KALEE

Kalee Projection Lenses are manufactured throughout by
A. KERSHAW & SONS, LTD., LEEDS

for

G.B-KALEE LIMITED

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Everything for the Cinema

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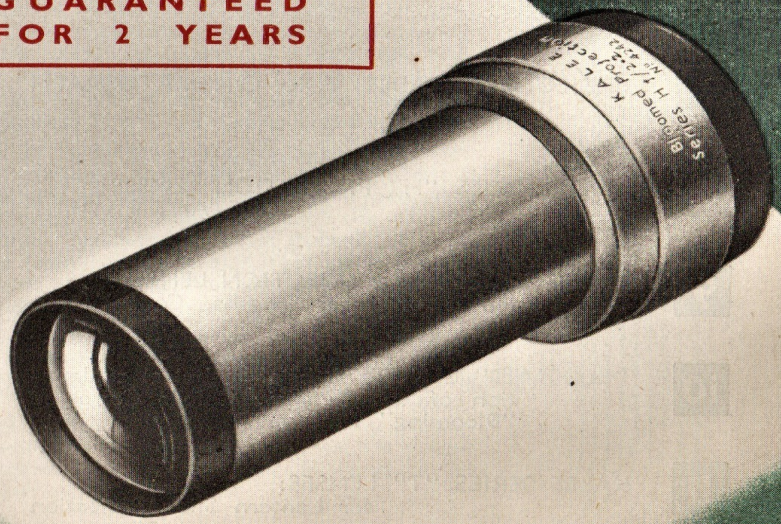
KALEE

COLOUR CORRECTED "BLOOMED"

PROJECTION LENSES

GUARANTEED FOR 2 YEARS



MAXIMUM *WHITE* TRANSMISSION

Kalee Projection Lenses are produced throughout by British labour and of British materials, and are distributed exclusively by G.B-Kalee Ltd., National House, 60, Wardour St., London, W.1.

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Illustrations are not binding.

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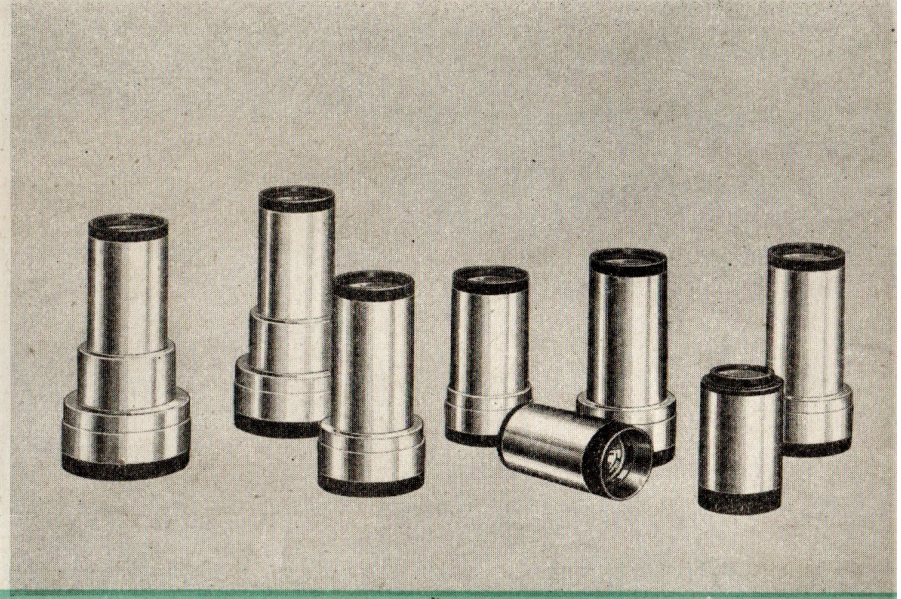
KALEE

