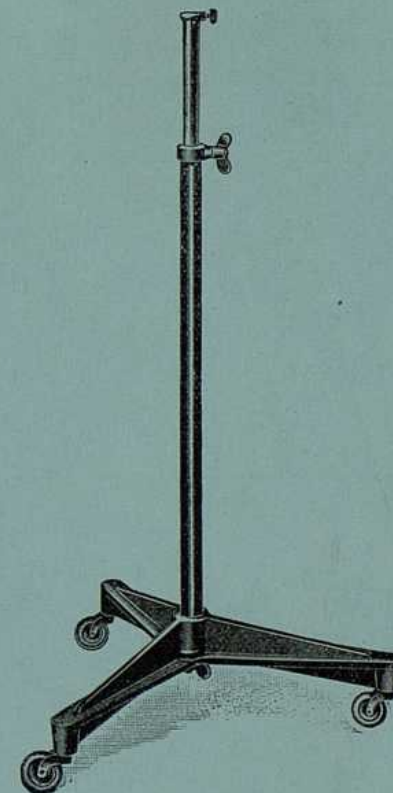
SPOTLIGHT STANDS. (I)



Stand "A"

Non-adjustable Stand, made of channel iron, with 5 ins. diameter plate on top, with slot for taking spindle fitted on stirrup of any spotlight or stage projector, in the catalogue. Also fitted with clamping screw. The whole crystalline enamelled.

Price £1 15 0



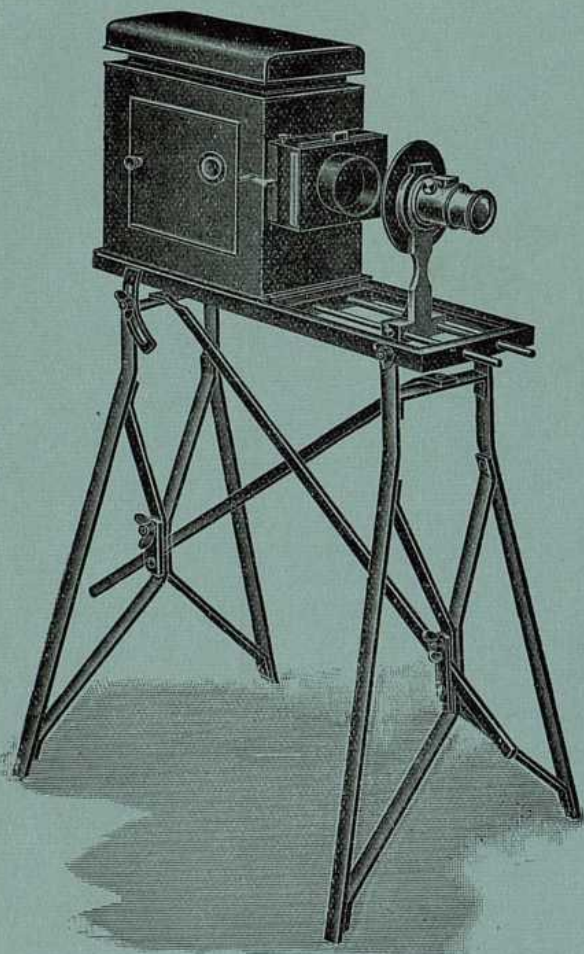
Stand "B"

Adjustable Stand, on very substantial base, made of cast iron, fitted with telescopic steel tubes, which can be adjusted from 3 ft. 6 in. to 6 ft. Fitted with clamping nuts for holding the spotlight. The whole mounted on 2½ ins. diameter rubber-tyred casters. The Stand finished in Stove Black Enamel.

Price £2 5 0

Carriage Forward.

THE UNIVERSAL EFFECT LANTERN. (I)



Prices :

Complete, as illustrated with slide carrier condensers

Lens support and
Lens Jacket.

£12 0 0

Without Stand Legs,

£8 10 0

Slide Lens (any focus) ... 21/-

Spotting Lens (in mount)... 10/-

Carriage Forward.

This Lantern will take any focus Lens, and any of the Accessories and effects described on Pages 64 and 65, and any Arc Lamp up to 50 amps.

Body made of Russian iron, with side door and eyepiece, and fitted with 4½ ins. Condensers, in spring mount.

The **Front Stage** is made to take all Universal effects and fittings. It is supplied with rack and pinion lens jacket, to take interchangeable 2 ins. diameter lenses, and this is fitted on a support which slides on runners to enable any focus lenses to be used, and the whole is mounted on an angle iron frame.

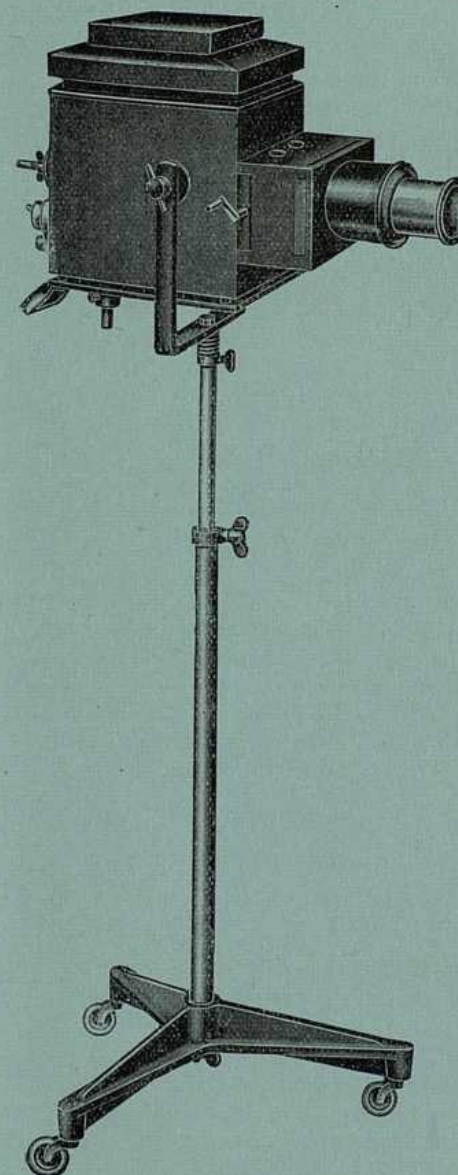
The **Slide Carrier** takes the ordinary standard lantern slides 3¼ ins. by 3¼ ins., but as the slide carrier itself is larger than the usual types, we supply a slide carrier with each outfit.

The Lantern is quoted without lenses, owing to the fact that some customers have their own lenses.

UNIVERSAL PROJECTORS (I)

No. 1 size, for 500 Watt Lamps.

No. 2 size, for 1000 Watt. Lamps



For use in Dance Halls, Theatres, Studios, and for exhibition of lantern slides and other effects.

These outfits can be used for flooding, spotting. Colour wheels, etc. can be used, and also any of the effects illustrated on Pages 64 and 65.

Lantern Slides can be exhibited, the distance and size of picture governed by a minimum of 6 ins. focus, and a maximum of 14 ins. focus lens being employed.

Prices of Lenses for lantern slide work will be found on Page 63.

Specification :

Each body is fitted with removable sliding tube for flooding No. 1 Spotting Lens, two tinter frames, two spotting diaphragms, two 4½ ins. condensers, adjustable lamp holder, and Mangin Mirror in aluminium mount.

Switch Plug fitted on the back, also operating handle.

Prices :

No. 1 size Without Stand ... £5 15 0

No. 2 size Without Stand ... £6 15 0

No. 1 size on Stand "B" ... £8 0 0

No. 2 size on Stand "B" ... £9 0 0

No. 1 size on Stand "A" ... £7 10 0

No. 2 size on Stand "A" ... £8 10 0

For illustration of Stand "A" see p 59

Universal Projector on Stand "B"

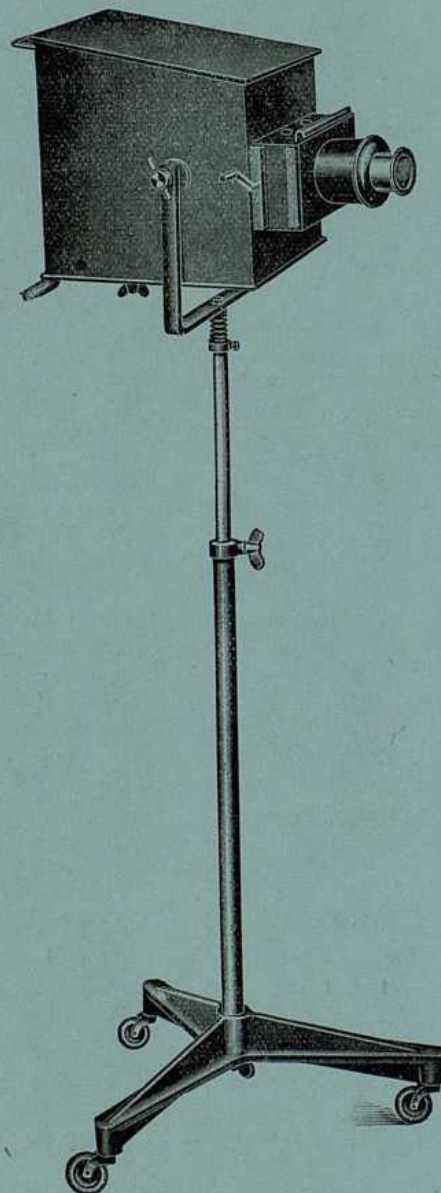
Carriage Forward.

Projector type lamps 500 Watt. for size No. 1 and 1000 Watt. for size No. 2 Class A.1. Full particulars on Page 67.

For prices of Accessories and Effects, see Pages 64 and 65.

UNIVERSAL PROJECTOR (I)

No. 3 for use with Arc Lamps from 10 to 60 Amps.



Projector on Stand "B"

The No. 3 Projector does the same class of work as No. 1 and No. 2, but is principally intended for large Theatres, Music Halls and other places where a very powerful light is required.

Specification :

Body.—With slanting roof and ventilation at the back with clamp to prevent lamp from slipping when the body is tilted.

Condensers.—Two Plano $4\frac{1}{2}$ ins. Condensers with quick removing clip to enable either one or both lenses to be used as desired.

Front Stage.—Made to take all Universal Effects, complete with two colours in frames, two spotting diaphragms, a No. 1 Spotting Lens in sliding tube, which can be removed for flooding. The whole is mounted in stirrup with strong hand grips to hold body in any desired position.

Prices :

Without Stand	...	£4 15 0
On Stand "B"	...	£7 0 0
On Stand "A"	...	£6 10 0

(For illustration of Stand "A" see Page 59.)

Carriage Forward.

For Arc Lamps	...see Page 68
For Effects	...see Pages 64 and 65
For Accessories	...see Page 63
For Bench Clamps	see Page 58
For Wall Brackets	see Page 58

ACCESSORIES for the "UNIVERSAL" PROJECTORS. (I)



Spotting Diaphragms.

Circular, any size ... 1/- each
Special shapes, to order 2/6 ..



Flooding and Spotting Lens Glasses.



Plano Convex,
 $4\frac{1}{2}$ in. 3/6 each.



Meniscus,
 $2\frac{1}{2}$ in. 3/6 each.



Plano Convex,
 $2\frac{1}{2}$ in. 3/- each.



Bi-Convex,
 $2\frac{1}{2}$ in. 3/6 each.

Spotting Lenses complete in Mount.



No. 1
5 to 6
inch
Focus
10/-



No. 2
7 to 8
inch
Focus
18/-



No. 3
9 to 10
inch
Focus
20/-



No. 4
11 to 12
inch
Focus
22/6

Lenses for Lantern Slides and Special Work.



No. 1B
8 in.
Focus
25/-



No. 2B
10 in.
Focus
33/-

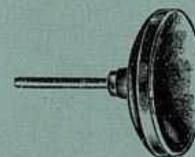


No. 3B
12 in.
Focus
36/-



No. 4B
14 in.
Focus
39/-

Reflectors.



Mangin
Mirror
in Mount
7/6
each



Colour Wheel or Flicker Wheel. With Spindle, 17/6



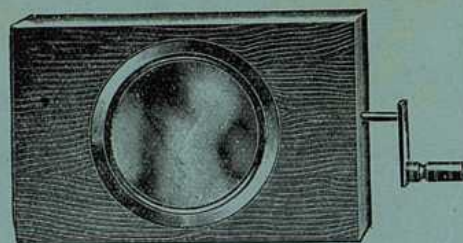
Clamp for attaching
Colour Wheel to
"Universal Projector."

Price 5/6 each.



All Prices on this page Carriage Forward.

EFFECT SLIDES
for "UNIVERSAL" PROJECTORS only. (I)



Revolving Colour Dissolver

Consisting of two hand-painted discs revolving in opposite directions, causing the colours to slowly blend into one another.

(The effect is Rotary Blend).

Price 27/-

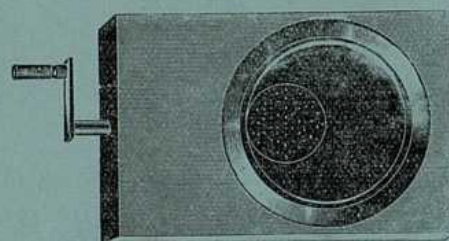
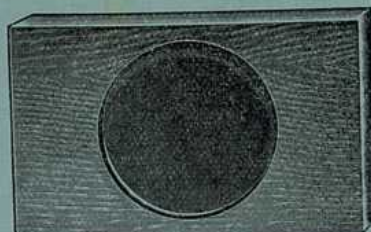
Tinters.

Consisting of a sheet of non-burnable Gelatine in mahogany frame.

Price 3/6

Green, Emerald Green, Ruby, Blue, Orange, Yellow, Pink, Violet, Photographic Light Blue, and Matt.

Colours only, 6d each



Snowing Effect.

