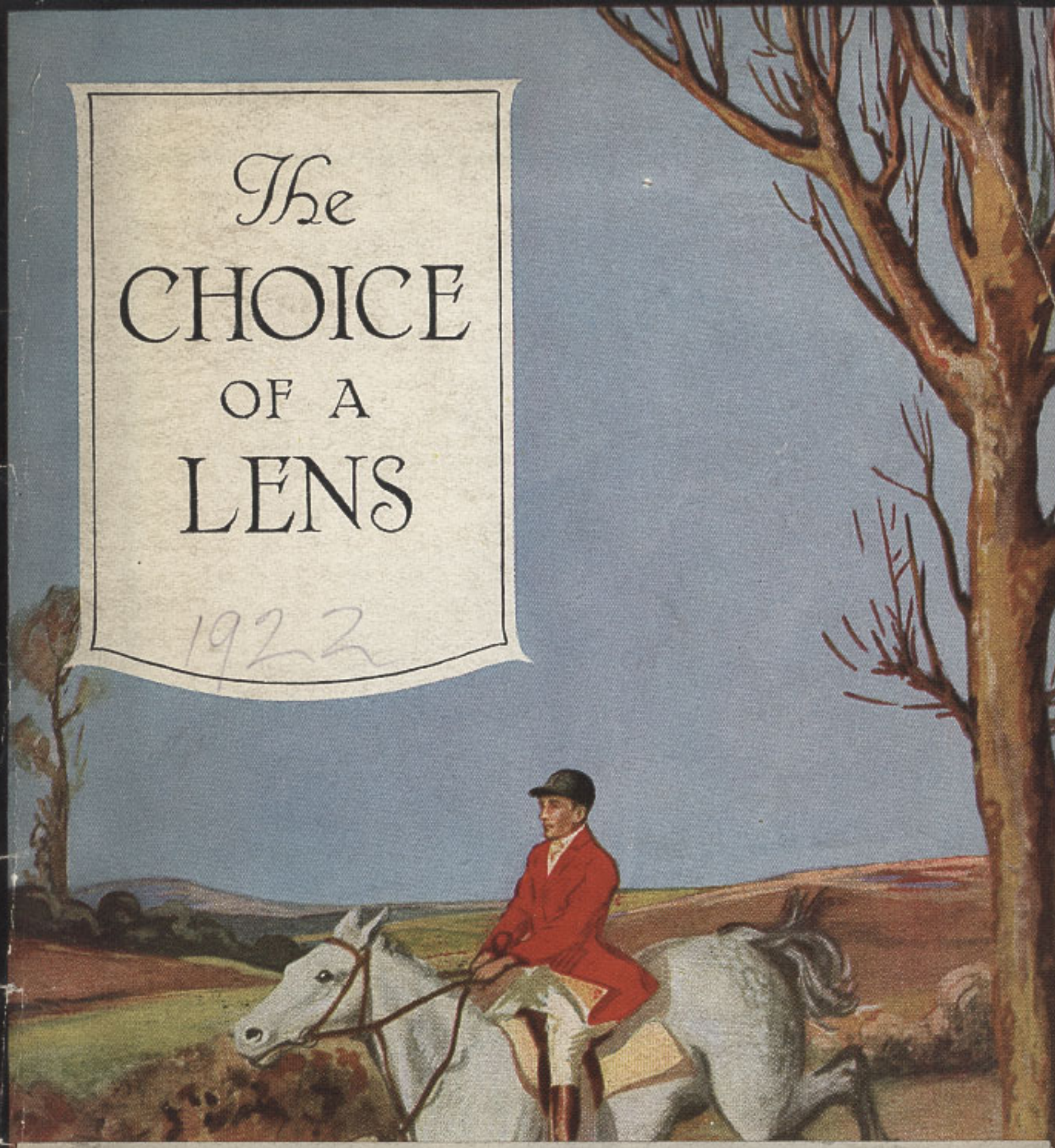
The CHOICE OF A LENS

1922



IMPORTANT NOTICE.

We have the pleasure to announce the following REDUCTIONS ON PRICES quoted in this Catalogue:

Ross Photographic Lenses - - - 25%

(All Series except Telecentric and Telephoto)

Ross Telecentric and Telephoto - 15%

ROSS, LTD., Dec. 1st, 1922.

The Choice of a Lens

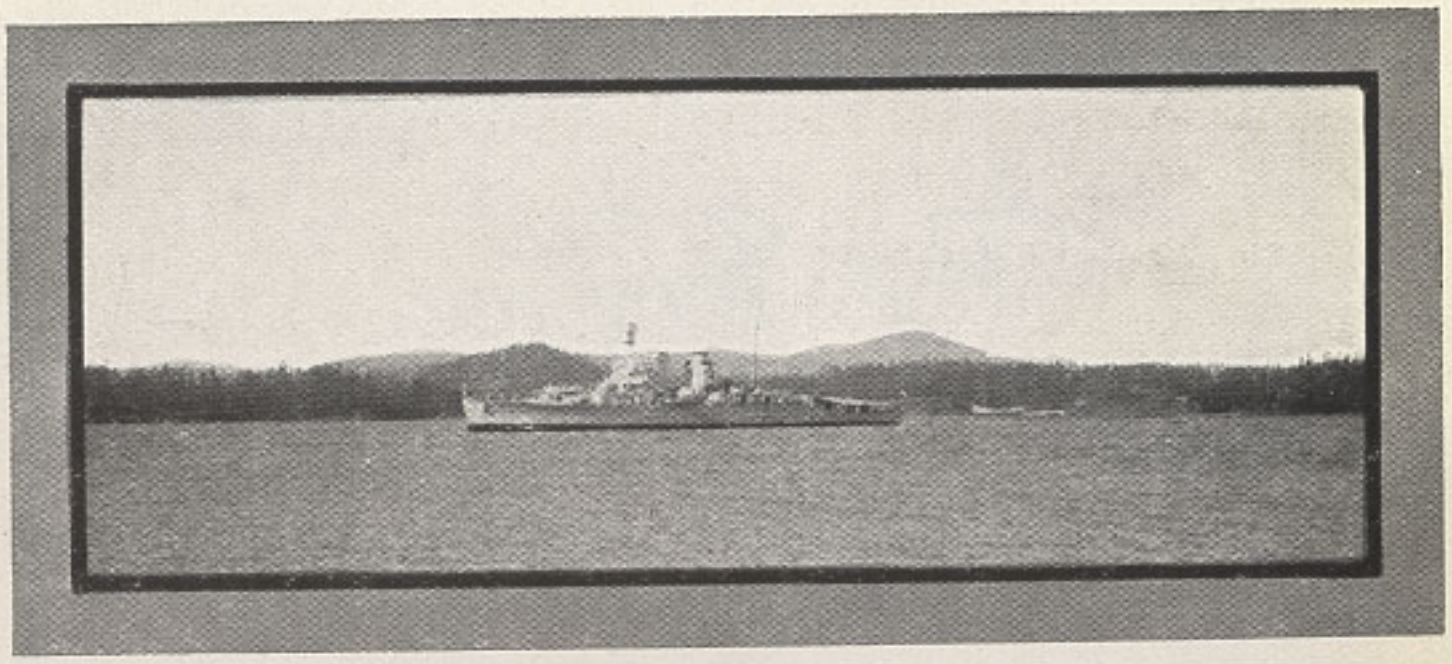
By appointment to
His Majesty the King.

ROSS LTD.

Optical Works, Clapham Common

LONDON, S.W.4.