COLOUR CORRECTED **'BLOOMED' PROJECTION LENSES**



Kalee Series "H" Lenses 3in. to 4¼in. inclusive are of Straight Barrel type

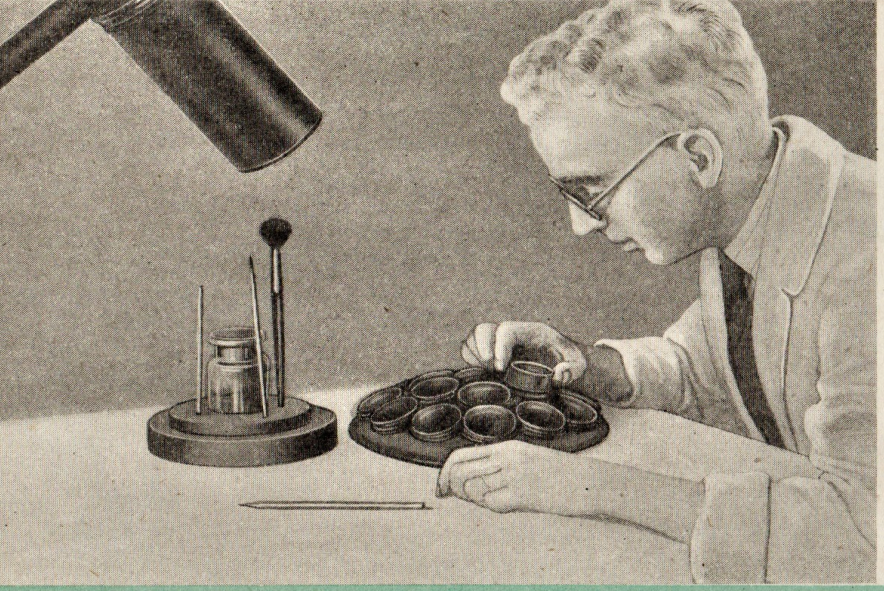
MORE LIGHT NEEDED

KERSHAW LABORATORIES DEVELOP NEW LENSES

The increasing demand for brighter screens, and the need for a projection lens to make full use of the light provided by modern Arclamps, led to researches which resulted in the production of the Kalee colour corrected "Bloomed" projection lens, Series "H." It is the outcome of co-operation between scientists familiar with the most up-to-date optical principles and manufacturing technique and the technical staffs of G.B-Kalee Ltd. with their wide knowledge of projectionists' requirements, in a combined effort to provide the exhibitor with the best projection lens it is possible to manufacture.

The Kalee Series "H" projection lens has been computed by expert mathematicians, and embodies the constant F value optical principle to provide maximum screen illumination irrespective of the focal length of the projection lens. Specially produced optical glasses of high transparency have been used and elaborate testing plant has been developed to achieve the corrections specified by the Kershaw designers.

The lens surfaces have been coated with a refractive medium to increase light transmission and improve image contrast. This process is known as "blooming." The Kalee "blooming" process is a modification of the usual technique, specially designed for application to projection lenses to ensure automatic correction of the colour of the light reaching the screen, and to produce an intense pure white projection beam.



Kalee Projection Lens components are put to test by the monochromatic light interference method

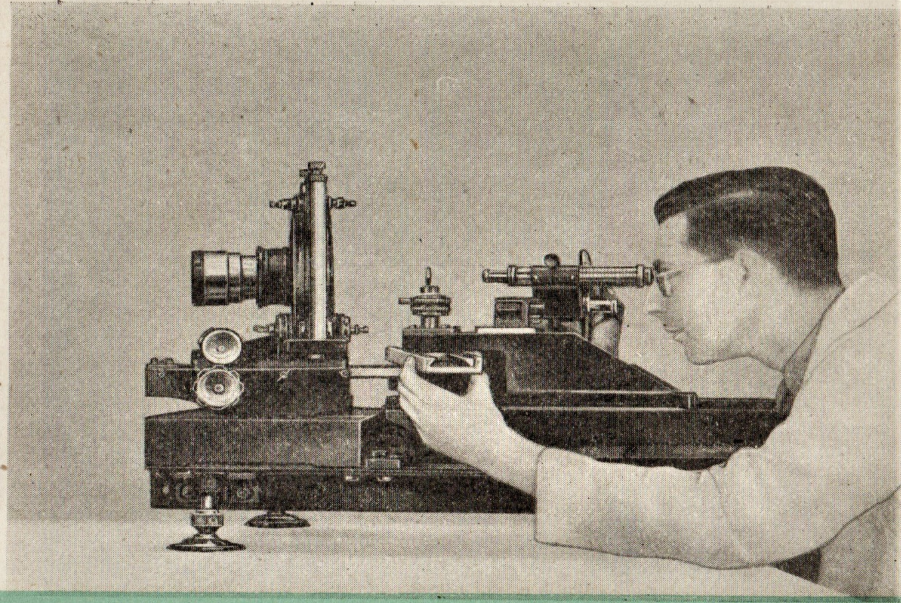
MORE LIGHT NEEDED—(cont.)