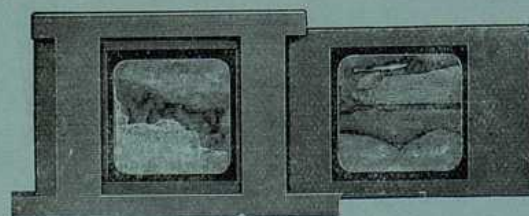
Rain Effect.

Price 27/6 each

Water Tank.

Consisting of a glass tank in mahogany frame, for producing numerous effects, such as swimming fish, growing water flowers, and dropping of different dyes into it, to cause wonderful colour-changing effects.

Price 7/6



Lantern Slide Carrier.

To take standard $3\frac{1}{4} \times 3\frac{1}{4}$ lantern slides. Price 4/-

NOTE.—Spotting lenses will project lantern slides and other effects in reasonable focus, but for perfect definition lantern slide lenses should be employed.

All Prices on this page Carriage Forward.

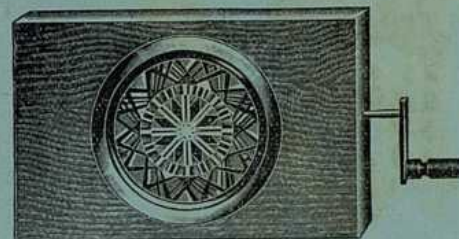
EFFECT SLIDES for "UNIVERSAL"
PROJECTORS and ORDINARY LANTERNS. (I)

Kaleidoscope Effects.

Consisting of two hand-painted Mica designs revolving in opposite directions, causing rapid changing of colours in numerous shades and designs.

PREDOMINANTLY IN RED, YELLOW OR BLUE AS DESIRED.

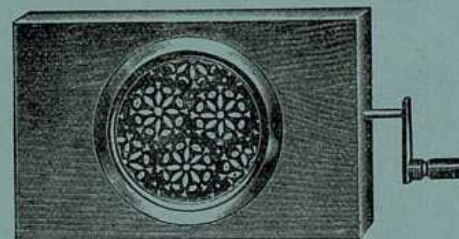
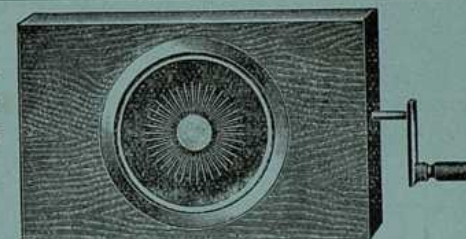
For Ordinary Lanterns ... 21/-
For Universal Projectors 27/6



Sun Rays.

Consisting of one fixed Mica disc and one moving disc—which shows the Sun's rays moving and sparkling in golden tints.

For Ordinary Lanterns ... 21/-
For Universal Projectors 27/6



Scintillating Designs.

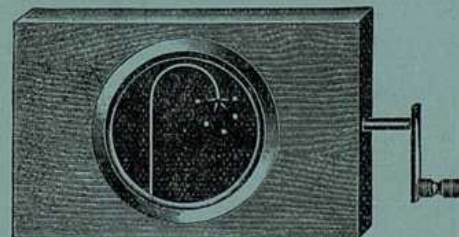
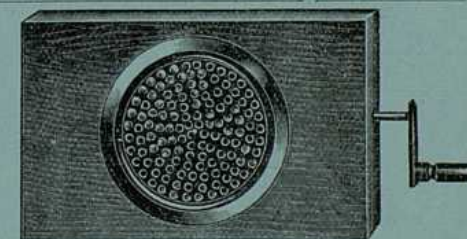
Consisting of two coloured Mica discs and two perforated discs, giving a constant change of pattern in various colours.

For Ordinary Lanterns ... 21/-
For Universal Projectors 27/6

Scintillating Dots.

Consisting of two coloured Mica discs and two perforated discs, presenting a shower of dots constantly changing colour.

For Ordinary Lanterns ... 21/-
For Universal Projectors 27/6



Rocket.

Consisting of one disc, having a rocket, and another which gradually passes over it, producing the effect of a Rocket rising and exploding in various colours.

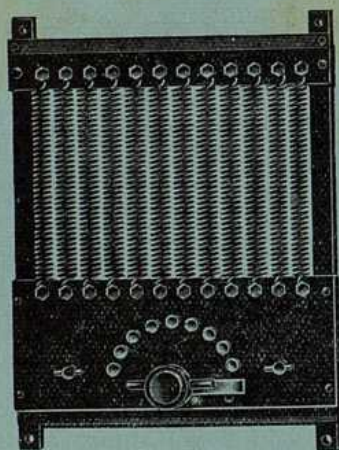
For Ordinary Lanterns ... 21/-
For Universal Projectors 27/6

NOTE—The Hand-Painted Discs are now made in Mica instead of Glass, thereby avoiding any breakage from heat.

All Prices on this page Carriage Forward.

ARC REGULATING RESISTANCES. (E)

(When ordering, exact voltage must be stated.)



Amperes	Volts 60-75	Volts 100-120	Volts 200-220	Volts 230-250
5-15	2 15 0	3 3 0	4 10 0	5 0 0
5-20	3 0 0	3 10 0	5 0 0	5 10 0
10-30	3 7 6	3 18 0	5 12 6	6 5 0
10-40	3 15 0	4 10 0	6 15 0	7 10 0
20-50	4 0 0	4 15 0	8 5 0	9 0 0
20-60	4 7 6	5 15 0	10 12 6	11 0 0
30-70	4 10 0	6 5 0	12 0 0	13 2 6
30-80	4 17 6	6 12 6	13 17 6	15 0 0
30-100	6 0 0	8 5 0	16 10 0	19 5 0

Duplex and Dissolving Resistances for fading and controlling two arc lamps, Parallel type with change-over switches, 75% on above prices; Rotary type 100 % on above prices.

Wall Type (Non-Regulating). (E)

Amps	60/75 Volts	100/110 Volts	200/220 Volts	230/250 Volts
10	£1 17 6	£2 12 6	£3 17 6	£4 10 0
15	£2 0 0	£2 15 0	£4 10 0	£4 17 6
20	£2 2 6	£2 17 6	£4 15 0	£5 0 0
25	£2 5 0	£3 0 0	£5 5 0	£5 10 0

IRIS DIAPHRAGMS. (I)

Full Aperture	Price	Full Aperture	Price
P 1 1/2 inch	3/-	P 9 1 1/4 inch	6/6
P 2 3/4 "	3/6	P 10 2 "	7/-
P 3 1 "	4/-	P 11 2 1/4 "	8/6
P 4 1 1/4 "	4/3	P 12 2 1/2 "	10/-
P 5 1 1/2 "	4/6	P 13 2 3/4 "	15/-
P 6 1 3/4 "	5/-	P 14 3 "	20/-
P 7 1 1/2 "	5/6	P 15 3 1/2 "	25/-
P 8 1 1/2 "	6/-	P 16 4 "	30/-

LENS ADAPTER. (I)

(Iris Diaphragm Movement).

Full Aperture	Price
P 17 2 3/4 inch	20/-
P 18 2 "	15/-
P 19 X Ray Iris Diaphragm, heavily mounted, and leaves of German Silver, Aperture 4 1/2 inches.	

Price £5 10 0

IRIS DISSOLVER. (I)

L 201 Fits 2-inch Jackets ...	14/-
L 202 " 2-inch Cylinders ...	16/-
L 203 " 2 1/2-inch Jackets ...	18/-
L 204 " 2 3/4-inch Cylinders...	26/-
L 205 " Cinematograph Lens, full Aperture 1 1/4 inches.	

Price 14/-

All Prices on this page Carriage Forward.

STANDARD PROJECTOR LAMPS.

For

Projection Work, Cinemas, Theatres, Floodlighting &c.

VERTICAL TUBULAR & CINEMA TYPES. Class A 1.

Watts	Cap	Dimension in Millimetres			Standard Voltages and Prices				
		Dia.	Overall length	Light centre length	15	30	50	100-110	200, 210, 220 230, 240, 250 260
100	E.S.	38	140	75	—	12/-	—	10/9	12/-
250	E.S.	64	140	75	—	22/6	—	20/-	22/6
500	E.S.	64	140	75	—	—	26/-	26/-	26/-
600	G.E.S.	64	230	120	—	38/-	—	—	—
750	G.E.S.	64	230	120	43/-	—	—	—	—
900	G.E.S.	64	230	120	—	38/-	—	—	—
1000	G.E.S.	64	230	120	—	—	—	33/6	33/6

"END ON" ROUND BULBS. Class A 3.

Watts	Cap	Dimensions in Millimetres			Standard Volts and Prices				
		Diam.	Overall length	Light centre length	30	50	100-110	200, 210 220, 230 240, 250 260	
100	E.S.	70	115	95	10/9	—	10/9	10/9	
250	E.S.	90	160	120	—	20/-	20/-	22/6	
500	G.E.S.	120	250	205	—	—	28/6	31/6	

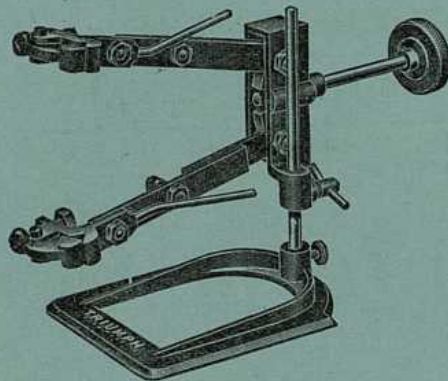
FLOODLIGHTING LAMPS. Class B.

Watts	Cap	Dimensions in Millimetres			Standard Volts and Prices		
		Diam.	Overall length	Light centre length	100, 105 110 115, 120, 125 130	200, 210, 220 230, 240, 250 260	
100	E.S.	80	130	75	10/9	12/-	
250	E.S.	95	135	75	20/-	22/6	
500	G.E.S.	130	190	115	28/6	31/-	
1000	G.E.S.	130	190	115	36/-	38/-	

STANDARD PROJECTOR LAMPS (below 20 volts) Class Group II.

Watts	Volts	Dimensions in Millimetres			Standard Volts and Prices			
		Diam.	Overall length	Light centre length	Cap	Price	Shape of Bulb	Type of Filament
8	4	35	62	52	S.E.S.	4/-	Spherical	Horiz. Helix
24	6	35	60	50	E.S.	4/6	Spherical	Horiz. Helix
24	12	35	55	45	S.B.C.	4/-	Spherical	Horiz. Helix
48	12	50	80	40	E.S.	4/-	Spherical	Twin Pillar
100	12	45	152	80	E.S.	11/3	Tubular	Twin Pillar

ARC LAMPS. (I)

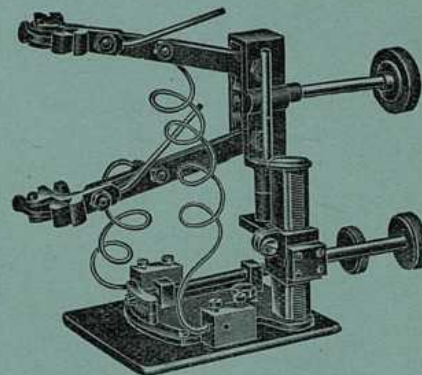


Scissors Arc Lamp.

For A.C. or D.C. Strong, well-finished and suitable for 10 to 20 Amps.

Price

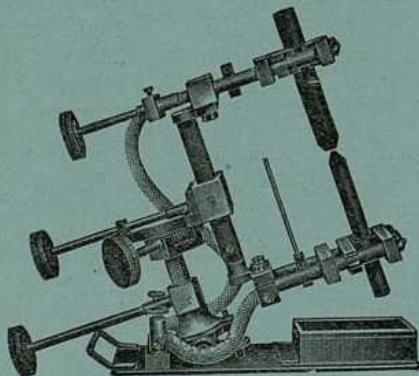
Without Tray ... 37/6
With Tray ... 40/-



Superior Scissors Arc Lamp.

10 to 20 Amps with horizontal and vertical adjustments, Arc Leads and Terminal Blocks.

Price £3 10 0



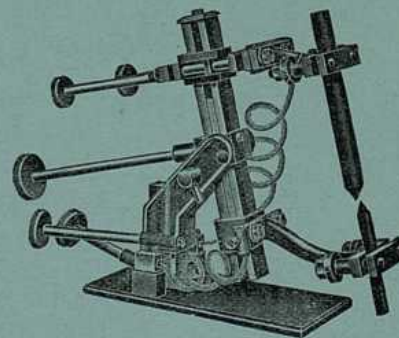
No. 4A Arc Lamp.

For 10 to 50 Amps. With four adjusting handles and tilting device, complete with leads and terminal block.

Price £5 17 6

When ordering state if for Alternating or Direct Current.

For Prices and Description of 5 Ampere House Arc Lamps Outfit see page 27.
All Prices on this page Carriage Forward.



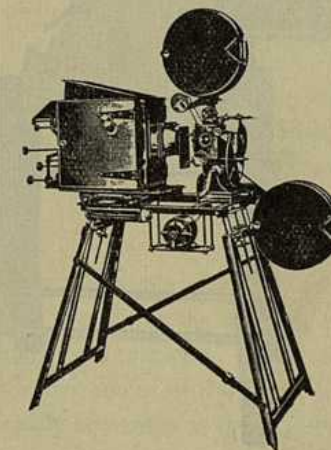
No. 5 Arc Lamp.

This lamp will carry up to 80 amps. and is principally used for cinematograph projection. It is substantially made and solid in construction. The racks and pinions are made of steel. This lamp is specially suitable for heavy and continuous work and has six movements.

Price £4 15 0

SEASON 1928-1929.