13 & 14, GREAT CASTLE STREET, W.1



H.M.S. Raleigh — *J. Howard Clapman*

Taken with Ross Combinable Lens No. 12, 7¼" focus

The Choice of a Lens

A Few Hints and Suggestions

IT is not surprising if the intending purchaser of a complete camera or of a lens alone should be perplexed as to the lens which should be chosen. So many claims are advanced by various manufacturers, so much has been written on the subject in terms that are but little understood by the average amateur, and so many preconceived ideas and prejudices exist, that there is little wonder if the intending purchaser is inclined to postpone his purchase pending further information, or purchase the cheapest lens obtainable, for which oftentimes the loudest claims are made.

The object of this booklet is to offer a few hints and suggestions on the choice of a lens.

Before proceeding more generally, a few words may be said on a popular fallacy, which, despite all evidence to the contrary, still continues to exist regarding the respective

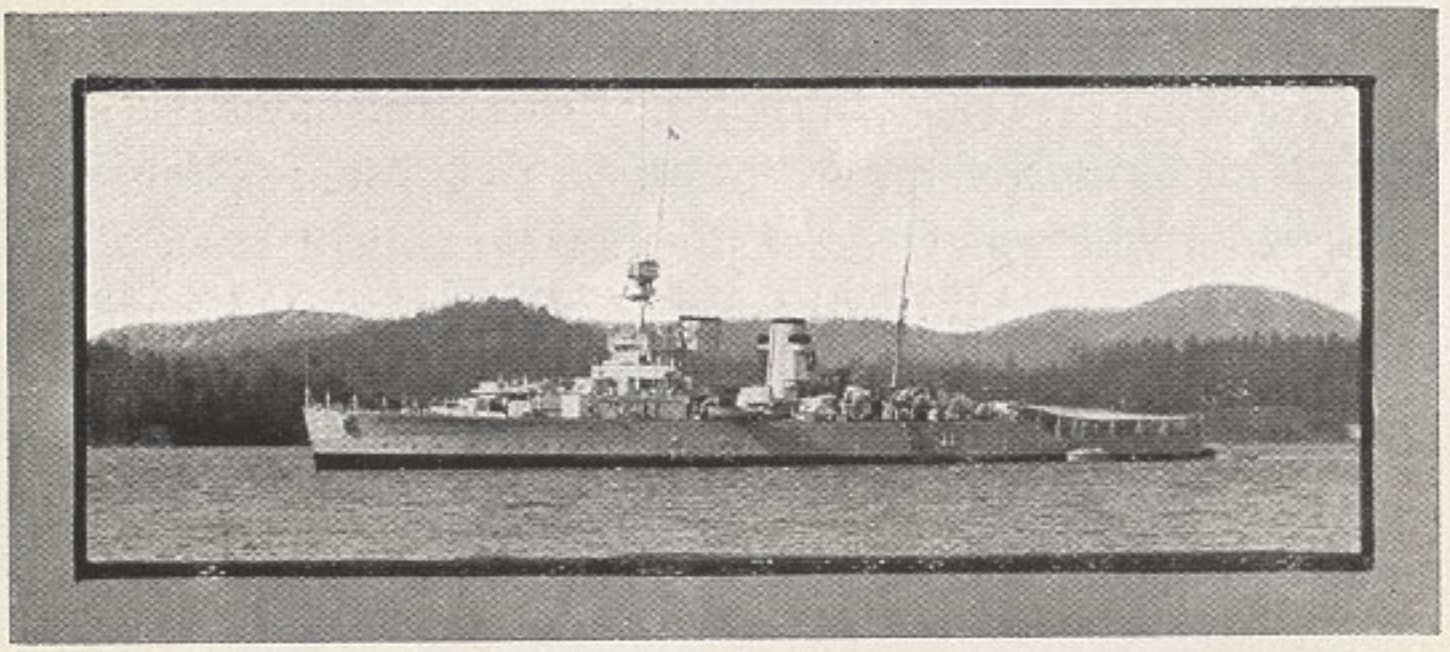
merits of English and German lenses. There is still an idea that German lenses are in some indefinable way superior to those made by English manufacturers. Those who support this idea will individually give differing reasons for their opinions, reasons which, when analysed by those competent to judge, disappear into thin air.

Even the British Government itself seemed obsessed with this belief at the outbreak of the war, and that the opinions of its experts were so rapidly and completely changed is therefore all the more interesting to those seeking actual facts.

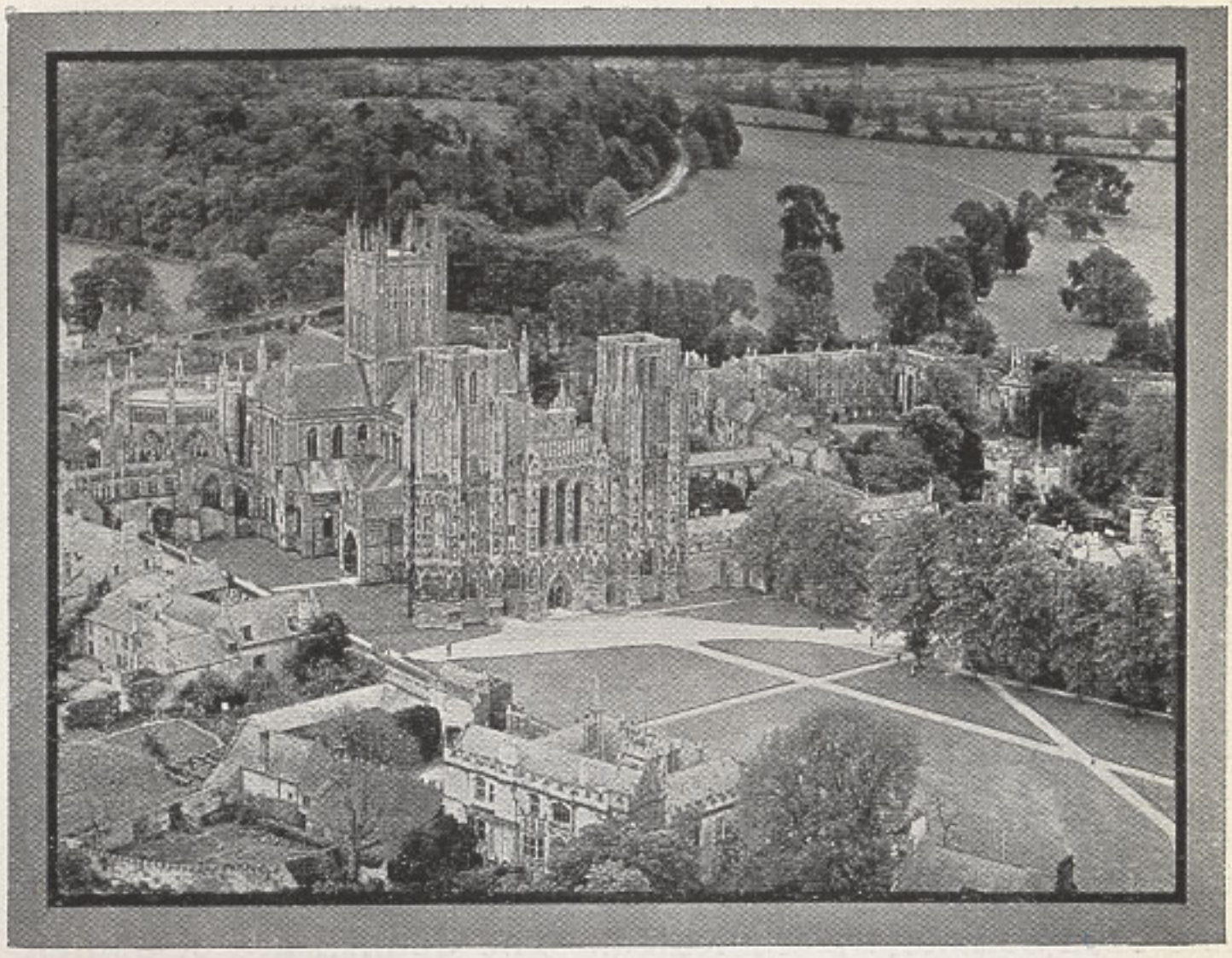
The following report from the Air Council is most illuminating on this point, and needs but little amplification:—

"The Air Council are satisfied that any comparative inferiority in British-made photographic lenses existing prior to the war has been completely eradicated. The Council are of opinion that the lenses produced by British manufacturers during the latter years of the war, which are those now in general use in the Royal Air Force, were in every respect as good as, or better than, any foreign lenses that they were able to obtain, including those manufactured in late enemy countries."