A fuller explanation is given on page 10 (this novel process is an invention from the Kershaw research laboratories upon which Patent is pending).

To summarise, the Kalee Series "H" projection lens has been designed to pass more light; to provide sharp critical definition all over the screen, and to convert all the light beam into image-forming light resulting in brilliant contrasty pictures. In many instances a gain of 50 per cent. more light is achieved by installing Kalee Series "H" lenses.

CHANGE OVER TO KALEE LENSES NOW! and take advantage of the most modern development in optical projection technique.

The projection chart on page 7 will enable you to select the focal length of the projection lens for your specific screen size and throw, and our technical advisory department is at your service to solve your problems concerned with screen illumination.



Kalee Series "H" lenses are individually checked tc ensure highest optical performance

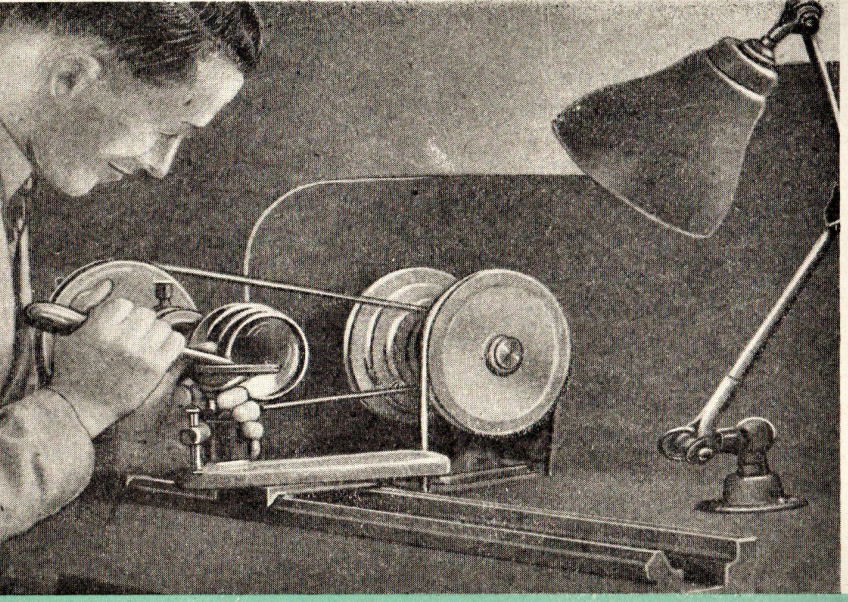
MAKING & TESTING KALEE LENSES

Kalee projection lenses are a precision optical production. The lenses are ground and their surfaces polished to an accuracy of a few millionths of an inch, and this accuracy is put to test by the monochromatic light interference method.

In mounting the optical elements, extreme care is taken that each unit is "centred" and special instruments have been devised to ensure that each individual lens is accurately centred and aligned correctly on a common axis.

Prior to assembly, the lenses are "bloomed" by the unique Kershaw process which ensures the transmission of brilliant white light, and finally, the completed lens is tested under actual theatre conditions.

Use is made of photo-electric cell photometers located at critical positions on the screen which record infallibly the intensity of light on the screen. This test is free of all possible human errors — guess-work is eliminated. The use of photo-electric photometers for the measurement and comparison of screen illumination is typical of the severe tests applied to Kalee projection lenses. Kalee Series "H" Lenses invariably demonstrate their superiority when such irrefutable comparisons can be made.