CINEMATOGRAPH PROJECTORS



ARC LAMPS

CARBONS

RESISTANCES

SPOOLS

PORTABLE PROJECTORS

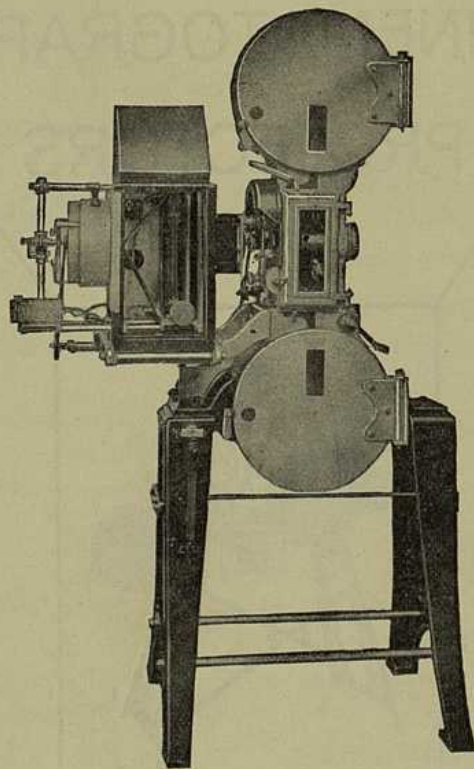
FOR :-

Optical Lanterns, &c. ...	See Section "A"
Focuslite Outfits ...	"B"
Spotlights, Floodlights, &c. ...	"C"
Electrical Charging Sets and Rectifiers ...	"E"

Section "D"

Sept., 1928.

"WEMBLEY" PROJECTORS.



Model No. 1
(as illustrated)

£75 (E)

Model No. 2
(self-rewinding)

£90 (E)

Carriage Forward.

As a result of the experience gained in the manufacture of Kinematograph Apparatus from the inception of the industry to the present day, it was decided to build a Projector which should be the last word in every respect, the "Wembley" being the outcome. Nothing has been spared in the way of time, trouble and expense to produce an ideal machine, and as a consequence it is unequalled for professional purposes.

The Maltese Cross Movement has been re-designed, and is both silent in operation and accurate in construction, ensuring an exceptionally steady picture. For the construction of the Crosses we have designed expensive machines which grind the surfaces of the Maltese Cross and the slots to the highest degree of accuracy.

The teeth of the Sprockets are made by a new process which makes it impossible for them to be inaccurately spaced, or unequal in any other respect.

All Gears are made by the latest method on Gear Hobbing Machines, which always produce a perfect and uniform tooth theoretically correct in every respect. The whole of the Maltese Cross Movement and Gear Wheels run in an oil bath.

A double door encloses the whole of the Mechanism, a window being provided so that it is just as easy for the operator to control the passage of the Film, as in an ordinary type machine. At the same time this door is so arranged that by a single movement of the finger it can be opened and the Film is practically as readily accessible as if an ordinary machine were being used.

The Lens is carried on the front part of the door and the focus can be adjusted without opening same.

The Shutter is placed between the light and the Film, and thus it cuts off both heat and light at the same time, the film as a consequence keeping cool when passing through the gate. A reliable Safety Shutter is provided centrifugally operated and quick in action.

In masking the picture the film only is moved, thus ensuring a constant optical axis.

(Continued on next page).

The unique arrangements embodied in this machine for keeping the film cool will forcibly appeal to those who have used Mirror Arc Lamps when projecting, as with this type of lamp the heat on the film, and the risk of the film firing, is much greater than with an ordinary Arc Lamp using twice the current. It also gives the Operator ample time in the event of a break in the film to re-thread without danger of the film firing.

The tension on the clutch spring on the Take-up Arm is adjustable whilst operating, as in all previous "Kamm" Models, the Take-up being operated by a chain.

In the Handle is incorporated a ball bearing free wheel, the Handle consequently remaining stationary while the machine is being run by motor. Ball bearings are also fitted in the Shutter Movement and wherever it is found desirable for the better working of the machine.

All the Sprockets and most of the Gear Wheels are made of steel, a special material of a very durable nature being used for some of the wheels to ensure smooth and silent running.

The Spool Boxes are large enough to take 2,500 ft. of film, and are made of aluminium over a $\frac{1}{4}$ in. thick, the lids being of the same material with strong hinges.

The whole of the machine is mounted on the lower spool box, and there is thus never any question of the spool boxes being out of alignment. The stand is also clamped to the surfaces of the lower spool box, the tilting of the machine being easily effected by altering the position of the box.

The legs of the stand are heavy castings of aluminium, and the whole machine thus forms a solid rock-rigid unit, free from vibration.

The Arc Lamp is of the Mirror type with Lamphouse built to suit, and with small Fan and Motor for keeping the Mirror cool, as described on page 74. The Lamphouse is mounted on a tubular framework, which enables it to be moved to one side when showing lantern slides.

In the Wembley No. 2 Model (not illustrated) the top spool box is mounted horizontally, and by an ingenious arrangement the film is fed from the centre of the spool, thus obviating the necessity of re-winding the film after it has been shown. A film-stopping device can be fitted to this model, enabling the film to be shown stationary—this is of great advantage for lecturing purposes.

As will be seen from the above description, the special form of shutter movement, combined with the enclosed mechanism and solid construction of the spool boxes, eliminates all danger from fire, and the apparatus will be found to meet the unqualified approval of licensing authorities everywhere.

In conclusion, "Kamm" Machines have always been noted for the beautiful way in which they do the work for which they are constructed, viz., taking the film through in a perfectly smooth, steady manner, and giving perfect results on the screen. It appeals not only to the highest class of Cinema where the films are always received in good condition, but also to the proprietor whose show will only afford films which have had a lot of use, or whose shows are in inaccessible parts of the world where the same films have to be used over and over again. The following remarks from quite a recent letter received express the opinion which we frequently receive from clients.

"The projector is an excellent piece of workmanship. Its capacity for taking badly damaged films is extraordinary."

PRICES:

No. 1 Projector, with ordinary vertical Spool Boxes.

16" diameter (to take 2,500 feet of film) with

6 spools £75 0 0 (E)

No. 2 Projector, with automatic film rewinding mechanism, 14" Spool Boxes (to take 1,500 feet of

film) with 6 spools £90 0 0 (E)

The above are all equipped with Motor Drive of any Voltage ready for use, Lenses and Lantern Lens Attachment.

THE "KAMM" MIRROR ARC LAMP.

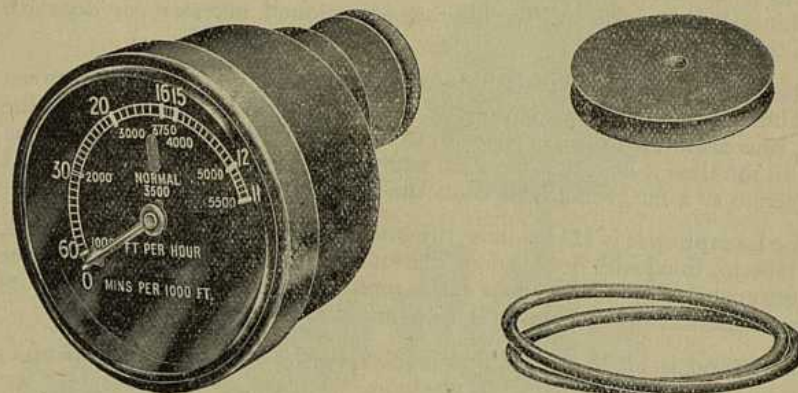
The advantages of the Mirror Type of Arc Lamp over the ordinary type are now well known, and it is generally recognised as a money-saving proposition that cannot be ignored in any Cinema. Projectors that formerly used from 60 to 100 amperes now take only 20 to 30 amperes, and it is quite an easy matter to work out the saving in current which, approximately, will pay the whole cost of the lamp in a few months.

The Maximum of illumination, combined with simplicity of construction and operation, are the outstanding features of this Lamp. The Carbon Holders are carried on brackets which slide on vertical rods at the side of the Lamp. These brackets are operated by chains and chain sprockets, a form of movement which is extremely durable, and simple, and cannot clog with carbon dust, etc., as happens with screw movement. The adjustment of the carbons is effected by a double handle on the side close to the operator, so that each carbon can be adjusted separately, or the two moved at the same time for feeding the carbons. The positive carbon also has an extra adjustment so that its angle with the negative can be adjusted to a nicety.

The Mirror, which is 8 ins. in diameter, is outside the Lamphouse, at the back, so as to keep it as cool as possible, and is surrounded by an aluminium cover to prevent the light straying. It is carried on a bracket mounted on two rods which slide into the Lamphouse to adjust the distance from the mechanism. The same Bracket also carries a small fan which keeps the back of the Mirror quite cool, this fan being driven by a very small motor. A milled head screw behind the Mirror enables it to be adjusted sideways.

In operating the Mirror Arc Lamp, the point to be borne in mind is that it is only the light reflected from the Mirror which is being used for projection, and that therefore the crater on the positive carbon, which is the source of the light, should be adjusted to throw as much light as possible on to the Mirror, and not towards the film. The point of the negative carbon should be slightly nearer to the Mirror than the positive Carbon, so as to form a crater on the side of the positive carbon facing the Mirror, if possible. Generally speaking, the Mirror should be about 18 ins. from the gate of the mechanism, but this depends to some extent on the focus of the Cine Lens in use.

CINEMATOGRAPH SPEEDOMETERS. (E)



The Dial Indicates "Feet per Hour" and "Minutes per 1000 Feet."

This Speedometer has been designed to meet a long felt want. We are all aware that the film should be run through the machine at the rate of 3,600 feet per hour, or 1000 feet in 16 minutes, but how many operators know if their projector is running at that speed.

This small instrument tells you at a glance the exact speed the film is travelling through the projector, so that it is possible to either advance or retard the speed of your machine accordingly.

A thoroughly reliable instrument which can be fitted to any make of machine at a small cost. It is an absolute boon to operators, comprising the following excellent points:—

Firstly—Your Projector will wear longer, as the operator can tell at a glance whether he is racing the machine.

Secondly—You are certain your machine is not giving a flicker by travelling too slowly.

Thirdly—The minimum risk of damage to the film is ensured.

Just a glimpse at the Dial to see where the Indicator is pointing will set the operator at ease, exactly in the same manner the aviator glances at his speedometer and tells at once if all is going well, also the motorist, who would feel lost if he had no means of indicating the speed at which he is travelling, so also it is a great necessity for the cinematograph operator to have a device whereby he can tell the speed of the projector and incidentally obtain the finest result.

Price £3 19 6

Including Speedometer, Pulley, Driving Pulley for fixing to Projector and Rubber Band.

Carriage Forward.

BACK SHUTTER MODEL.

This is the latest improved model of the earlier "Kamm" Maltese Cross Machines, and embodies all the improvements found necessary or desirable from time to time.

The distinctive feature is the type of shutter, which is mounted between the film and the light, thus cutting off the heat as well as the light from the film, whereas in the ordinary type of machine the whole of the heat is on the film all the time it is in the gate. In addition to this, the shutter is adapted to operate as a fan, which also cools the film still further.

The Lamphouse is 12½ ins. long, 10 ins. wide and 16½ ins. high, made of steel, and asbestos lined with double door nearest operator. The Patent Condenser Mount enables a condenser lens to be replaced in a few seconds, while its unique design reduces breakages to a minimum.

The Stand is made of steel and is rock-rigid. The legs are telescopic, so as to adjust the height of the machine. Unless specially ordered, the lowest position of the lens with the stand supplied is 47 ins.

The Fireproof Spool Boxes are made of steel, and are 14 ins. diameter, the largest size allowed by the Board of Trade.

The Maltese Cross and Main Gear Wheels are all encased and run in oil. The Maltese Cross can be adjusted by means of an outside screw, to take up wear, etc. The mechanism and lamphouse are mounted on a steel frame.

Kamm's Patent Intermittent Sprocket is a considerable improvement on the types hitherto in use. It is fixed to the spindle by means of a special clamp round the middle, which is split, thus ensuring a perfectly true fitting sprocket.

Silent Running. The Maltese Cross movement has now been entirely re-designed, and the action cannot be heard among the audience. This movement can be fitted to all our previous Maltese Cross machines.

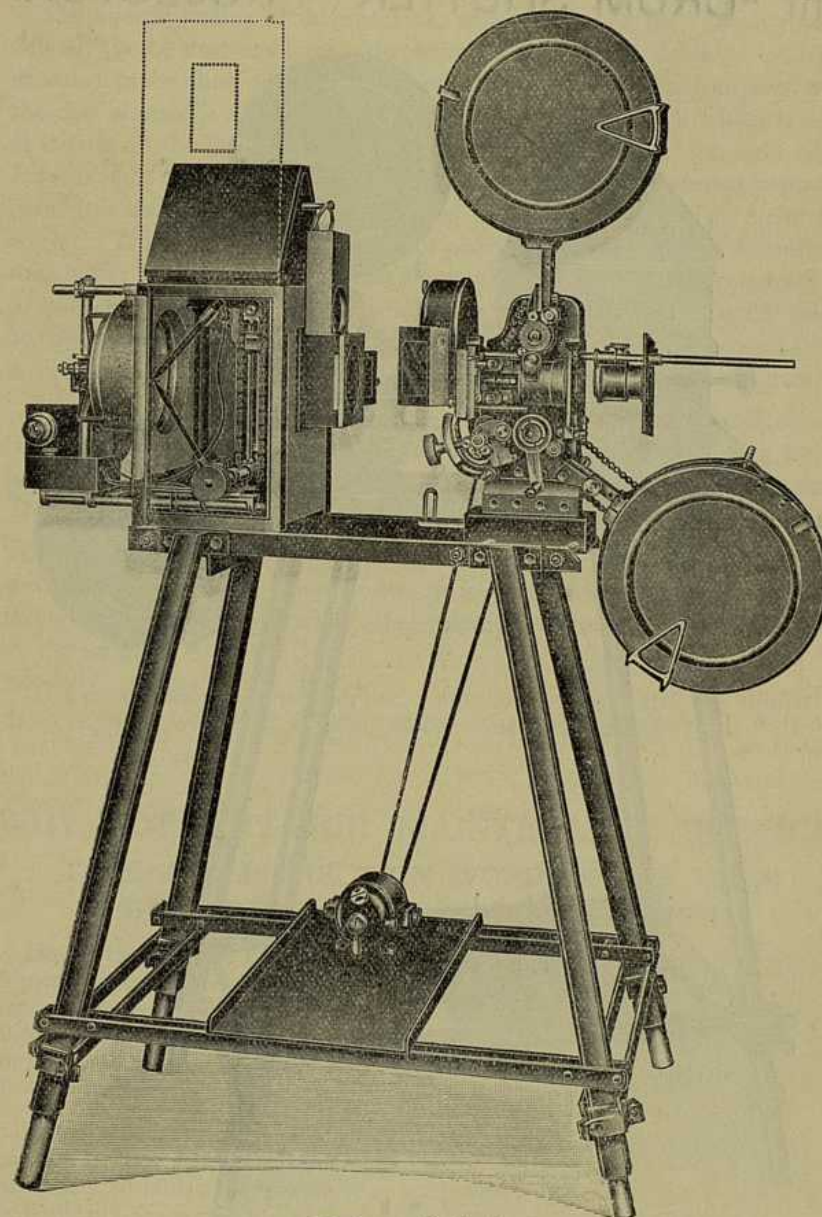
Convenience in Manipulation and Adjustment. The machine embodies every device for projecting a perfect picture with ease and facility of adjustment. When "framing" or "masking" the picture, it is not necessary to re-adjust the light also, as the film itself is moved in the gate, ensuring a constant optical axis. The Take-up is by means of a chain and friction clutch, and can be adjusted for varying pressure while operating. An automatic Drop Shutter is provided, which intercepts the light in the event of stoppage of machine.