The wording of this report is significant, whilst the statement of Professor Cheshire, C.B.E., late Scientific and Technical



Comparative photograph taken with front combination of Ross Combinable Lens No. 12 from same viewpoint.



Wells Cathedral *Taken with Ross Xpres Lens*

Director of the Optical Munition Department of the Ministry of Munitions, is no less emphatic. He says, "After extensive trials conducted by Air Force experts, it was decided that the English lenses were equal to, and in many cases the superior of those German lenses which had hitherto been used and demanded for the work."

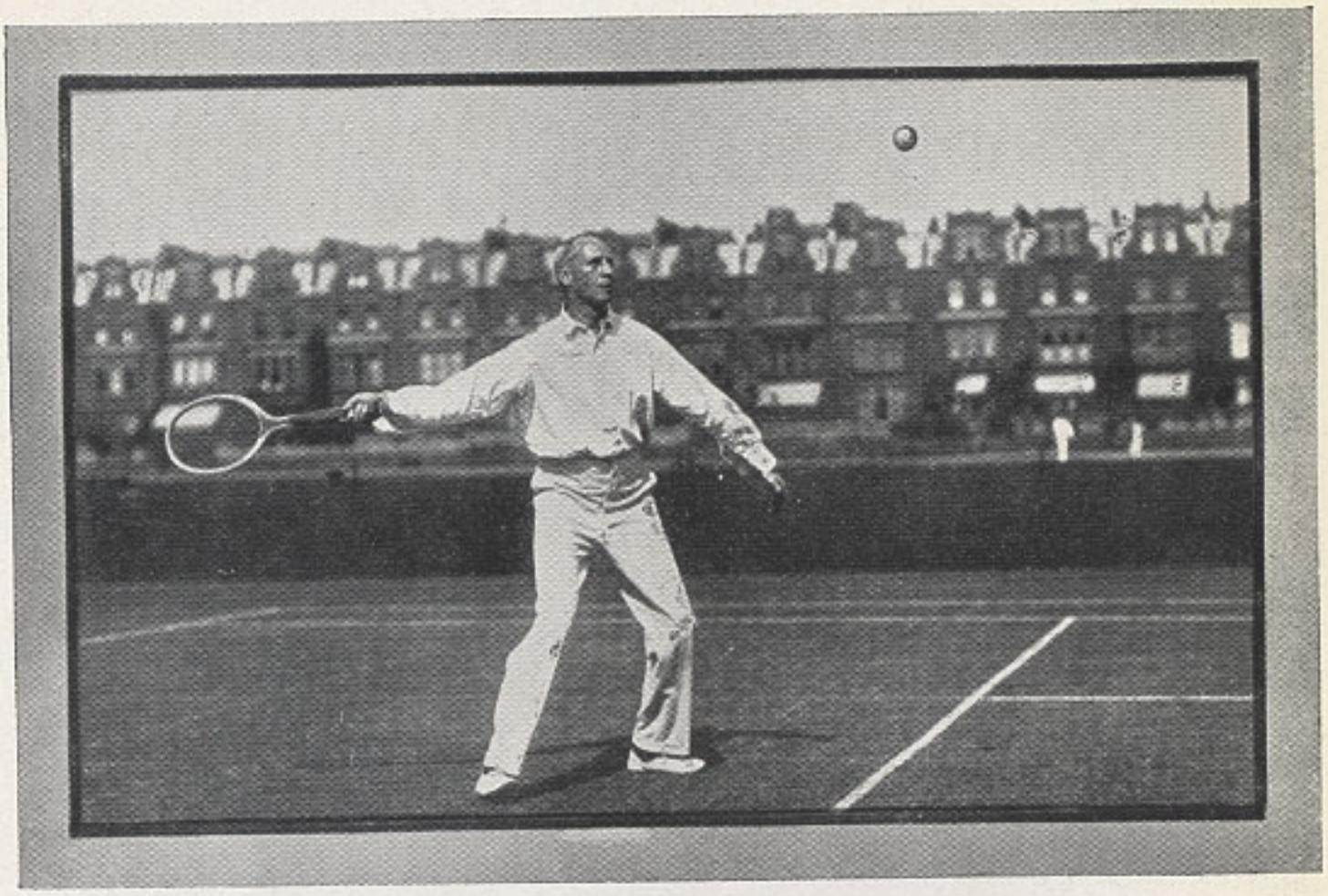
One further statement will, we think, be sufficient to amply prove the case in point. This statement is from no less an authority than Lt.-Col. J. T. C. Moore-Brabazon, M.C., M.P., who was Head of the Photographic Section of the Royal Air Force during the War. He states, "I have no hesitation in saying that the lenses produced towards the end of the war, computed from English calculations, and built from glass made in England, were better than any lenses made in other countries, enemy or otherwise."

These opinions should be sufficient for any open-minded photographer, and should convince him that, despite all that

Taken with Ross Telecentric Lens 12" F/5·4 *J. Stewart*

has been said to the contrary, either before the war or since, that British lens manufacturers have left no stone unturned in meeting German and foreign competition, and that at least some of the lenses which they manufacture are equal, if not superior to those which can be obtained from any other source.

Passing from this, it can be said right away that no lens is absolutely perfect : indeed, the efforts of the lens manufacturers of good standing are constantly directed to the elimination of various faults in lenses, and to minimise these until they become a negligible quantity. Naturally, therefore, as the lens is the fundamental basis of all photographic effort, and as an inferior lens will effectively mar the best photographic work, however skilful the photographer may be, and however good his camera and apparatus, the old adage, " Buy the best lens you can afford " is good advice.



Tennis *Taken with Ross Xpres Lens*

In brief, the object of the lens is to give a true image on the plate or film of the subject of the photograph, and, as far as possible, to bring each point of the subject to a true focus on one plane.

The first question to ask oneself is, what is expected of a photographic lens ? and the answer in almost every case is definition, combined with rapidity or large aperture, and perfect covering power. Definition is undoubtedly the most important quality to be looked for. To every photographer a crisp, sharp negative is a desirable feature, and every pictorialist recognises that the possession of a lens which will give him a perfectly sharp image furnishes him with the ground-work for subsequent manipulation if he so desires.

For hand camera work there can be no doubt that definition is of the greatest possible importance, because the negatives, usually small, are often taken with a view to subsequent enlargement.