The highest skill is employed for mounting and accurately centring Kalee Lens components

SELECTION OF CORRECT FOCAL LENGTH

The focal length of the lens governs the size of the picture projected to the screen; the longer the focal length the smaller the picture. The projection chart (opposite) has been calculated for cinematograph projection lenses assuming a gate mask of .825" x .600" commonly used with sound on film systems.

Accurate selection may be made by using the formula below:

D = distance from lens to screen (in feet)
P = width of picture (in feet)
M = width of mask (in inches)
F = focal length of projection lens (in inches)

Example for use of the formula:

To find the focal length of the projection lens necessary to project a picture 23ft. wide at 120ft. throw:

$$F = \frac{D \times M}{P} \qquad F = \frac{120 \times .825}{23}$$

therefore F = 4¼".

PROJECTION TABLE FOR CINEMATOGRAPH LENSES

SHOWING WIDTH OF SCREEN PICTURE AT DIFFERENT DISTANCES WITH LENSES OF DIFFERENT FOCAL LENGTHS

"TALKIE" MASK APERTURE 0.825 in. WIDE.

Distance Lens to Screen. Feet.	FOCUS OF LENS IN INCHES																										Width of Picture
	3 in.		3¼ in.		3½ in.		3¾ in.		4 in.		4¼ in.		4½ in.		4¾ in.		5 in.		5¼ in.		5½ in.		5¾ in.		6 in.		6¼ in.		6½ in.		6¾ in.		7 in.		
	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	
20	5	5	5	0	4	7	4	3	4	0	3	9	3	7	3	4	3	2	3	0	—	—	3	8	3	6	3	4	3	2	3	1	—	—	—	—	
25	6	9	6	3	5	9	5	5	5	1	4	9	4	6	4	3	4	0	3	10	3	8	3	5	3	2	4	0	3	10	3	8	3	7	3	5	
30	8	2	7	6	7	0	6	6	6	1	5	9	5	5	5	1	4	10	4	7	4	5	4	2	4	0	3	10	3	8	3	7	3	5	4	0	
35	9	6	8	9	8	2	7	7	7	1	6	8	6	4	6	0	5	8	5	5	5	2	4	11	4	8	4	6	4	4	4	2	4	0	4	7	
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60	16	5	15	1	14	0	13	1	12	3	11	6	10	11	10	4	9	9	9	4	8	11	8	6	8	2	7	10	7	6	7	3	7	0	7	7	
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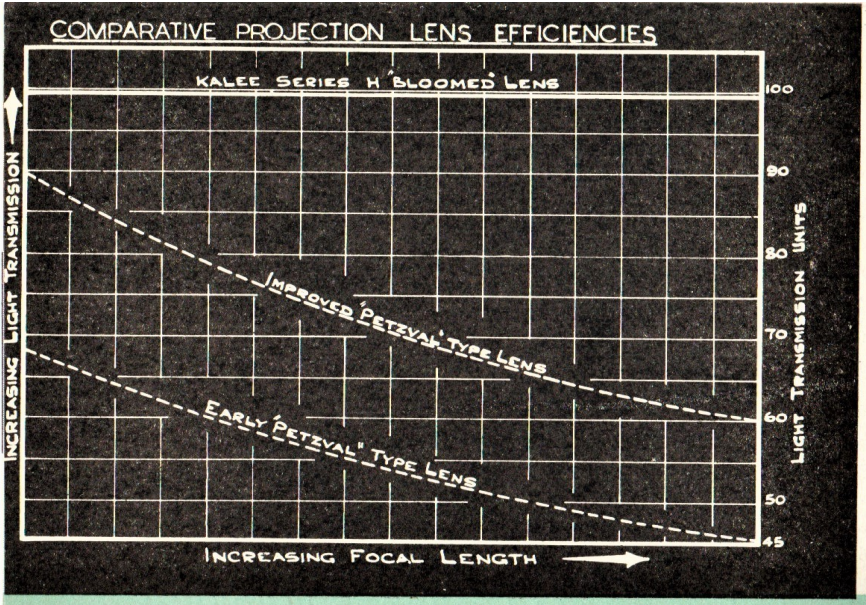
140	38	5	35	5	32	11	30	8	28	9	27	1	25	7	24	2	23	0	21	11	20	11	20	0	19	2	18	4	17	8	17	0	16	5	17	0	
145	39	9	36	8	34	1	31	9	29	10	28	0	26	6	25	1	23	10	22	8	21	8	20	8	19	10	19	0	18	4	17	7	17	0	17	7	
150	41	2	38	0	35	3	32	11	30	10	29	0	27	5	25	11	24	8	23	6	22	5	21	5	20	6	19	8	18	11	18	3	17	7	18	2	