The Take-up Spool Box is fitted in front of the machine unless specially ordered to be mounted below mechanism, to economise space in operating box.

The Machine is suitable for driving either by hand or by motor.

For Particulars of Maintenance System see page 79.

"BACK SHUTTER" PROJECTOR. (E)



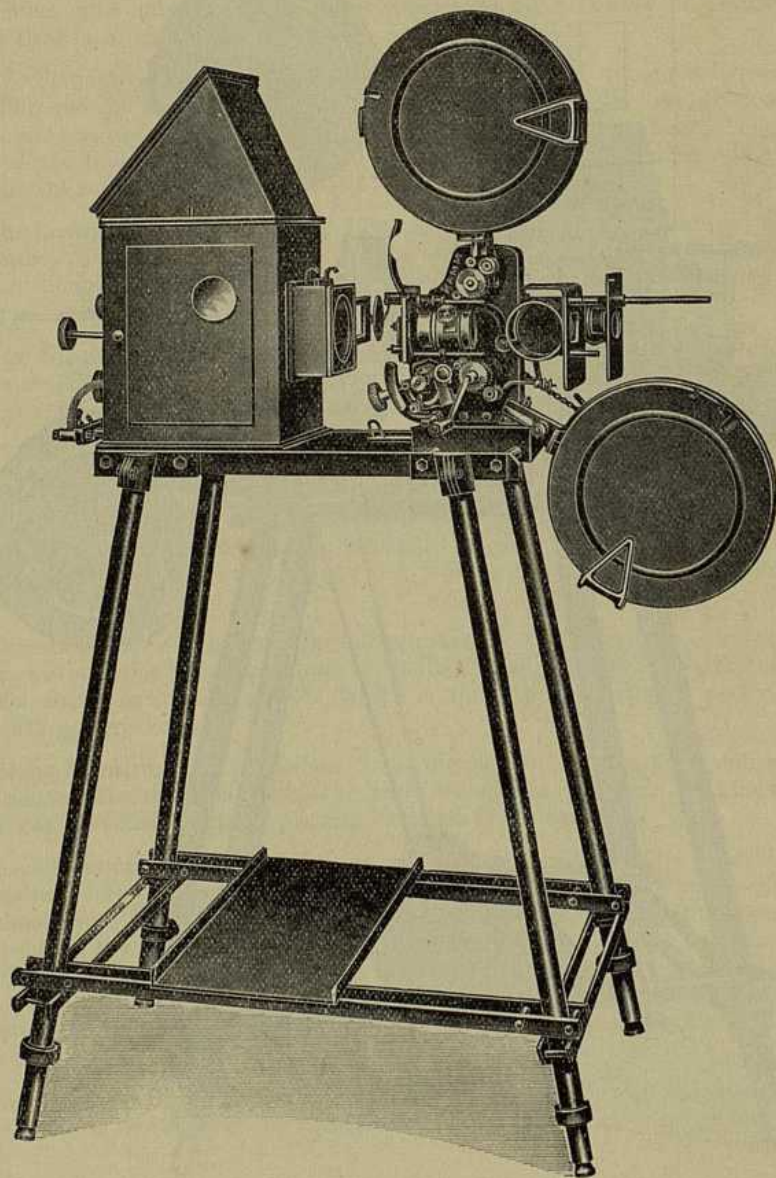
Price £55 0 0.

Complete with 2 Lenses, 2 Spool Boxes, 2 Spools, Steel Stand, Universal Arc Lamp and Lamphouse. (Motors and Regulators not included).

If fitted with Mirror Arc Lamp and special Lamphouse (as illustrated).

£10 0 0 extra.
Carriage Forward.

Patent "DRUM SHUTTER" PROJECTOR. (E)



A few re-conditioned "Drum Shutter" Outfits are available complete with 2 lenses, 2 spool boxes, 2 spools, Universal Arc Lamp, Lamphouse and Steel Stand. (For full description see next page).

Reduced Price £25 0 0 only.

Carriage Forward.

"DRUM SHUTTER" PROJECTOR.

The special feature of this machine, which is termed the "Drum-shutter Model," is the shutter which is shaped more or less like a drum, or cylinder, as shown in the illustration. The superiority of this shutter, as compared with the disc shutter is very marked, owing to the rapidity with which it acts, as it cuts off the light from both the top and the bottom at the same time. It saves light and adds to the brilliancy of the picture. A patented improvement has also been added, which gives a further 20 % of light upon the screen. This improvement consists of providing a series of very fine slits in the shutter which permit a certain amount of diffused light to penetrate on to the screen while the picture is being moved. This diminishes the strain on the eyes, and the picture projected is more natural. The stereoscopic effect is very marked compared with the picture projected by other shutters.

The Shutter normally cuts off the light twice for each picture, each cut-off lasting the same length of time. This, coupled with the slitted shutter, owing to which the screen is never perfectly dark, gives an ideal flickerless picture. This machine, which is termed the D2 model passes about 70% of the total light from the arc lamp on to the screen.

Owing to the slitted drum shutter, it is possible if required to run these machines much slower than any other machines without a flicker appearing on the screen.

The remainder of the mechanism, Lamphouse Stand, etc., are similar to those supplied with Back Shutter Model, described on page 76.

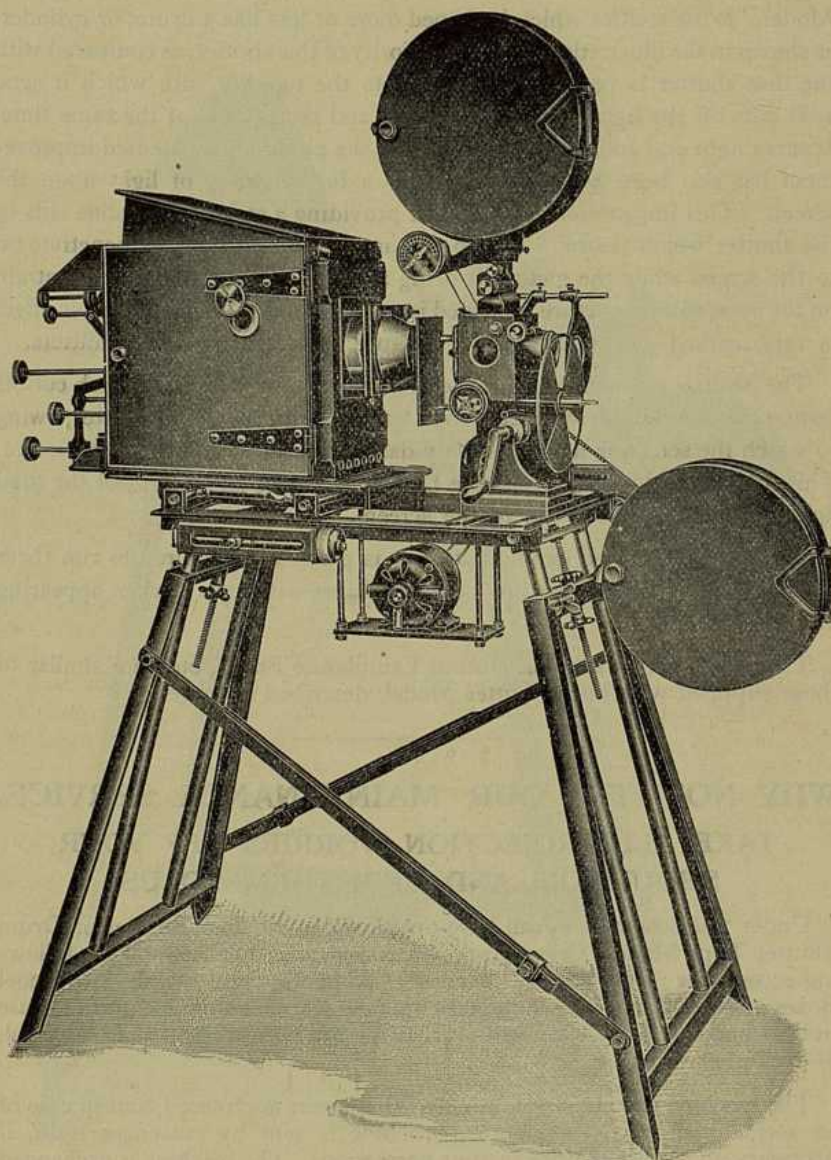
WHY NOT TRY OUR MAINTENANCE SERVICE. TAKE ALL PROJECTION WORRIES OFF YOUR SHOULDERS AND GIVE THEM TO US.

Under this scheme you can have one of the latest Back Shutter or Drum Shutter Type Maltese Cross Machines, complete with lenses and the following accessories: 100 amp. "Universal" Arc Lamp, Steel Stand, Two Spool Boxes and two Spools, for the sum of 12/- per week, or a double outfit for use in the same hall for 18/- per week. (Mirror Arc Lamps instead of Universal, 3/- per week extra for each Lamp.)

The machine is maintained, any part that wears is replaced, and in case of an accident at any time, another machine is sent by passenger train, if necessary, to replace the one in your possession. The machine is exchanged periodically, if necessary, and thoroughly overhauled. In a word, you have a show as good on the last, as on the day you receive the outfit. Lenses which are broken, carbons, or mirrors, cannot, of course, be included in the maintenance, these being charged extra.

Write for Agreement Form, and full particulars, or call and see the Outfit.

MODEL "F" PROJECTOR. (E)



PRICE:

(Complete as illustrated, but without Motor, Arc Lamp and Speedometer).

£47 10 0

Spare Mechanism only £25 0 0

For Prices of Motors, see page 86.

For Prices of Arc Lamps, see pages 27 & 68.

Carriage Forward.

SPECIFICATION OF THE MODEL "F" PROJECTOR

Material used in the production of the Model F Projector is uniformly of highest grade. All steel parts are carefully tested at frequent intervals during manufacture. Castings are exceptionally clean and fine.

The Complete Projector consists of an adjustable iron stand, constructed mainly of angle iron and steel tube. It is fitted each end with a pair of telescopic rods, and lock nuts, so that it can be suitably adjusted or tilted to any angle. For showing still view slides, there is attached to the left side of the mechanism a flange fitting for the objective, having adjustable centring, while the lamp house can be instantly slid over on traverse rails.

The Lamp House is of ample size, scientifically ventilated, and has both side doors and top removable at a moment's notice for cleaning the back condenser glass in situ. In addition to this, the whole lamp house lifts off bodily from its runners when required, and is then quickly replaceable in position.

The Mechanism is superbly built. Sprockets are all steel, the intermittent sprocket, upon which picture steadiness largely depends, being correct to within a well-nigh unmeasurably small margin of error. All spindles are ground to fit their bearings. Bearings are provided with easily accessible lubrication cups. The Maltese Cross and its spindle are not two separate pieces rivetted together, and liable in the long run to develop a fatal looseness, but are turned from the solid steel rod. The faces of the cross are hardened, tempered, and last of all, given a final re-grinding, which makes the steadiness of the whole intermittent escapement both perfect and sure. The striking pin on the locking ring of the escapement is also hardened and tempered upon its striking face. Hence wear is practically eliminated and a fruitful source of troublesome and costly breakdowns with other machines rendered non-existent with the Model F. The oil bath of the Maltese Cross escapement has a glazed front, so that the intermittent action can be kept under constant inspection and the oil level upon which so much depends for easy and frictionless running, maintained at a point which is neither too high nor too low.

The Gate is of a design combining perfection and simplicity with a complete absence of tantalising exterior "gadgets" which might tempt the operator to waste time in trying dangerous experiments with its adjustments. An efficient heat shield is fitted behind the gate aperture.

For cleaning out the oil bath thoroughly, the glazed face may be screwed complete off in its knurled ring and the whole escapement flushed with petrol or paraffin if desired. This, again, is a unique feature of the Model F Machine. The oil bath is absolutely oil-tight so long as the glass face plate is kept screwed up in its screw ring. It will not leak or splutter.

Masking is rapidly done by a lever placed in a most accessible position on the front plate of machine. An ample mask travel is allowed for.

Shutter and Shutter Drive are perfectly designed. Our unique system of gearing the shutter spindle directly with the locking ring shaft not only does away with the necessity of intermediate idle wheels, with their power waste and their slack motion, but eliminates the possibility of the shutter developing "whip" and "travel ghost" through wear. True, wear may occur in the course of years, but this being confined to the directly geared driving and driven wheels upon locking ring and shutter shafts, the picture shift can never occur before the shutter blade comes into position.