Covering power is scarcely less important, for unless the lens covers the plate for which it is made to the extreme margins, it will be found that the whole picture is marred

and that for enlargements only the central part will give the definition and detail required. The additional fact that most cameras have the convenient adjustment of a rising front makes it absolutely necessary that the lens should not only cover the actual plate for which it is made, but preferably should have a margin to allow for the increased area which it may have to cover.

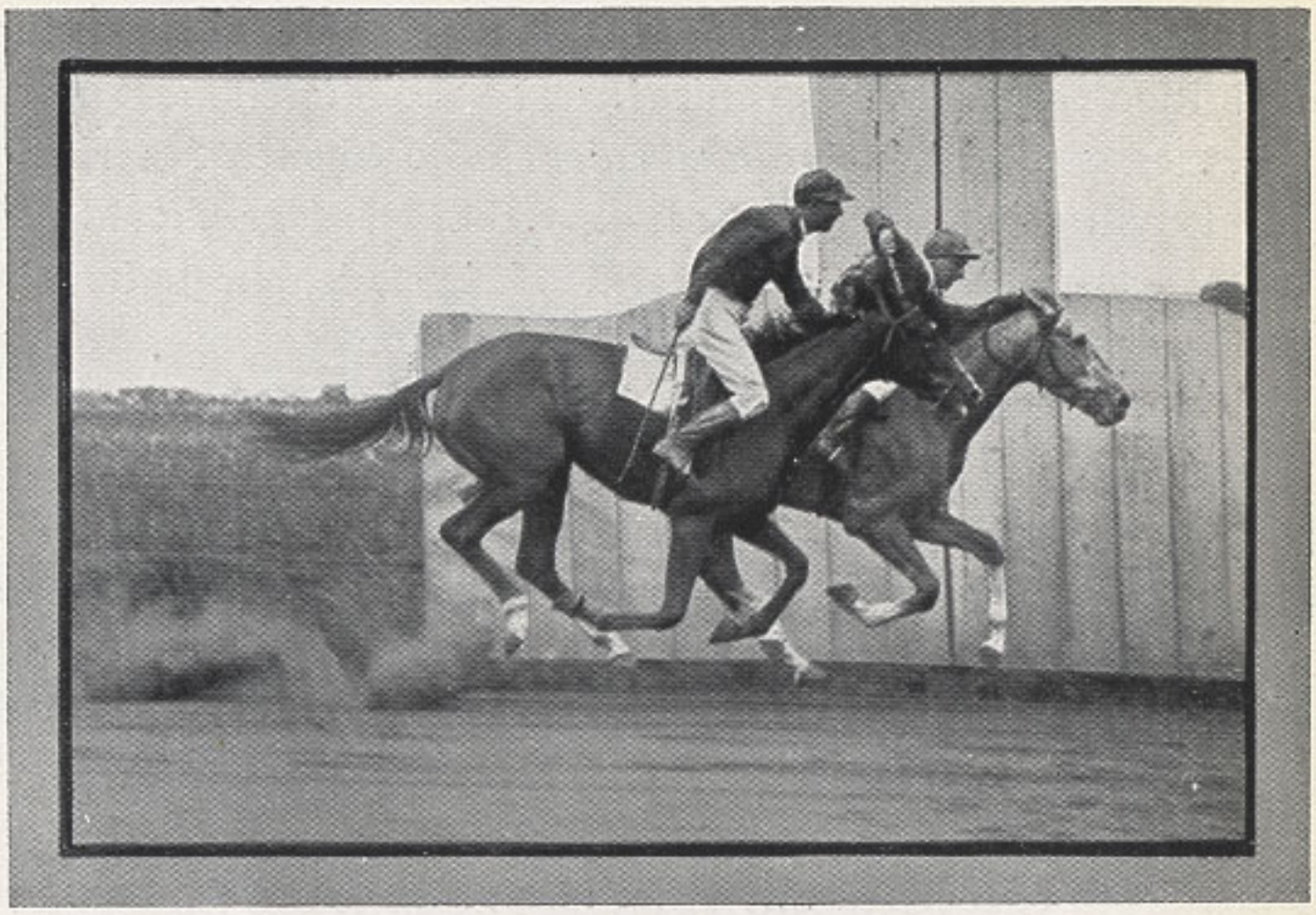
Something may here be said with regard to the question of depth of focus. Many photographers, and some manufacturers, claim that certain lenses have a greater depth of focus than others. This is not so. Depth of focus is covered by optical laws which are unchangeable, and can be attributed to no make or type of lens, but depends on aperture or focal length. One six inch lens working at f/4.5 has exactly the same depth of focus as any other lens of the same focal length and aperture, irrespective of type and make. With increased aperture or length of focus, depth of field or focus must be sacrificed, and care should always be exercised in using lenses of large aperture or long focus when focussing the image. In many instances lack of depth of focus will be considered an advantage, as in this case the principal object may be sharply defined whilst the detail in other planes will be left comparatively diffused.

THE FAULTS OF A LENS

The principal failings or faults of all lenses which, as far as possible, have to be overcome in order to give good definition and covering power are chromatic aberration, spherical aberration, curvature of field, astigmatism and coma. In order that the reader may thoroughly understand what these terms mean, and how they will affect the actual photograph, the following are brief descriptions of the faults in question, and of the resulting effects on the photographic image.

CHROMATIC ABERRATION

Chromatic aberration is the inability of the lens to bring to the same focus the different coloured rays of light emanating



Taken with Ross Xpres Lens *F. H. Perman*

from all objects, with the result that in cases where this fault is acute it is impossible to get a sharp picture and to obtain a true representation of the object photographed. In colour photography this is particularly noticeable, hence the fact that some lenses are much more suitable for this work than are others.

SPHERICAL ABERRATION

Anastigmat lenses which are well corrected for flatness of field and freedom from astigmatism frequently possess spherical aberration, with the result that when the best image has been obtained to the extreme margins of the plate the residual spherical aberration will detrimentally affect the centre. This failing can be overcome by the use of a small stop, but this renders what would otherwise be a fast lens of little or no advantage.

CURVATURE OF FIELD

This fault is the inability of the lens to bring objects on the same plane into correct focus. Photographers generally assume that all objects on the same plane will be equally

sharp on their negatives, but with a lens having curvature of field this is not so, for a central object will come to focus at a different point to that of objects in the same plane at the margin of the picture. It is very essential in order that good definition may be secured that curvature of field should not be present especially in lenses of large aperture.

ASTIGMATISM

Astigmatism is always to be found in all single lenses and those of the rapid rectilinear type, and, indeed, to some extent in anastigmats, despite the fact that the latter name is meant to infer that they are free from this defect. This failing is one of the most easily noticed of all the faults. Astigmatism cannot be overcome by stopping down the lens. With lenses having astigmatism it is impossible to obtain perfect sharpness of horizontal and vertical lines which may cross one another at the extreme margin of the picture, with the result that the definition of such subjects as architecture is extremely bad and often worthless.