The height of the picture is approximately ¾ the width.



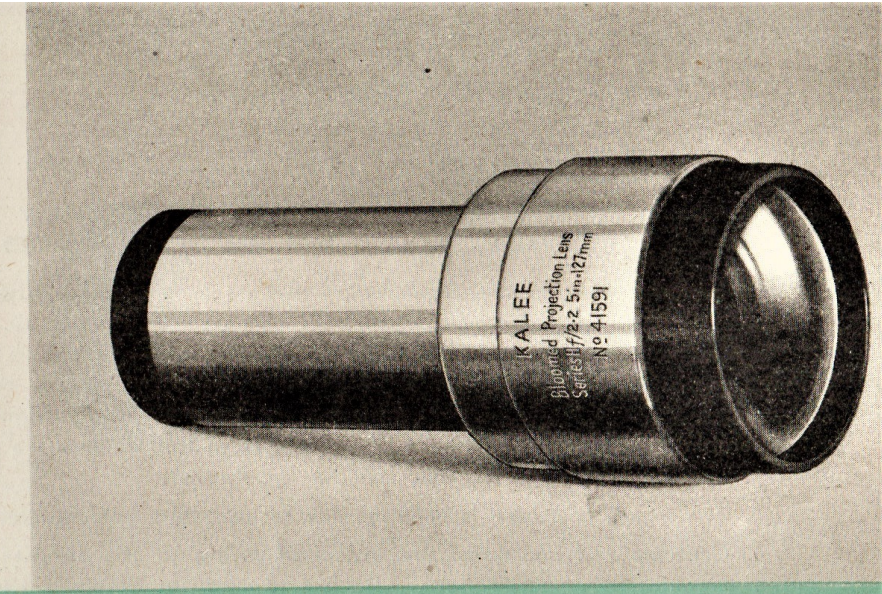
KALEE SERIES "H" PROJECTION LENSES

CONSTANT F VALUE

The whole range of Kalee Series "H" projection lenses possess a constant F value. This means that each lens, whatever its focal length, passes the same maximum amount of light to the screen, as is graphically illustrated by the straight line characteristic in the chart above. This feature has been achieved by making the diameters of the lenses increase in direct proportion to the focal lengths; as will be seen from the chart above, a considerable gain of illumination is obtained by Series "H" lenses.

A short back focus allows the lens to approach close to the film gate and collect a maximum angle of light, and the large front component provides a clear path for the rays to reach the screen without being cut-off—a vital necessity when used in conjunction with the large aperture condensers. A further novel feature of the Kalee Series "H" lenses is its property of converting the light beam into useful image forming light, resulting in crisp, contrasty pictures evenly illuminated over the whole screen.

The finish of the Series "H" projection lens is attractive; black enamelled cells contain the optical components which are robustly mounted in satin-finish chromium-plated tubes.



KALEE SERIES "H" PROJECTION LENSES

Focal Length In inches	Focal Length In mm.	Code Word	For Standard Lens Holders
3″	76	Halen	
3¼″	83	Hemip	1.67″ (42.4mm.) diam.
3½″	89	Hinor	
3¾″	95	Hopus	
4″	102	Hurat	
4¼″	108	Hasev	
4½″	114	Hetix	
4¾″	121	Hivoy	
5″	127	Howuz	2.06″ (52.4mm.) diam.
5¼″	133	Huxab	
5½″	140	Hayec	
5¾	146	Hezid	
6″	152	Hibof	

NOTE: Lenses of 4¼″ focal length and less, are of the straight barrel type.