Specification of Model "F" Projector—Continued

Hence "travel ghost" need not be feared, as the Model F mechanism grows old with use. The shutter is set in correct phase before the machine leaves our works. Its spindle is so shaped that this correct phase will not be upset by removal and replacement of the shutter blades, or by reversal of the shutter boss to accommodate long or short focus objective lenses. Should an operator for any reason wish to re-phase his shutter, he can do it in less than a minute, by simply slackening three screws in the shutter boss and slightly turning the now separately movable blade portion in its slotted screw holes.

Feed and Take-up Spindles run in ball bearings. One effect is greatly to lessen the drag upon the lower spool as it fills. Consequently, alteration of Projector speed at the end of a reel is negligible, even where the operator neglects to accelerate the motor, as he should do. The take-up spool is driven by a roller chain from a friction clutch affixed, not on the take-up spindle, as is the usual practice, but on the left-hand side of handle-driving spindle. The chain itself does not at any time travel faster than necessary to keep the lower spool turning. This pull on the re-wind is rendered light, *and the chain and tooth wheels wear far longer.* On the outer end of the feed spool spindle is a friction regulating device consisting of a steel spring and washer, spring tension being controlled by two mutually interlocking knurled nuts. By adjusting and interlocking these nuts, an operator can set a mild braking action on the upper spool—enough exactly to counteract any tendency of the film feed to over-run and unwind slack film into the upper film box.

Automatic Fire Shutter. This will never fail. The action is on the well-known and absolutely dependable centrifugal counter-weight principle. The friction clutch controlling the fire shutter is mounted on ball bearings, and will wear indefinitely.

All Gear Wheels on the Model F Projector are cut with deep, strong, *truly helical diagonal teeth.*

Motor Drive and Speed Regulation. The motor which is well tucked away upon a platform affixed to the inner side of the stand is of the best make, with self-oiling cups, and needs the minimum amount of attention. Speed regulation is by infinitely variable patent regulator attached to the stand close under the near side of lamp house, a most generally approved position.

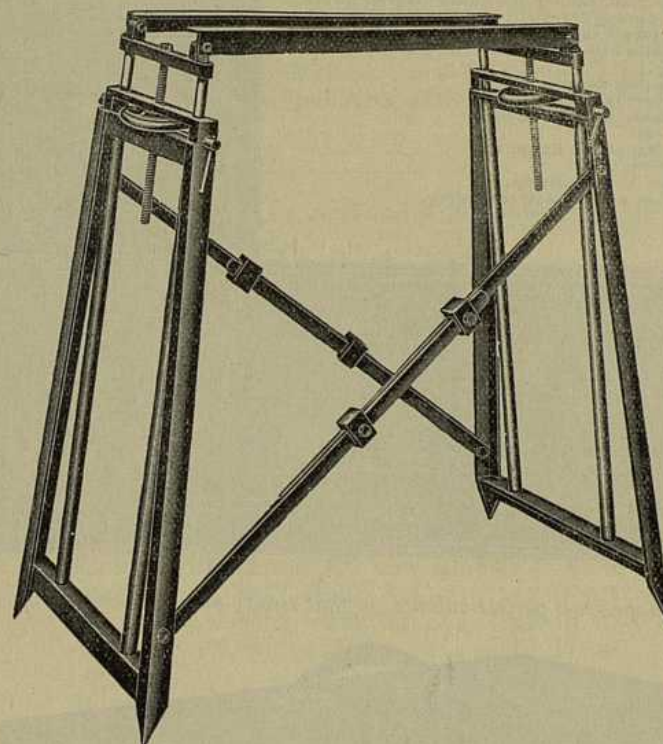
SPARE PARTS FOR MODEL "F." (E)

	£	s.	d.		£	s.	d.		£	s.	d.
Top Sprocket ...	0	16	0	Striking Pin & Plate...	0	6	0	Connecting Links for			
Bottom 8-picture	1	8	0	Vertical Driving Shaft				ditto ...	0	0	6
Intermittent Sprocket	0	18	6	with 2 Worm Gears	2	0	0	Top-Arm Spindle ...	0	6	0
Set Gate Springs (6)	0	2	0	Governors for Auto-				Bottom-Arm Spindle	0	6	0
Shutter Mitre Wheels				Shutter (per pair)...	0	7	0	Spool Boss ...	0	1	6
per pair...	0	10	0	Auto-Shutter Spindle	0	1	6	Spool Boxes complete			
Maltese Cross ...	2	0	0	Automatic Shutter ...	0	7	6	(per pair) ...	4	10	0
3-Blade Shutter ...	0	15	0	Gear Box for Top				Lamp House com-			
Handle ...	0	10	0	Sprocket ...	1	5	0	plete with Stage and			
Locking-Ring Spindle				Shutter Spindle ...	0	7	6	Cone 4½ ins. Con-			
Striking Pin & Plate	1	10	0	Helical Gear for Ver-				denser and Asbestos			
Gate Pad complete...	0	15	0	tical Drive ...	1	5	0	Curtain... ..	6	0	0
Sprocket Rollers ...	0	2	0	Ditto for Main Drive	0	15	0	Complete Movement			
Guide ...	0	3	0	Ditto for Intermediate				Casting Screws			
Gate Runners (pair)	0	3	0	Drive (per pair) ...	0	18	6	Maltese Cross			
Gate Guides (pair) ...	0	3	0	Balance Wheel				Locking-Ring			
Gate Shoes ordinary				(2-speed) ...	0	12	0	Spindle etc. Inter-			
per pair...	0	4	6	Window for Oil Bath	0	0	8	mittent Sprocket...	7	10	0
Gate Shoes double...	0	10	0	Coventry Chain				Mechanism Head			
Complete Door for Gate	2	5	0	(per foot) ...	0	4	6	only complete ...	25	0	0

Carriage Forward.

THE "TRIUMPH" STAND. (I)

For High-class Projection Purposes.



This Stand is of the heavy type, most suitable for Cinematograph Machines, but, of course, can be adapted for other uses, if required.

It is made of flat, channel and round iron, very rigid, can be adjusted for height, the whole being finished in crystalline enamel, altogether, a really good strong stand.

Price :

£4 17 6

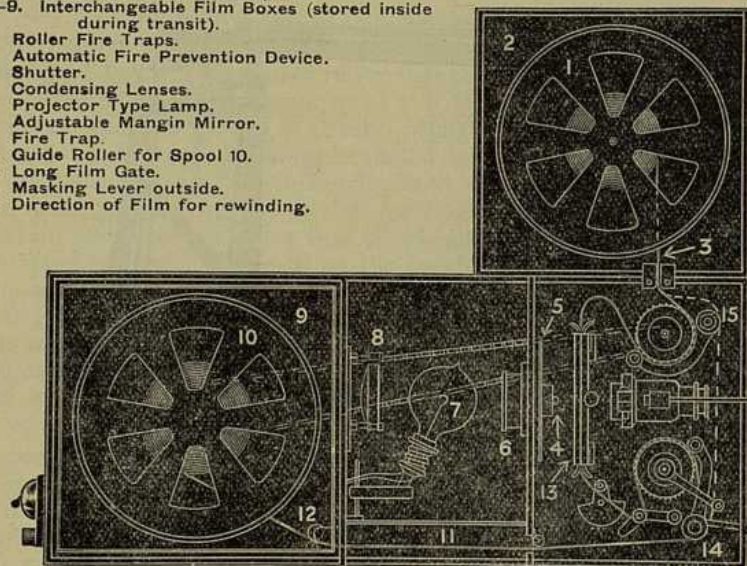
Carriage Forward.

THE "HOWATH" PORTABLE PROJECTOR. (REGULATION MODEL).

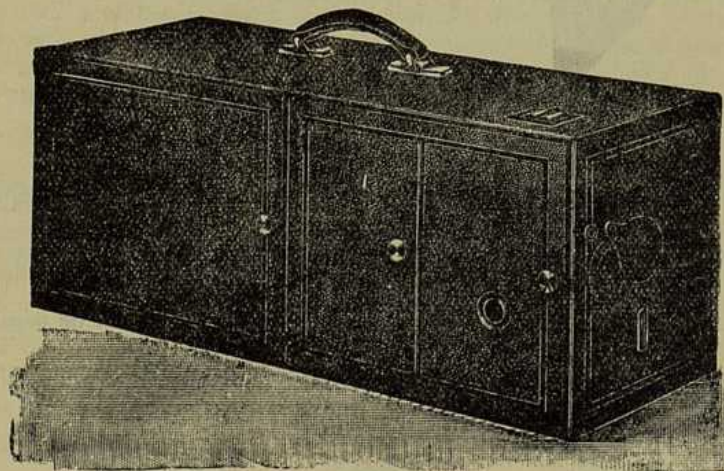
BRITISH PATENTS NOS. 161422 and 168211.

An Patented in a'l the Principal Countries throughout the World.

- 1-10. Universal 10-inch Split Spools.
- 2-9. Interchangeable Film Boxes (stored inside during transit).
3. Roller Fire Traps.
4. Automatic Fire Prevention Device.
5. Shutter.
6. Condensing Lenses.
7. Projector Type Lamp.
8. Adjustable Mangin Mirror.
11. Fire Trap.
12. Guide Roller for Spool 10.
13. Long Film Gate.
14. Masking Lever outside.
15. Direction of Film for rewinding.



This shape gives perfect balance, so that steady pictures can be projected.



PRICE:

Complete with 2 Spool Boxes, 2 Spools, Lens and Lamp,

£19 10 0 (N)

Carriage Forward.

The Howath Portable Projector is constructed entirely of metal, with Fireproof Film Boxes, and complies with the Cinematograph Regulations for public exhibitions, and will take any of the lamps specified below *without risk of firing the films*, owing to the fact that the machine is fitted with unfailing automatic devices which remove every possibility of fire.

The Machine is provided with special collapsible Spools which enables films to be readily put on or taken off. The mechanism has full size picture sprockets, which enables the handle to be turned at normal speed. It is a dog action machine, provided with helical gears, which projects pictures equal to those exhibited with Maltese Cross Projectors, with the added advantage that old films can be employed, which could not possibly be used on a Maltese Cross Machine.

The following Lamps can be used and will give perfect illumination for the size of picture stated.

12 volt 100 watts, for pictures. Approx. 5 ft. wide. Price						
25/30	"	150	"	"	5 ft.	10/6
50/55	"	250	"	"	7 ft.	12/6
100/110	"	250	"	"	7 ft.	15/-
200/250	"	250	"	"	6 ft.	21/-
						23/6

(N)

ADJUSTABLE RESISTANCES. (N)

to enable the same lamp to be used on any higher voltage up to 250 volts.

For use with 12 volt 100 watt lamp	£4 5 0
" " " 30 " 150 " "	£2 5 0
" " " 50 " 250 " "	£2 0 0
" " " 110 " 250 " "	£1 17 6

MOTORS AND REGULATORS.

We can supply and fit Motors and Regulators to the Projectors for any specified voltage, the said Motor to work on alternate and direct current.

Price :

£4 17 6 (N)

Spare Film Boxes 25/- }
Film Re-Winders 55/- } (N)

Split Spools ... 6/- }
Ordinary Spools 4/6 } (N)

SILVER SCREENS AND ROLLERS AND BATTEN.

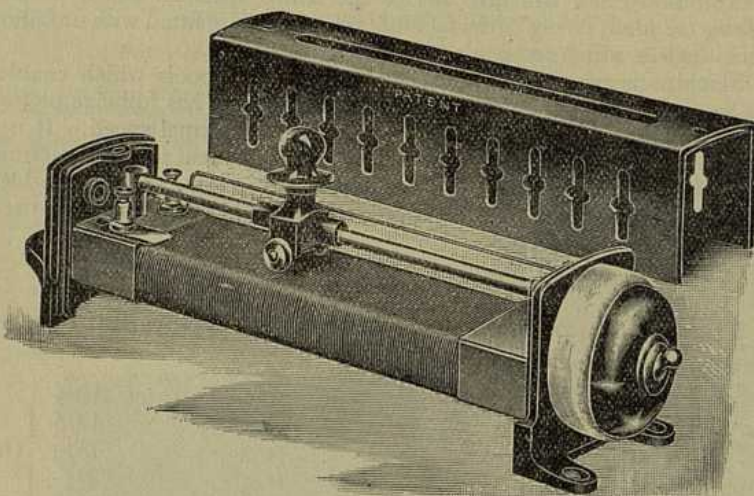
Where brilliant illumination is required these Screens are necessary.

5×4 ft.	6×4½ ft.	7×5 ft.
21/-	35/-	55/- (I)

All prices on this page Carriage Forward.

THE "TRIUMPH" REGULATOR. (E)

(Patent No. 26361/1913.)



The "TRIUMPH" Regulator is for controlling the speed of small-power motors, of $1/50$ to $\frac{1}{8}$ h.p., no matter for what purpose the motor is employed. They are fitted with Roller Contact, which never injures the winding, and Rocker Bearing, which slides without friction. Full length 9 inches.

Substantially made with best Crystalline Finish.

PRICE £1 5 0

Carriage Forward.



CINEMATOGRAPH PROJECTOR MOTORS. (E)

With Reversible Pulley and Oil Cups.

For Direct Current,

$\frac{1}{8}$ H.P. any desired voltage ... £4 15 0

For Alternating Current.

$\frac{1}{8}$ H.P. any desired voltage ... £5 5 0

$\frac{1}{4}$ H.P. " " " ... £5 15 0

Above prices are for $\frac{2}{3}$ periods, 10% extra for higher periods.

Universal Type.

For using on both A.C. and D.C.