DISTORTION

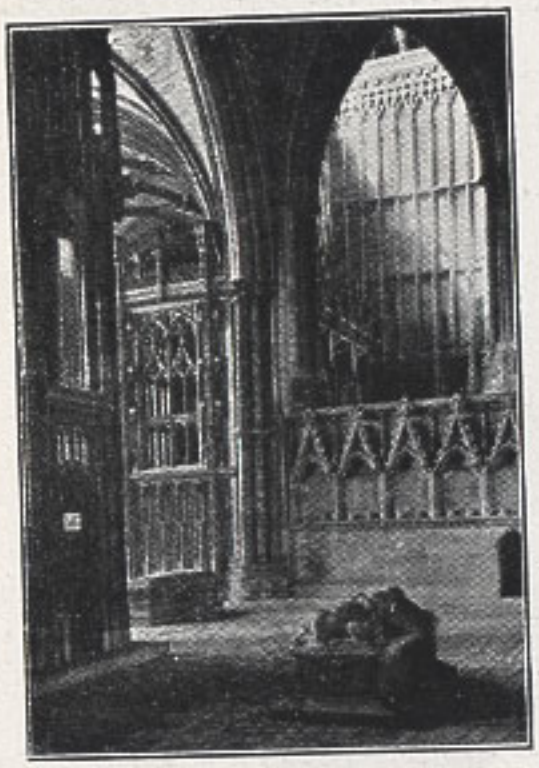
Distortion is the failing of a lens to give equal magnification over the whole plate, its effect on the photograph causes objects having distinctly straight lines to appear as though they were not straight but curved: a fault that is fatally noticeable in photographs of an architectural nature.

COMA

Coma, when present, produces greyness and flatness of appearance, the finer contrasts and detail being lost by the straying of rays of light resulting from this aberration. This appearance in the negative is often attributed to errors in exposure, development and faulty plates, whereas it is frequently due to coma in the lens.

Having dealt with the various failings of the lens, one may further explain the type of lens that should be chosen for various kinds of photography, and the following notes will be found of some assistance in making one's choice of lens.

ARCHITECTURAL WORK



The ideal qualities of a lens intended for architectural work are those of definition and covering power. The lens must essentially be one free from astigmatism and distortion, and should preferably be of a wider angle than the general type of lenses. For this work the Ross Wide Angle Anastigmat lens can be especially recommended. It gives even illumination, perfect definition, large covering power, and is entirely free from all distortion. Photographs taken with this lens show a wealth of detail that is a perfect delight to the Architectural photographer.

For photographing interesting bits of architecture which are inaccessible with lenses of shorter focal length, the Ross Telecentric lens places in the hands of the photographer the means of securing photographs otherwise practically unobtainable. It gives an image twice as large as that given by an ordinary lens from the same view point without extra camera extension. In reality, the image covers four times the area of that given by an ordinary lens.

CHILD PHOTOGRAPHY

For this branch of photography, which is one of the most fascinating, a fast lens is required in order that one may catch the fleeting expressions and striking attitudes of children at play. For this work the Ross Xpres lens and the Ross Telecentric lenses are ideal. The Xpres lens, working at f/4.5, may be used at full aperture, allowing for the fastest exposures to be made and still giving well exposed negatives with perfect definition. With a reflex camera,

without stopping down. For cameras of Focal Plane and Reflex type, the Ross Xpres should be chosen, whilst for cameras of a Roll Film or Folding Plate type the Ross Homocentric will be found to give every satisfaction. The leading makes of these cameras are listed fitted with these lenses, which have rightly become most popular with hand camera photographers, who find it possible to obtain perfect results with the utmost ease.

LANDSCAPE PHOTOGRAPHY

Whilst the conditions usually prevailing in landscape photography are less exacting than those of many other branches, yet devotees of this type of work are seldom satisfied with prints taken from the actual negatives, and nearly always desire to have enlargements of the part of a negative which composes the best pictorially, hence the need for a lens giving definition to the margin of the plate, so that any portion of the negative may be enlarged with equal chance of success. The landscape photographer will find the Ross Combinable lens a source of constant pleasure, and a great asset towards successful picture making. This lens can be used either as a complete lens, or its components can be used separately, thus giving the photographer the choice of two, and in some cases three, different focal lengths, whilst the definition and covering power given by the complete lens or its single components are so good that enlargements can be made from any part of the negative without any loss of detail.

The choice of various focal lengths places in the hands of the landscape photographer a ready means of obtaining pictorial bits inaccessible in the ordinary way, whilst the

such as the "Standard Reflex," and an Xpres or a Telecentric lens, one may be certain of obtaining as nearly perfect photographs as possible, photographs which will be treasured in after years.

COLOUR PHOTOGRAPHY

For colour photography one requires a lens particularly well corrected for chromatic aberration. In this respect the Ross Xpres and Homocentric lenses will be found to be almost perfect.

COPYING AND PROCESS WORK

For this class of work the very highest precision is required, and lenses must be as free as possible from all faults, particularly astigmatism, distortion and chromatic aberration. The Process Homocentric is as nearly perfect as possible in this respect, and so perfectly achromatised that the different colour images coincide and are as nearly as possible identical in size and equal in definition. The Homocentric is, therefore, particularly adapted for process work of any kind, and especially useful for colour work.

HAND CAMERA PHOTOGRAPHY

In consequence of the smallness of their size, negatives taken with hand cameras are more often than not required to be enlarged. The lens used, therefore, should be one giving the finest possible definition at large aperture. The maximum exposure is always brief, and with an ordinary lens one is frequently in the dilemma of having to sacrifice correct exposure or risking blurred images, hence the need for a lens working at a large aperture and giving perfect definition

composition of the picture gains considerably through the use of the narrow angle. In addition to the Ross Combinable lens, the Xpres and the Homocentric lenses can be recommended where a single focus lens is preferred.

NATURALISTS PHOTOGRAPHY

For all kinds of nature photography the Ross Xpres or the Ross Telecentric lenses are invaluable. The one making possible the minimum exposure and giving the maximum definition at ordinary range, whilst the Telecentric lens places in the hands of the photographer the opportunity of getting an enlarged image from the same view point or an image of the same size from a more distant position. In both cases the definition is all that can be desired, whilst the exposure, by reason of the large aperture, can be successfully reduced to the minimum. Many of the leading experts in this class of work have chosen these two lenses after exhaustive tests of other make of similar lenses.

PORTRAITURE AND GROUPS

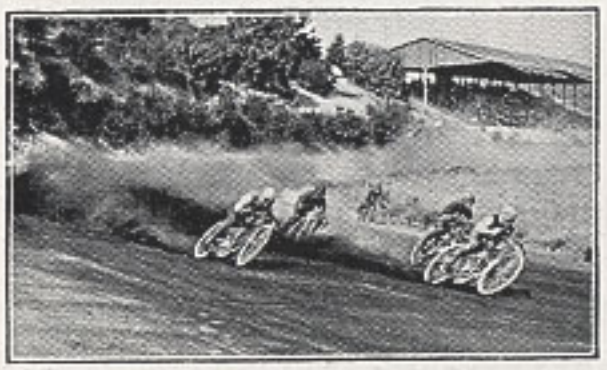
To most professional photographers the Ross Portrait lens is so well known that little needs to be said on its behalf. Many of the best known portrait photographers are constant users of this lens, and the work which they produce is of itself a sufficient recommendation. Working at f/3.5, it gives exquisite definition at open aperture. With the Cabinet lens any desired degree of diffusion, which in Portraits some-

times is an advantage, can be easily obtained by slightly unscrewing the outer cell of the back lens.

In cases where cameras are used which only have a comparatively short extension, and where the definition of modelling given by a long focus lens is required, the Ross Telecentric lens should be used. With a given extension of the camera a Telecentric lens of twice the focal length can be used, thus giving all the advantages of modelling without the necessity of a long extension to the camera. Used at open aperture, it gives a beautiful softness of background which is characteristic of this lens.

For large groups, especially those taken in the open air, the Ross Xpres lens is unsurpassed. It can be used at open aperture f/4.5, thus curtailing exposure to the minimum, while the detail and definition which it gives are perfect even to the edges of the plate.