A pair of neat lens caps is furnished to protect the lens surfaces when the instrument is not in use.

An instructional booklet describing the care and maintenance of Kalee Series "H" projection lenses is enclosed with each lens. Make sure that you obtain this booklet, and carefully observe the advice contained therein.

BLOOMED LENSES

A BRIEF TECHNICAL EXPLANATION OF THE KERSHAW COLOUR CORRECTED BLOOMING PROCESS FOR PROJECTION LENSES

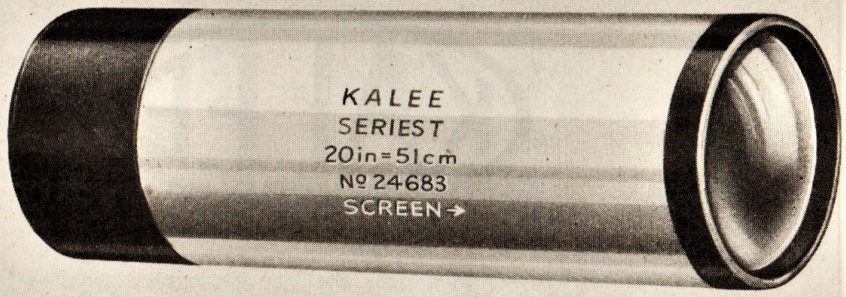
It is a well-known optical phenomenon that under normal conditions a loss of over 5 per cent. of light occurs on passing through an air to glass surface. "Blooming" of the lens surface eliminates most of this loss, and restores the light to the projected beam. A projection lens containing four to six air-to-glass surfaces must, therefore, fail to transmit a considerable proportion of the light it receives from the arclamp via the gate. "Blooming," therefore, has two obvious advantages:

1. The image or screen is brighter due to increased transmission of light.
2. Contrast and definition are improved owing to the almost complete elimination of stray light reflected to and fro between the various lens surfaces.

Experiments have proved that normally this advantage can only be secured at the cost of affecting the colour of the light. This is readily seen by examining a bloomed surface by reflected daylight; it appears purple instead of white. In a similar way, if a first-class arclamp and screen both in perfect working condition are employed, it will be seen that an ordinary "bloomed" lens provides a brighter screen, but of pale yellow colour which is so frequently associated with the use of poor carbons or is the result of dirty lens surfaces or screen. etc.

The Kalee "colour corrected" bloomed lens is an invention from the Kershaw research laboratories upon which Patent is pending, and is a modification of the normal process designed to overcome this disadvantage. The composition of the transmitted light is carefully adjusted so that the screen appears a brilliant white, while preserving all the other advantages of ordinary blooming.

It is easy to recognise a Kalee "colour corrected" lens. Examine it by reflected light: the lens surfaces appear straw coloured—distinct from the purple of ordinary bloomed lenses. Remember:—the straw coloured lens guarantees a brilliant white screen.



KALEE SERIES "T" LENSES

FOR LANTERN SLIDE PROJECTION

The outstanding range of lenses for slide projection. The Kalee Series "T" lenses are the result of accurate computation and experiments and are subjected to the same exacting tests as Kalee cinematograph projection lenses. This Series is not to be confused with lenses of the Petzval type—definition is even over the entire screen, and screen brightness is up to 15 per cent. greater. Surface treatment of these lenses is not strictly necessary, and therefore, KALEE SERIES "T" LENSES ARE NOT BLOOMED.

To find the focal length required use the formula on Page 6 but assume a slide mask size of 3". For example: to find the focal length necessary to project a picture 12 feet wide at 80 feet throw:

$$F = \frac{D \times M}{P} \quad F = \frac{80 \times 3:}{12} \text{ therefore } F = 20"$$

Kalee Series "T" lenses are made in the following focal lengths:

16in. (41cm.)	24in. (61cm.)
18in. (46cm.)	26in. (66cm.)
20in. (51cm.)	28in. (71cm.)
22in. (56cm.)	30in. (76cm.)

For standard lens holders 2.06in. (52.4mm.) diameter.

Code Word: TEKON

When coding add focus in inches to Code Word.