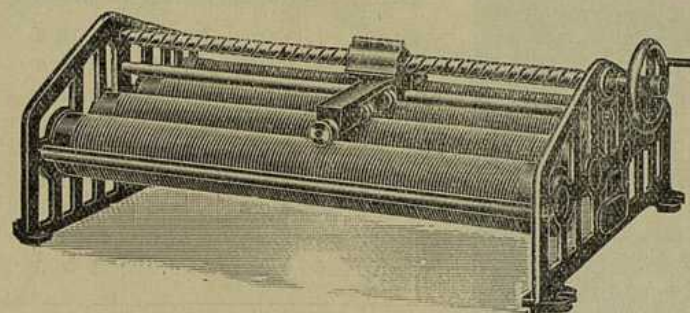
$\frac{1}{8}$ H.P. any desired voltage ... £6 0 0

Carriage Forward.

BELTING (I).
Leather, $\frac{1}{4}$ in., 6d. per ft.
Spring, $\frac{1}{4}$ in., 1/- "

DIMMERS. (N)

With Patent Roller Contacts.



Wonderfully effective lighting is obtained by the aid of Dimmers.

The gradual fading or intensifying of light and beautiful colour blending effects from darkness to dawn and onwards to sunset are invariably provided by the aid of Dimmers.

They are in fact a necessary adjunct to every Theatre, Cinema, Dance Hall or Exhibition, and can be used in conjunction with any of the appliances provided by us or any existing installations.

Important.

Perfection in dimming is obtained by employing the correct load for which the Dimmer is made, therefore when ordering, the load should be estimated as near as possible and stated.

The prices given below are for Standard Dimmers, but we can make any special Dimmer to order, such as may be required for producing special dissolving colour effect by one operation.

TUBULAR DIMMERS.

Length	Max. Load	1 Tube Price	Max. Load	2 Tubes Price	Max. Load	4 Tubes Price
15 ins.	1000 watts	£5 0 0	2000 watts	£7 10 0	4000 watts	£15 0 0
18 "	1250 "	£5 10 0	2500 "	£8 5 0	5000 "	£16 10 0
21 "	1500 "	£6 0 0	3000 "	£9 0 0	6000 "	£18 0 0

Maximum Current on One Tube Dimmer	...	...	...	18 amps
" " " Two Tube Dimmer, series connected	...	...	...	18 "
" " " " " parallel "	...	...	...	36 "
" " " Four " " series parallel connected	...	...	...	36 "
" " " " " full parallel connected	...	...	...	72 "

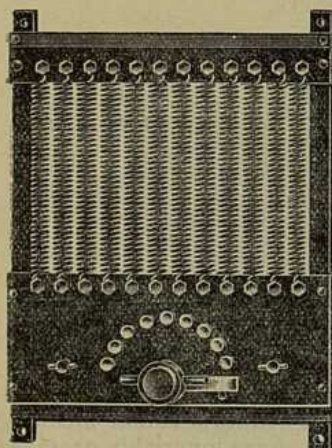
Extras.

Two Tube Dimmers connected in parallel ... }
Four Tube Dimmers connected in full parallel } **10%**

Carriage Forward.

ARC REGULATING RESISTANCES. (E)

(When ordering, exact voltage must be stated.)



Amperes	Volts 60-75	Volts 100-120	Volts 200-220	Volts 230-250
5-15	2 15 0	3 3 0	4 10 0	5 0 0
5-20	3 0 0	3 10 0	5 0 0	5 10 0
10-30	3 7 6	3 18 0	5 12 6	6 5 0
10-40	3 15 0	4 10 0	6 15 0	7 10 0
20-50	4 0 0	4 15 0	8 5 0	9 0 0
20-60	4 7 6	5 15 0	10 12 6	11 0 0
30-70	4 10 0	6 5 0	12 0 0	13 2 6
30-80	4 17 6	6 12 6	13 17 6	15 0 0
30-100	6 0 0	8 5 0	16 10 0	19 5 0

Duplex and Dissolving Resistances for fading and controlling two arc lamps, Parallel type with change-over switches, 75% on above prices; Rotary type 100% on above prices.

Wall Type (Non-Regulating). (E)

Amps	60/75 VOLTS	100/110 VOLTS	200/220 VOLTS	230/250 VOLTS
10	£1 17 6	£2 12 6	£3 17 6	£4 10 0
15	£2 0 0	£2 15 0	£4 10 0	£4 17 6
20	£2 2 6	£2 17 6	£4 15 0	£5 0 0
25	£2 5 0	£3 0 0	£5 5 0	£5 10 0

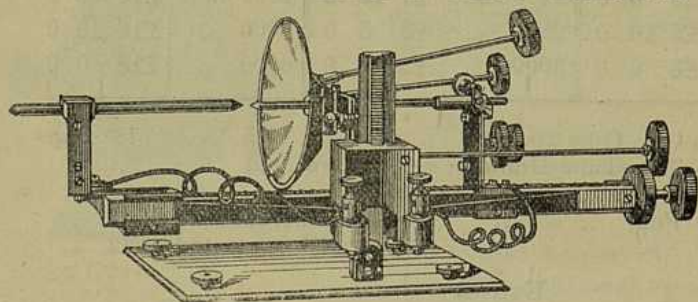
RESISTANCES for MIRROR ARC LAMPS. (E)

These are made with special fine adjustments, as ordinary arc resistances do not give satisfaction.

AMPS.	60/70 VOLTS	100/110 VOLTS	200/250 VOLTS
5-15	£3 3 0	£3 12 6	£5 15 0
10-25	£3 10 0	£4 5 0	£6 10 0

Dissolving Resistances for 2 Arcs, prices sent on application according to requirements.

MIRROR ARC LAMPS. (E)

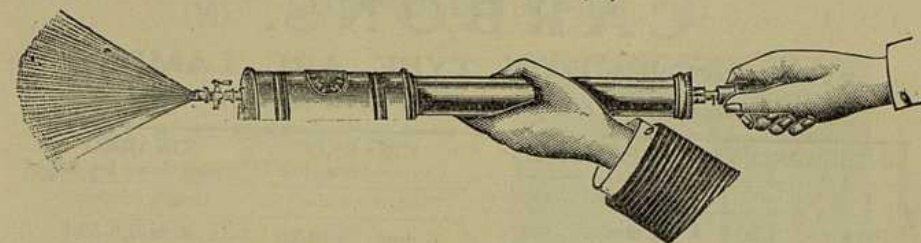


For Cinematograph Theatre Machines, and for projecting Powerful Beams of Light, similar to Searchlight.

Price £9 15 0

All Prices on this Page are Carriage Forward.

SPRAYERS. (E)



Very Best Quality Automatic Sprayer.

Made of Solid Brass and Fully Guaranteed.

Full Working Instructions supplied with each Sprayer.

Price £1 18 6

Carriage Forward.

SPRAY ESSENCE. (E)

1-oz. bottle	...	...	2/-
2-oz. bottle	...	...	3/9
4-oz. bottle	...	...	7/6

NOTE.—One 1-oz. bottle makes 1 gallon of fluid.

Carriage Forward.

SOLID BRASS DRUM-TYPE SPRAYER. (E)

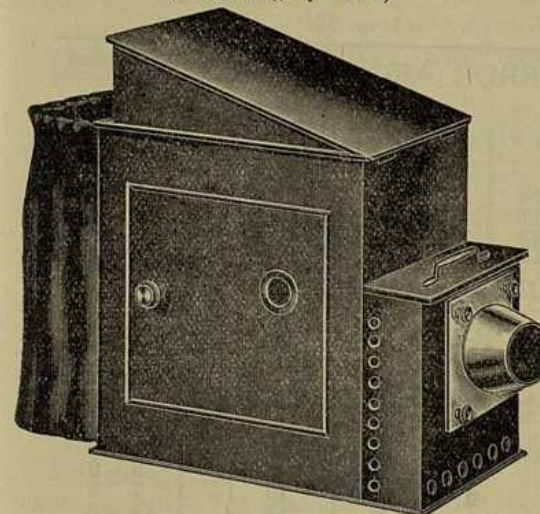


Price ... 15/-

Carriage Forward.

LANTERN BODIES. (E)

(Cinematograph Size).



Large Body, complete with 4½-in. Condensers,

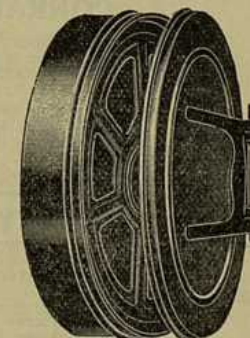
£2 15 0

Asbestos Curtain extra 5/9

Carriage Forward.

PROJECTOR SPOOL BOXES. (E)

(Fireproof).



ROUND OR SQUARE.

14 inches.

Per Pair

With Roller Traps £2 17 6

Without „ „ £1 17 6

Carriage Forward.

CARBONS. (N)

FOR PROJECTION TYPE ARC LAMPS.

All prices are per 100 pieces, except where otherwise stated.

KINARKO CORED POSITIVE				KINARKO Coppered Negative		KINARKO White Flame for A.C.	
Length 8 inches		Length 12 inches		Length 6 inches		Length 6 inches	
16 mm	20/6	16 mm	41/-	8 mm	16/6	16 mm	30/6
18 "	23/-	18 "	56/-	10 "	18/6	18 "	42/-
20 "	36/-	20 "	72/-	11 "	23/6	20 "	48/6
22 "	44/-	22 "	88/-	12 "	26/6	22 "	53/6
25 "	58/-	25 "	117/-	14 "	32/-	25 "	64/6

KINARKO MIRROR ARC CARBONS POSITIVE

Diameter	12-inch	9-inch	8-inch
13 mm	37/-	28/-	25/-
12 "	33/6	25/6	22/6
10 "	26/-	20/-	17/6
9 "	23/-	17/6	15/6
8 "	20/-	15/-	13/6

KINARKO MIRROR ARC CARBONS NEGATIVE

Diameter	12-inch	9-inch	8-inch
10 mm	26/-	20/-	17/6
9 "	23/-	17/6	15/6
8 "	20/-	15/-	13/6
7 "	17/6	13/-	11/6
6 "	15/6	11/6	10/6

PENCIL & STAGE ARC CARBONS

Length 6 inches

Solid Negatives				Cored Positives			
5 mm	9/6	11 mm	15/6	5 mm	9/6	11 mm	15/6
6 "	11/-	12 "	16/6	6 "	11/-	12 "	16/6
7 "	11/-	13 "	18/6	7 "	11/-	13 "	18/6
8 "	11/-	14 "	20/-	8 "	11/-	14 "	20/-
9 "	12/-	15 "	22/-	9 "	12/-	15 "	22/-
10 "	14/-	16 "	24/-	10 "	14/-	16 "	24/-

5 mm and 6 mm cored, 8 ins long, 15/-

CONRADTY MIRROR ARC CARBONS

For Use on Direct Current.

For Use on Alternating Current.

POSITIVE CORED Length 9 ins.		NEGATIVE SOLID Length 9 ins.		Length 8 ins. or 9 ins.			
12 mm	32/6	9 mm	19/6	8 mm	23/-	11 mm	39/-
11 "	28/-	8 "	16/6	9 "	27/-	12 "	44/6
10 "	24/-	7 "	13/6	10 "	32/9	13 "	50/-

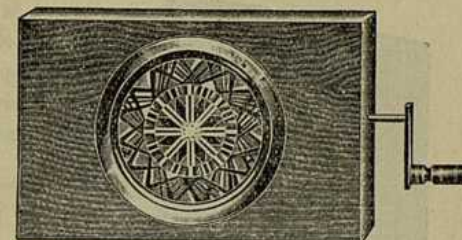
CONRADTY CARBONS for ORDINARY ARCS

Diameter mm	Cored Positive			Diameter mm	Solid Negative			Diameter mm	Coppered Negative Solid or Copper- coated Core		
	Per 100 Pieces 12 ins. long				Per 100 Pieces 6 ins. long				Per 100 Pieces 6 ins. long		
	£	s.	d.		£	s.	d.		£	s.	d.
14	2	9	0	10	0	14	0	8	1	3	0
16	3	2	0	11	0	15	3	9	1	5	0
18	4	1	9	12	0	17	6	10	1	7	9
19	4	10	0	13	1	1	0	11	1	10	0
20	4	17	0	14	1	4	3	12	1	11	9
22	5	17	6	16	1	10	0	13	1	13	6
24	7	2	6	17	1	14	6	14	1	15	0

Carriage Paid on orders of £5 and over.

CHROMOTROPES. (I)

Best Quality, 3-ins. diameter in a variety of patterns mounted in Mahogany Frame, 7 x 4½-ins.



PRICE, 21/- each

SLIDE ACCESSORIES. (I)

SLIDE WRITING INK (per box of Three Colours)	...	...	1	3
" MASKS (Assorted)	...	...	2	0
" BINDERS	...	...	2	0
" BLACK (for coating slides) in screw top bottle	...	...	1	3
SLIDES (Opaque) "Specialist" Brand; Black	...	per box	1	9
" " " " Black and White	...	...	2	0

"H.M. KING" and usual Announcement Slides. (I)

GLASS.

INDESTRUCTIBLE.

Plain	1/6
Coloured	2/0

Plain	3/3
Coloured	4/0

CLOCK SLIDES (I) with adjustable hands (unbreakable), 5/0

STANDARD LANTERN SLIDES. (I)

From Stock Negatives.

Travel, Religious, History, Educational, Illustrated Songs, etc.

Plain ... 2/- each. Coloured, 4/-

SLIDES MADE TO ORDER. (E)

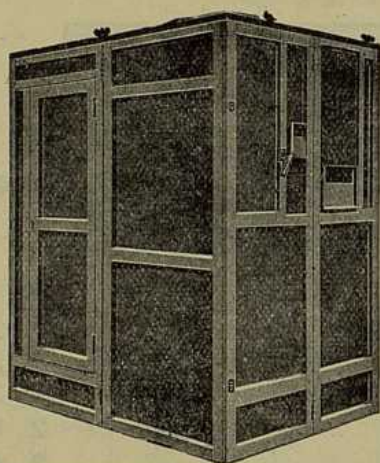
Special Announcements and Advertisements.