SPEED PHOTOGRAPHY



The Ross Xpres, working at f/4.5, will appeal to all speed photographers, inasmuch as there is no need to stop down in order to obtain perfect definition. The fastest exposures can be made with the utmost certainty of fully exposed plates. The Ross Xpres lenses are made to cover plates to the margins even at open aperture, and the definition will be found to be uniformly good for the whole area. For distant objects of which it is found impossible to obtain a satisfactorily large image, the Ross Telecentric lens is a distinct advantage, and most successful press photographers are now adopting this lens for difficult subjects such as yachting, cricket, football, and other sports scenes. The Telecentric enables a photographer who would otherwise be out of range to obtain an image of large size from quite distant positions.

TELEPHOTOGRAPHY

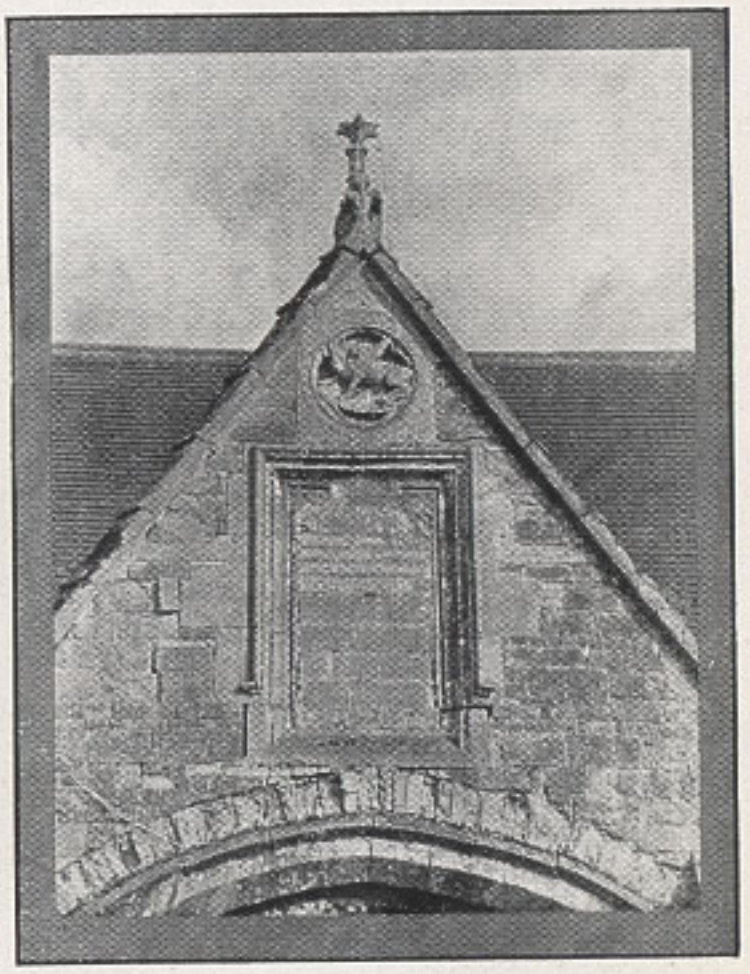
As the Telephoto lens simply magnifies the image produced by the ordinary lens, in conjunction with which it is used, it is obviously necessary that the positive lens should be of the best possible quality. The Ross Xpres and the Ross Homocentric can be confidently recommended in this respect, and the Ross Telephoto lens has been manufactured with the intention of its being used in combination with either of these lenses, although it will give good results with any other good positive lens.

Comparative Photographs

taken from the same viewpoint
showing enlargement of image, with a

ROSS TELECENTRIC LENS

The Porch of Abbey Barn, Glastonbury
Taken with a 6″ Lens



The Porch of Abbey Barn, Glastonbury
Taken with a 12″ Telecentric Lens

The Ross Xpres Lens

The Ross Xpres combines extreme speed with the highest possible quality. It works at F/4.5 and the excellence of the formula allows of a quality unequalled in lenses of the same aperture.

The Ross Xpres Lens gives exquisite definition which is maintained at full aperture over the whole of the plate. Even after considerable enlargement there is no appreciable loss of quality and no visible difference between the quality of the image at the centre of the picture and at the edges.

The idea seems to exist among photographers that lenses of the same aperture must necessarily be of the same speed. This is not the case. A lens with a multiplicity of air spaces is slower than one with only a few air spaces, as glass to air surfaces in a lens means loss of light by reflection. The Ross Xpres Lens has a cemented back combination. This reduces the air spaces to a minimum and adds to the speed and brilliancy of the image.

Lenses of extremely large aperture are subject to Ghost and Flare, faults arising from internal reflection in the lens and giving rise to peculiar markings on the plate. The smaller number of air spaces in the Ross Xpres Lens and the care with which the lens in constructed has eliminated this fault, and perfect pictures can be secured with it under the most difficult conditions.

The Ross Xpres Lens is indispensible to those photographers who are specially interested in those branches of photography where a large aperture is essential, *e.g.*, Focal Plane Photography, Press Work, Sports, Reflex Work, Indoor Portraiture, and similar subjects. Whilst the general photographer will find that the Ross Xpres Lens exactly meet his requirements.

The Ross Xpres Lens for Portraiture

The Ross Xpres Lens in the larger sizes makes an excellent portrait lens, as the formula allows of long focus lenses being made without reduction of aperture. This larger aperture enables the worker to reduce exposures to the minimum and thus secure characteristic attitudes and expressions. The Ross Xpres Lens offers another great advantage to the portrait photographer. Its perfect covering power allows him to make groups at full aperture and still secure perfect definition over the whole plate, an impossibility with an ordinary lens.

Prices of Ross Xpres Lens

No.	Equiv. Focus.	Plate covered.	Price. £	s.	d.
0	3 inch	$2\frac{5}{16} \times 1\frac{3}{4}$	9	0	0
1	$4\frac{3}{4}$,,	$3\frac{1}{2} \times 2\frac{1}{2}$	10	4	0
2	$5\frac{1}{2}$,,	$4\frac{1}{4} \times 3\frac{1}{4}$	11	8	0
3	6 ,,	5×4	13	4	0
4	$6\frac{1}{2}$,,	$5\frac{1}{2} \times 3\frac{1}{2}$ P C size	14	14	0
5	$7\frac{1}{4}$,,	$6\frac{1}{2} \times 4\frac{3}{4}$	16	4	0
6	$8\frac{1}{2}$,,	7×5	20	2	0
7	10 ,,	8×5	30	0	0
8	12 ,,	$8\frac{1}{2} \times 6\frac{1}{2}$	44	2	0
9	$16\frac{1}{2}$,,	10×8	70	4	0
10	21 ,,	12×10	100	4	0

In sunk settings for Reflex Cameras at same price.

In Focussing Mounts

No.	Equiv. Focus.	Price. £	s.	d.	No.	Equiv. Focus.	Price. £	s.	d.
0	3 in.	10	10	0	3	6 in.	15	0	0
1	$4\frac{3}{4}$,,	11	14	0	4	$6\frac{1}{2}$,,	16	10	0
2	$5\frac{1}{2}$,,	13	4	0	5	$7\frac{1}{4}$,,	18	12	0

In Between-Lens Shutters

No.	Equiv. Focus.	Price in Lukos Express Shutter. £	s.	d.	Price in Ilex Acme Shutter. £	s.	d.
0	3 in.	12	12	6	12	12	6
1	$4\frac{3}{4}$,,	15	14	0	14	1	6
2	$5\frac{1}{2}$,,	16	18	0	16	18	0
3	6 ,,	19	9	0	18	14	0
4	$6\frac{1}{2}$,,	20	19	0	20	19	0
5	$7\frac{1}{4}$,,	22	9	0	23	4	0
6	$8\frac{1}{2}$,,	27	2	0	27	2	0

The Focussing Mounts are provided with Iris Diaphragms and are for Hand Cameras of fixed extension. They do not admit of between-lens shutters.