Designing and making up	...
From Prints (no making up)	...
From Negatives	...

FIRST COPY		REPEAT COPIES	
Black and White	Coloured	Black and White	Coloured
From	From	From	From
4/-	5/-	2/-	3/-
2/6	3/6	1/3	2/3
1/9	2/9	1/-	2/-

All Prices on this page Carriage Forward.

OPERATING HOUSES. (M)



Made with best Galvanized Steel Sheets, fitted with Metal Drop Shutters and all Fittings for opening and closing from inside and outside, also fitted with ventilator over machine, strong Wood Frames.

Size	Height	Length	Width	Price £ s. d.
1.	6 ft. 6 ins.	5 ft.	5 ft.	12 17 6
2.	7 ft.	5 ft.	5 ft.	14 0 0
3.	6 ft. 6 ins.	6 ft.	6 ft.	16 0 0
4.	7 ft.	6 ft.	6 ft.	18 0 0

Made to Order only. Delivery 7 to 10 days.

Carriage Forward.

FIRE SHUTTERS FOR OPERATING ROOM. (M)

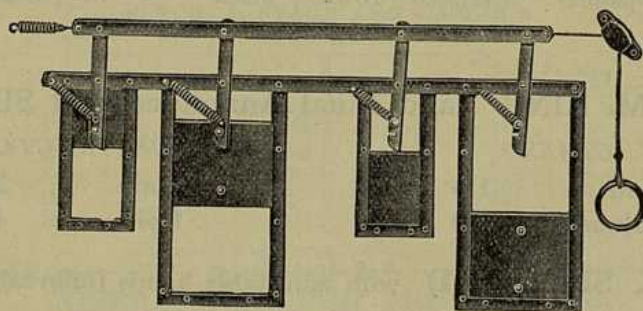


Illustration shows a 4-hole Shutter for 2 Projectors.

2-hole Shutter ...	£4 15 0	3-hole Shutter ...	£6 10 0
4-hole Shutter ...	£8 0 0	5-hole Shutter ...	£10 10 0
6-hole Shutter ...	£12 0 0		

Smoke-proof Window Frames ... 16/-

When ordering, a sketch should be sent giving measurements and position of each shutter.
Carriage Forward.

GANGWAY ROPES, &c. (N)

COMPLETE WITH REGULATION FITTINGS.

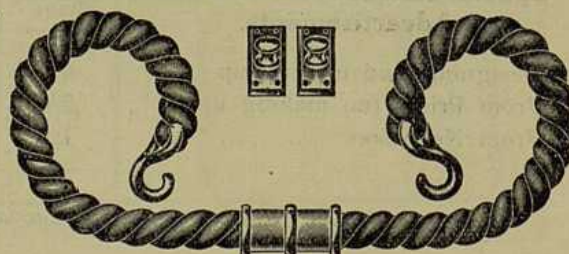
	s.	d.
Up to 3 ft. 6 ins.	17	6
Every extra 6 ins.	1	0

Brass Fittings only.

Complete Sets.

Price	s.	d.
... 10	6	

Carriage Paid.



AMMETERS AND VOLTMETERS. (I)

These Instruments are good quality and accurate in working.
and can be highly recommended.

When ordering, please state whether for A.C. or D.C. Circuits.

AMMETERS.

4-in. Dial.	6-in. Dial.
Reading	Reading
0.75 ... 32/-	0.75 ... 45/-
0.100 ... 35/-	0.100 ... 50/-
Carriage Paid.	

VOLTMETERS.

4-in. Dial.	6-in. Dial.
Reading	Reading
0.130 ... 37/6	0.130 ... 57/6
0.250 ... 49/6	0.250 ... 65/-
Carriage Paid.	

"Universal"

Ammeters and Voltmeters.

For use on A.C. or D.C. Circuits.

Nickelled Fittings, 5-in. Dial.

AMMETERS.	VOLTMETERS.
0.75 ... 50/-	0.130 ... 60/-
0.100 ... 55/-	0.250 ... 70/-
Carriage Paid.	

Special Central Zero Type.

Reading Charge and Discharge.

VOLTMETERS. AMMETERS.

Reading.	Reading.
15 0 15 volts.	4 0 4 amps.
20 0 20 "	8 0 8 "
25 0 25 "	12 0 12 "
50 0 50 "	15 0 15 "
1 1/2 in. Dial.	Price 10/6 each.
Carriage Paid.	

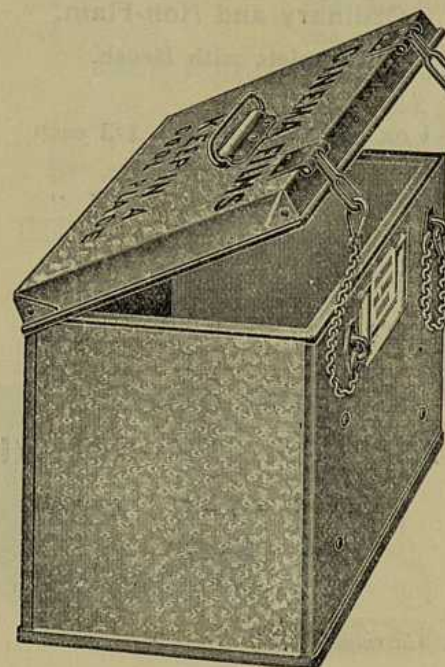
TRANSIT BOXES. (M)

for 12-inch Spools.

These boxes are made of galvanised iron, wood lined, conforming with necessary regulations.

PRICES:

To hold 1 spool ...	11/6 each
" 2 spools ...	12/6 "
" 3 " ...	13/6 "
" 4 " ...	14/6 "
" 5 " ...	16/6 "
" 6 " ...	18/6 "
" 7 " ...	25/- "
" 8 " ...	32/6 "
Carriage Forward.	



SPOOLS. (I)

Best quality Japanned, with Rolled Edge, stamped out of sheet steel, with wooden core and brass centre.

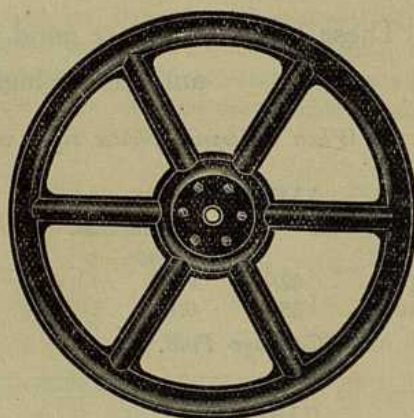
For $\frac{3}{8}$ " or $\frac{1}{2}$ " Spindles :

10-inch diam.	...	4/-	each
12 "	...	4/6	"
13½ "	...	5/-	"

Special Split Spools.

10-inch diam.	...	5/6	each
12 "	...	6/-	"
13½ "	...	6/6	"

Special Quotations given for Quantities.



LACQUER. (N)

Specially Prepared Lacquer.

For Colouring Lamps.

In ½-pint bottles.

Any Colour 3/9 per bottle.

HEAT EXTRACTORS. (I)

To enable films to be exhibited stationary without risk of fire.

Unbreakable.

For 20/40 amps.	...	2/6	each
" 45/70 "	...	3/-	"
" 80/100 "	...	3/6	"

The above fit ordinary slide carriers.

When ordering, state power of illuminant used.

ASH TRAYS. (M)

Fixed Pattern, Oval Shape.

Prices on Application.

ARC LEADS. (I)

Asbestos Covered.

30/100 amps. (Soldered & Bound)	per pair	5/6
30/100 "	per yard	5/6

If fitted with Brass Lugs,

1/- per Lug extra.

All prices on this page, Carriage Forward.

CURTAINS. (C)

For Back of Lanterns.

	Size	Price
Asbestos,	22 x 16½ ins.	5/9
Black	14 x 14 "	3/-
Fireproof	14 x 11 "	1/6

FILM CEMENT. (I)

Ordinary and Non-Flam.

Complete with Brush.

1 oz. Bottle	...	1/3	each
2 "	...	2/-	"

FILM SPACING. (I)

50 feet, 2/6

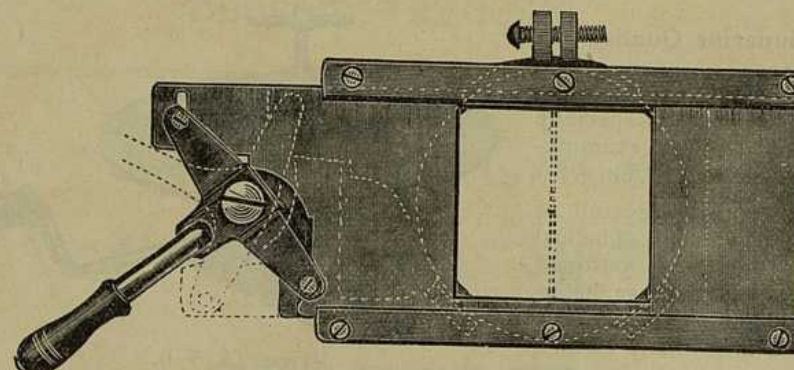
100 " 5/-

ASBESTOS BLANKETS. (I)

Made to any Size Required.

1/6 per Square Foot.

CURTAIN LIGHT CUT-OFF. (I)



Made of Solid Brass. Will fit any standard lantern cone, by means of a clamping ring, operated by a screw. In use, the effect produced is the gradual illumination of the picture or slide with a positive curtain effect.

Price ... 10/6
Carriage Forward.

CINEMATOGRAPH LENSES AND JACKETS. (I)

2 ins. diameter Tube, special high-grade "Siamor" quality	...	4 10 0
2 " " " ordinary quality	...	2 10 0
1½ " " " special high grade "Siamor" quality	...	3 15 0
1½ " " " ordinary quality	...	1 10 0
1½ " " " cheap quality	...	0 15 0
RACK JACKETS, for 2-in. diameter Tube	...	1 5 0
" " " 1½-in. " "	...	1 0 0

Carriage Paid.

When ordering, please state whether large or small diameter and focus of lens required.

For CINEMATOGRAPH LENS TABLE see page 2.

ILLUMINATED SIGNS. (M)

Suitable for lighting with Electricity, Gas, or Oil.
Stencil-Cut Letters and Sliding Fronts.

"EXIT" Boxes.

Without glass	...	12/6	each
With glass	...	15/-	"

"EMERGENCY EXIT,"
"CLOAK ROOM," "LAVATORY,"

And other special signs.

Without glass	...	15/-	each
With glass	...	17/6	"

Carriage Forward.

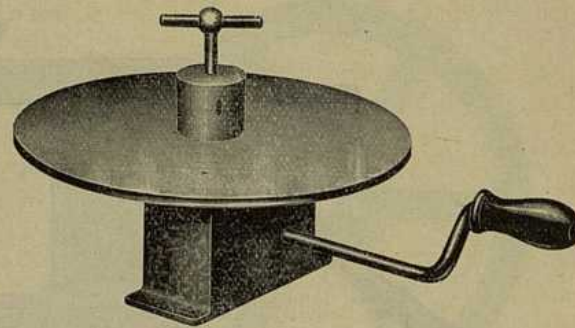


REWINDERS. (I)

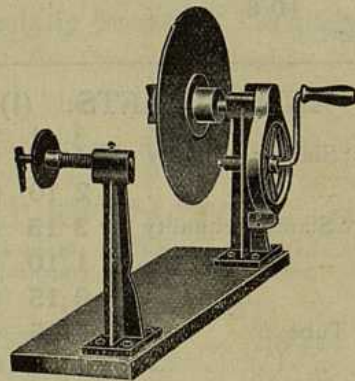
Superior Quality Table Rewinder.

This Rewinder is specially designed for the examination and joining of films.

The handle is geared to the table by means of helical gears running in oil-tight gear case, the case being crystallined enamel. The table is aluminium 10-inch diameter, $\frac{1}{4}$ -inch thick, centre core is removable.



Price £5 5 0.
Carriage Forward.



Superior Quality Gear Type Rewinder.

For re-winding spools; with slip
cheek to remove films from spools.

Complete on Polished Baseboard.

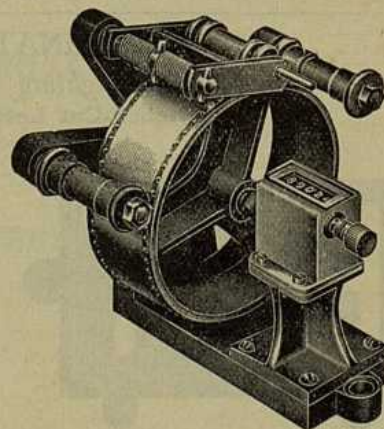
Price £2 15 0.
Carriage Forward.

FILM MEASURERS. (N)

*A thoroughly reliable instrument for
correct measuring any length of film.*

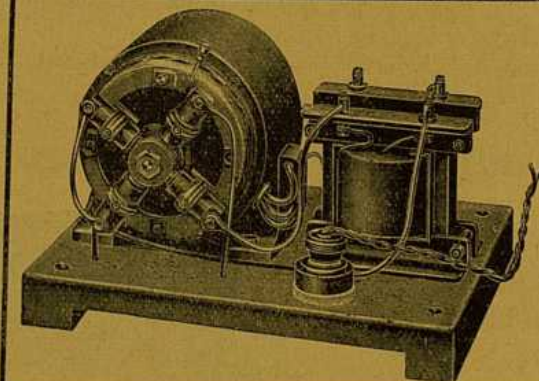
Fitted with a 16-picture sprocket and direct-reading counter, registering up to 100,000 ft. The indicator can be set to zero, by just a movement of the thumb and finger. The measurer can be fixed between the two spools on any film winder, and will correctly indicate the number of feet of film, when sprocket is turned in either direction.

Price £3 19 6
Carriage Forward.



Season, 1928-29.

ELECTRICAL CHARGING SETS AND RECTIFIERS



Suitable for
CINEMAS, THEATRES,
GARAGES
and PRIVATE HOUSES.

For:

Optical Lanterns, &c.	see Section "A"
Focuslite Outfits	" " "B"
Spotlights, Floodlights, &c.	" " "C"
Cinematograph Projectors, &c.	" " "D"

Section "E."

Sept, 1928.

FORE - WORD.

The charging of accumulators, for motor car, wireless purposes, provides a considerable source of revenue to Garage Proprietors, electrical contractors and wireless retailers.

In the following list will be found a range of highly efficient battery charging installations, including units for use in the home, charging stations, also complete equipment for sets of greater capacity for use in cinemas, etc., or where it is desired to charge a considerable number of batteries.

Direct Current is an essential of the Kinema Theatre. The reason is that alternating current arcs of low frequency, produce a decided flicker, in addition to being very inefficient.

The ordinary motor generator, operating from A.C. mains, is a source of considerable loss in efficiency, and by using a Commutating Rectifier Outfit, the initial outlay is saved in a very short time.

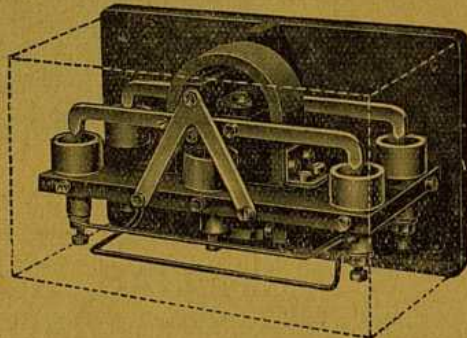
AUTOMATIC POLARITY CHANGE-OVER SWITCH.

PRICE COMPLETE

with 9 oz. bottle Mercury,

£3 15 0

Carriage Forward.



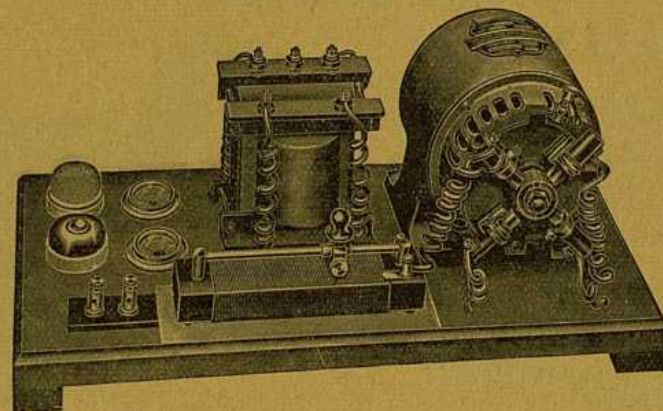
As shown in the illustration, this device is of sound construction and is absolutely reliable. (Carrying capacity up to 50 amperes).

Mounted on bakelite, the mercury cups and arms are made of steel. The magnet is wound with insulated copper wire and the body is constructed of cobalt steel. The whole changeover is enclosed in a steel case, crystal lined, with glass front. When ordering state voltage on which switch will be used.

A Special Technical Department is at your disposal for advice on any matters relating to A.C. Rectifiers.

COMMUTATING RECTIFIERS.

Nos. 1A and 1B.



Combined Rectifier and Switchboard.

Rectifier, mounted complete on switchboard, with Transformer, Central Zero Ammeter and Voltmeter, Battery Terminals, Switch and Fuse, Regulating Resistance, Flex lead and Plug.

As will be seen from the illustration, the machine is small and compact.

The Commutator is readily accessible for cleaning and replacement brushes, an essential item where rotary plant is concerned.

This machine has been specially designed for battery charging and efficiencies of approximately 90 per cent. are obtained.

PRICES.

Complete Outfit.

No. 1A. Output 25 volts. 5 amps.	£13 10 0 (N)
No. 1B. " 50 " 5 "	£14 0 0 (N)
If separate Switchboard required (extra)	£1 10 0 (N)

Carriage Forward

N.B.—Above prices are for Rectifiers to be used on any normal Voltage (Single Phase), 100 to 250 Volts., 50/100 Cycles.

For 40 Cycles 10% extra, 25 Cycles 25% extra.

When ordering please state Voltage and periodicity of supply and whether 25 Volt or 50 Volt output is required.

COMMUTATING RECTIFIERS.

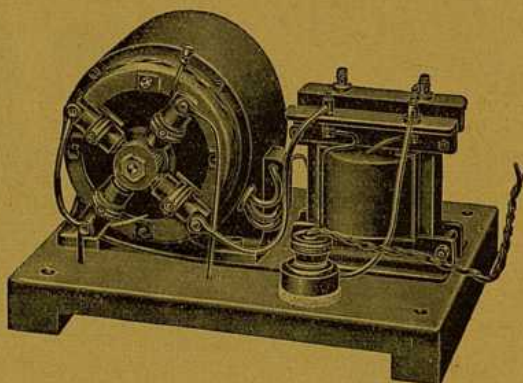
WITH SEPARATE SWITCHBOARD.

Nos. 2A and 2B.

Rectifier.—A thoroughly reliable machine which is gaining in popularity and is in use extensively where Alternating Current is supplied. Some form of rectifier is essential before Direct Current can be obtained, and this machine is the latest development in apparatus of this kind.

This Rectifier has a far greater efficiency than most types of Rectifiers, and maintenance costs are negligible.

A sturdy little machine that will give satisfaction in every way, and repay the initial outlay in a very short time.



Switchboard.

For the control of the Rectifier, a Switchboard is supplied, upon which is mounted a Central Zero reading Voltmeter and an Ammeter; also a variable Resistance for regulating the output. Other instruments fitted on the board, include a Change-over Switch for changing Polarity, a Fuse Box, Tumbler Switch and Plug Socket, including Two-pin Plug.



COMPLETE OUTFIT.

Rectifier.—Mounted on wood base, complete with Transformer and two pin plug and flexible cord for connecting direct to Switchboard.

Switchboard.—Central Zero Voltmeter, Ammeter, Double Pole Change-over Switch, Regulating Resistance, Two-Pin Plug and Socket, Porcelain Fuse, Tumbler Switch, Terminals (for Mains), &c., &c., Wired and ready for use.

PRICES.

No. 2A—Output 50 volts 10 amps £19 10 0 (N)

No. 2B— " 50 " 15 " £21 10 0 (N)

Carriage forward.

N.B.—Above prices are for Rectifiers to be used on any normal Voltage (Single Phase), 100 to 250 Volts, 50/100 Cycles.

For 40 Cycles 10% extra, 25 Cycles 25% extra.

When ordering please state Voltage and periodicity of supply and whether 25 Volt or 50 Volt output is required.

Scrap your Motor-Generator!

You could not afford to book and pay for twice as many films as you can run. Yet if you are using a motor-generator, you are paying for twice as much current as you use.

On account of its wonderful efficiency, the "Triumph" Rectifier will actually halve your current bills.

Further, owing to the peculiar properties of rectified current, a whiter light is obtained, giving a more pleasing picture on the screen.

The Standard Machines are constructed to give a pressure of 70 to 75 volts, and to carry a normal load of 30 and 40 amps, and a temporary overload of 60 and 80 amps respectively for change overs.

The projector motors may also be run off it, but it is not suited to running fans or other motors, owing to the inductive properties of rectified current.

To ascertain what the "Triumph" will save *you*, make this simple calculation: multiply the consumption of your arc in amps. by the hours run per week, and divide by 12. Compare the result with your present meter readings—it will convince you.

BRITISH MANUFACTURE THROUGHOUT.

The keynote of the "Triumph" is simplicity. It has no expensive and fragile valves needing periodical replacement—no windings which can be burnt out by a sudden overload. Installation is the work of a few minutes.

At normal loads, not a spark can be seen at the commutator.

The introduction of the "TRIUMPH" A.C. CINEMA RECTIFIER marks a step forward in cinema efficiency.

Perfected after exhaustive tests, it is the simplest, cheapest and most efficient means of supplying projectors from an alternating circuit. It is as great an advance over the motor-generator as the modern mirror arc over the old type vertical arc.

The "Triumph" A.C. Rectifier.

The "Triumph" Rectifier is :—

Efficient : The actual efficiency is over 90 per cent., as compared with the efficiency of 60 per cent. of the motor-generator. Thus it will considerably lower current bills, and pay for itself in a few months. It is particularly suited to mirror arcs; in cases where these are running off a large motor-generator installed for vertical arcs, the saving will be even more marked.

Foolproof : Only two switches to work. Unlike other mechanical rectifiers, the polarity *cannot* be reversed.

Reliable : Over 2,000 of these machines are in use for battery charging, running day and night for seven days a week, without attention and without loss of efficiency.

Care-Free : The "Triumph" needs no maintenance beyond occasional cleaning and oiling. The voltage remains constant, and there is no shunt regulator to adjust.

Self-Contained : Installation of the "Triumph" involves only fixing two pairs of leads to the rectifier terminals. It is small enough to go into the smallest operating box.

SPECIFICATION.

Synchronous running ball-bearing motor, carrying large diameter copper commutator.

Special self-lubricating brushes, with adjustable spring tension, carried on adjustable rocker.

"Triumph" double wound static transformer.

Heavy ironclad switchgear, comprising automatic polarity controller, primary and secondary D.P. switches and fuses, on aluminium panel.

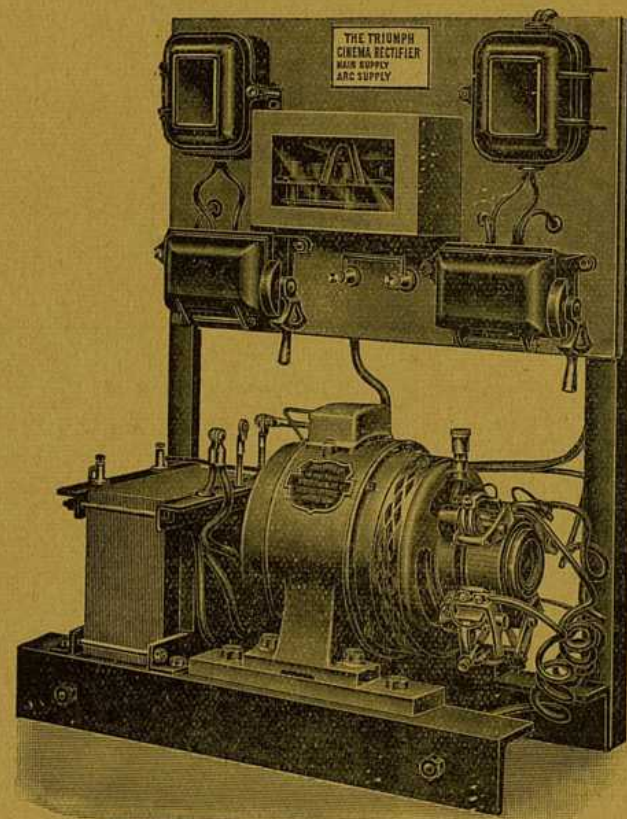
Mounted on angle-iron bed-plate.

DIMENSIONS.

24 in. long × 12 in. deep × 30 in. high.

Every machine is sent out complete with full instructions, and a blue-print of wiring.

The "Triumph" A.C. Cinema Rectifier.



PRICES.

2 K.w. Outfit for any standard single-phase, voltage and periodicity **£38 0 0 (E)**

3 K.w. Outfit, for any standard single-phase, voltage and periodicity **£57 10 0 (E)**

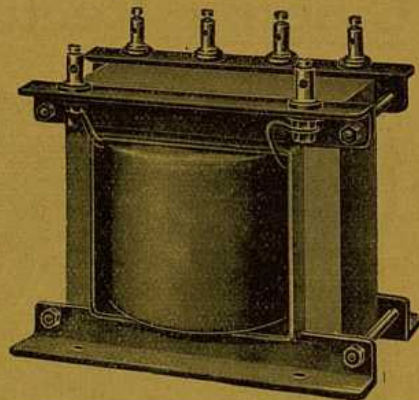
Carriage forward.

(This price is for delivery ex works, carriage and packing extra. Hire-purchase terms will be quoted on request). Prices on application for machines for non-standard voltages and periodicities or two- or three-phase supply, also for larger machines suitable for vertical and high-intensity arcs.

Prices and specification liable to alteration without notice.

"TRIUMPH" TRANSFORMERS.

(AIR-COOLED—SINGLE-PHASE).



Primary Voltage	SECONDARY		Auto Wound Price (£)	Primary Voltage	SECONDARY		Auto Wound Price (£)
	Volts	Amps			Volts	Amps	
100/110	22/25/30	5	50/-	100/110	25	5	40/-
100/110	22/25/30	10	60/-	100/110	50	5	45/-
100/110	22/25/30	20	80/-	100/110	50	10	70/-
100/110	22/25/30	30	120/-	100/110	50	15	75/-
200/220 or 230/250	22/25/30	5	53/-	200/220 and 230/250	25	5	50/-
200/220 or 230/250	22/25/30	10	66/-	200/220 and 230/250	50	5	55/-
200/220 or 230/250	22/25/30	20	88/-	200/220 and 230/250	50	10	77/-
200/220 or 230/250	22/25/30	30	130/-	200/220 and 230/250	50	15	90/-

Above suitable for Focus Light Lamps Nos. 2 and 6 (Section B), Models, Laboratory Work, Charging Sets &c.

Above suitable for Rectifier Outfits Charging Sets (Section E). 50 volt Secondary, suitable for Arc Lamps. (With Resistance in circuit).

All Prices on this page are for 50—100 Periods	Primary Voltage	SECONDARY		Double Wound (£)	Extras 40 Periods + 10% 25 " + 25%
		Volts	Amps		
	any named voltage 100/250	70-75	30	120/-	
		70-75	40	150/-	

3-PHASE TRANSFORMERS quoted on receipt of particulars.

Any Transformer required not in above list, including **Double Wound**, quoted for on receipt of following particulars:—Primary Voltage, Phase and Periodicity, Secondary Voltage and Amperage.

All Prices on this page, Carriage Forward.