Antinous Release for Lukos Express and Ilex Acme Shutters, 4/6 extra.

Price of pairing lenses for stereoscopic work, 17/6.

The Ross Combinable Lens

The Ross Combinable Lens meets requirements of the photographer who desires a lens which, in addition to high speed, gives a choice of focal length.

The Ross Combinable Lens is made up of two components, each of which is a complete anastigmat lens in itself, and gives excellent results when used separately at its full aperture. These components are not merely makeshift lenses which require stopping down to give satisfactory results, but excellently corrected lenses of the same high quality as the complete lens. They enable the worker to secure an enlarged image without the trouble of enlarging.

When the components of the Ross Combinable Lens are of equal focus length the worker has a choice of two foci, and the complete lens works at F/5.5. When the components are of unequal focal length a third focal length is added, and the lens works from F/5.7 to F/6.3, according to the difference.

The components all work at F/11, so that it is possible to use these lenses for rapid snapshot work, and it should be remembered that they give the extreme brilliance of image characteristic of single lenses.

The definition and covering power given by the Ross Combinable Lens at full aperture is all that can be desired by the most critical. No lens can be theoretically perfect, but in the Ross Combinable Lens, so perfect is the formula, that the effect of the various aberrations cannot be detected, even after considerable enlargement. This applies equally to the complete lens and the components.

The excellent quality of the Ross Combinable Lens, combined with the advantage of choice of focal length it gives, makes it the ideal lens for the general worker who wishes to do justice to his subject, whatever it may happen to be, and to make the most of his apparatus, his materials, and his photographic skill.

It is necessary to have sufficient extension on your camera to accommodate the component of longest focus to get the full advantage of the Ross Combinable Lens. When the camera extension is limited the components cannot be used separately, and when using a camera of this kind it is better to fit the more rapid Ross Xpres Lens described on pages 16 and 17.

The single components of the Ross Combinable Lens can be purchased separately either in setting with Iris Diaphragm or in the cell only (see page 19). Any number of single lenses may be purchased, and, as they are interchangeable in the setting, can be combined in various ways to give a variety of focal lengths. Sets consisting of several lenses and the setting are also supplied.

Prices of Ross Combinable Lens

Single Components F/11

No.	Equivalent Focus. Inches.	Plate covered f/11. Inches.	Price with Iris Diaphragm. £ s. d.	Price in Cell only. £ s. d.
0	7	5 × 4	8 14 0	7 4 0
1	8	$6\frac{1}{2} \times 4\frac{3}{4}$	8 14 0	7 4 0
2	$9\frac{1}{2}$	$7\frac{1}{2} \times 5$	9 18 0	8 8 0
3	$10\frac{1}{4}$	8 × 5	11 2 0	9 6 0
4	$11\frac{1}{4}$	$8\frac{1}{2} \times 6\frac{1}{2}$	11 14 0	10 4 0
5	$12\frac{1}{2}$	9 × 7	12 12 0	10 16 0
6	$14\frac{1}{2}$	10 × 8	14 2 0	12 6 0

Complete Lenses F/5·5 to F/6·3

No.	Front Lens Focus.	Back Lens Focus.	Complete Lens Focus.	Aperture.	Plate-covered.	Prices in Brass setting with Iris. £ s. d.
0	7	7	4	f/5·5	$3\frac{1}{2} \times 2\frac{1}{2}$	15 18 0
1	8	8	$4\frac{3}{4}$	f/5·5	$3\frac{1}{4} \times 3\frac{1}{4}$	15 18 0
2	$9\frac{1}{2}$	8	$5\frac{1}{4}$	f/5·9	$4\frac{1}{4} \times 3\frac{1}{4}$	17 2 0
3	$10\frac{1}{4}$	8	$5\frac{1}{2}$	f/6·2	$4\frac{1}{4} \times 3\frac{1}{4}$	18 6 0
4	$9\frac{1}{2}$	$9\frac{1}{2}$	$5\frac{1}{2}$	f/5·5	$4\frac{1}{4} \times 3\frac{1}{4}$	18 6 0
5	$10\frac{1}{4}$	$9\frac{1}{2}$	$5\frac{3}{4}$	f/5·7	5 × 4	19 10 0
6	$11\frac{1}{4}$	$9\frac{1}{2}$	6	f/5·9	5 × 4	20 2 0
7	$10\frac{1}{4}$	$10\frac{1}{4}$	6	f/5·5	5 × 4	20 8 0
8	$11\frac{1}{4}$	$10\frac{1}{4}$	$6\frac{1}{4}$	f/5·7	6 × 5	21 0 0
9	$12\frac{1}{2}$	$10\frac{1}{4}$	$6\frac{1}{2}$	f/6·0	6 × 5	21 18 0
10	$11\frac{1}{4}$	$11\frac{1}{4}$	$6\frac{1}{2}$	f/5·5	6 × 5	21 18 0
11	$12\frac{1}{2}$	$11\frac{1}{4}$	$6\frac{3}{4}$	f/5·9	$6\frac{1}{2} \times 4\frac{3}{4}$	22 16 0
12	$14\frac{1}{2}$	$11\frac{1}{4}$	$7\frac{1}{4}$	f/6·2	$6\frac{1}{2} \times 4\frac{3}{4}$	24 6 0
13	$12\frac{1}{2}$	$12\frac{1}{2}$	$7\frac{1}{4}$	f/5·5	$6\frac{1}{2} \times 4\frac{3}{4}$	23 8 0
14	$14\frac{1}{2}$	$12\frac{1}{2}$	$7\frac{3}{4}$	f/5·9	7 × 5	24 18 0
15	17	$12\frac{1}{2}$	$8\frac{1}{2}$	f/6·3	8 × 5	28 10 0
16	$14\frac{1}{2}$	$14\frac{1}{2}$	$8\frac{1}{2}$	f/5·5	8 × 5	26 8 0

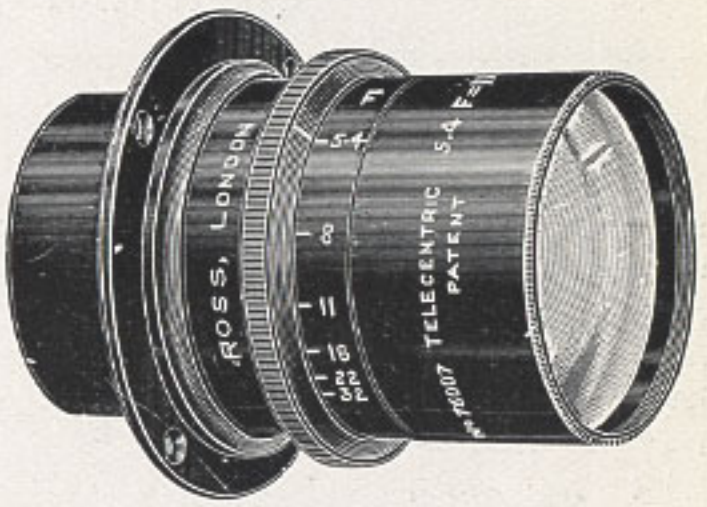
More than two single lenses may be used in the same setting. The size of the setting is determined by the longest focus lens. Each lens of three or more foci is supplied, without extra cost, with an adjustable ring indicating three or more scales of aperture as required.

Prices of lenses for larger plates and for sets of Combinable Lenses on application.

The Ross Telecentric Lens

The Ross Telecentric Lens combines the advantages of a telephoto lens with the speed and quality of the modern anastigmat.

The Ross Telecentric Lens gives an image twice as large as that given by an ordinary lens from the same view point, it requires no extra camera extension and works at a sufficiently large aperture to allow of rapid focal plane exposures.



The Ross Telecentric Lens in made in two series, one working at F/5.4, the other at F/6.8. In both series the definition and covering power at full aperture is excellent, and the general quality of the lenses conforms to that high standard which has made Ross Lenses famous.

The Ross Telecentric Lens will enable you to achieve excellent results when circumstances or the nature of your subject make a close approach either impossible or undesirable. It is invaluable to the reflex worker and the Press photographer.

Used as an auxiliary lens, the Ross Telecentric gives the user of an ordinary hand camera with limited extension the advantage of a choice of foci and enables him to pick out the pleasing "bits" of a landscape, and to secure unconscious and characteristic expressions in portraiture, child groups, animal studies and similar subjects.

The Ross Telecentric Lens has none of the disadvantages of an ordinary telephoto system, it is used just like any other ordinary lens, and is fitted with Iris Diaphragm. No elaborate calculation is necessary to arrive at exposure, as with a telephoto system.

The Ross Telecentric Lens, especially the larger sizes, is particularly suitable for portraiture. The long focus gives excellent modelling, and the large aperture allows the user to give short exposures, and thus secure natural pose and pleasing expressions. Moreover, all unnecessary details can easily be subordinated.

The user of the Reflex Camera in the studio is steadily becoming more popular, and the Ross Telecentric Lens is highly satisfactory on an outfit of this kind. It should be remembered that the longer the focal length and the higher the speed of a lens the less depth of focus has the lens. This is not a characteristic of the Telecentric Lens, but applies to all lenses. When using the Ross Telecentric Lens, it is necessary to focus carefully and to remember that if great depth of focus is required the lens must be stopped down accordingly.

Prices of Ross Telecentric Lens F/5·4

Equiv. Focus.	Size Plate.	Flange Inside dia.	Length Overall.	Infinity. Back Cell to Screen.	Back Cell to Flange.	Price in Iris Setting. £ s. d.
9 in.	$3\frac{1}{2}\times2\frac{1}{2}$	$1\frac{3}{4}$ in.	$3\frac{1}{8}$ in.	$4\frac{10}{16}$ in.	1 in.	13 10 0
11 ,,	$4\frac{1}{4}\times3\frac{1}{4}$	$2\frac{1}{4}$,,	$3\frac{3}{4}$,,	$5\frac{11}{16}$,,	1 ,,	16 10 0
12 ,,	5 ×4	$2\frac{1}{4}$,,	$3\frac{15}{16}$,,	$6\frac{1}{4}$,,	$1\frac{1}{4}$,,	18 0 0
13 ,,	$5\frac{1}{2}\times3\frac{1}{2}$	$2\frac{1}{2}$,,	$4\frac{5}{16}$,,	$6\frac{11}{16}$,,	$1\frac{3}{8}$,,	19 10 0
17 ,,	$6\frac{1}{2}\times4\frac{3}{4}$	$3\frac{1}{4}$,,	$5\frac{11}{16}$,,	$9\frac{1}{16}$,,	$1\frac{5}{8}$,,	32 2 0

Mounted in Between-Lens Shutters or in Focussing Settings

In Focussing Settings. Equiv. Focus.	Price. £ s. d.	In Lukos Express Shutter. Price. £ s. d.	In Ilex Acme Shutter. Price. £ s. d.
9 in.	16 10 0	19 15 0	19 15 0
11 ,,	20 14 0	23 10 0	23 10 0
12 ,,	22 4 0	25 0 0	25 0 0
13 ,,	—	26 10 0	26 10 0

Prices of Ross Telecentric Lens F/6·8

Equiv. Focus.	Size Plate.	Flange Inside dia.	Length Overall.	Infinity. Back Cell to Screen.	Back Cell to Flange.	Price in Iris Setting. £ s. d.
9 in.	$3\frac{1}{2}\times2\frac{1}{2}$	$1\frac{1}{2}$ in.	$2\frac{11}{16}$ in.	$4\frac{10}{16}$ in.	$\frac{3}{4}$ in.	10 4 0
11 ,,	$4\frac{1}{4}\times3\frac{1}{4}$	$1\frac{3}{4}$,,	$3\frac{1}{8}$,,	$5\frac{11}{16}$,,	$\frac{15}{16}$,,	12 0 0
12 ,,	5 ×4	2 ,,	$3\frac{1}{2}$,,	$6\frac{1}{4}$,,	1 ,,	13 4 0
13 ,,	$5\frac{1}{2}\times3\frac{1}{2}$	2 ,,	$3\frac{3}{4}$,,	$6\frac{11}{16}$,,	$1\frac{1}{8}$,,	14 2 0
17 ,,	$6\frac{1}{2}\times4\frac{3}{4}$	$2\frac{1}{2}$,,	$4\frac{7}{8}$,,	$9\frac{1}{16}$,,	$1\frac{3}{8}$,,	22 4 0

Mounted in Between-Lens Shutters or in Focussing Settings

In Focussing Settings. Equiv. Focus.	Price. £ s. d.	In Lukos Express Shutter. Price. £ s. d.	In Ilex Acme Shutter. Price. £ s. d.
9 in.	13 4 0	15 14 0	14 1 6
11 ,,	15 0 0	18 5 0	18 5 0
12 ,,	16 16 0	19 9 0	19 9 0
13 ,,	18 6 0	20 7 0	20 7 0
17 ,,	27 6 0	29 4 0	29 4 0

The focussing Setting necessitates larger flanges.

Antinous Release for Lukos Express and Ilex Acme Shutters, 4/6 extra.

The Ross Homocentric Lenses

The Ross Homocentric Lenses have achieved great popularity on account of their high standard of quality and general excellence. This series of lenses is particularly free from what is known as zonal aberration—that is, faults in certain zones of the lens which produce poor quality in certain patches of the picture, although the centre and the edges may be perfectly sharp. This freedom from zonal aberration renders the Homocentric Lenses especially suitable when the pictures are to be greatly enlarged. An enlargement from a negative taken with a Homocentric Lens shows wonderful quality over the whole of its area. There are four lenses of the Homocentric series working at F/5.6, F/6.3, F/6.8 and F/8 respectively.

The Ross Homocentric Lens F/5·6

The F/5.6 HOMOCENTRIC LENS is excellent for all high-speed work and general photography where rapid exposures are essential. It is admirably corrected for all aberrations, and gives splendid definition over the whole plate at full aperture. It is also admirable for portraiture and enlarging.

The Ross Homocentric Lens F/6·3 and F/6.8

The F/6.3 and F/6.8 HOMOCENTRIC LENSES. These lenses give complete satisfaction for all branches of photography, except the most rapid focal plane work, where a larger aperture is desirable. The single components of these lenses can be used separately, and give highly satisfactory results when used with a medium stop. Both these lenses are particularly suitable for fitting to small cameras of the folding pocket type.

The Ross Homocentric Lens F/8

The f/8 HOMOCENTRIC LENS. This lens is specially suitable for landscape work, groups, interiors, copying, and all subjects where very high speed is unnecessary. It is especially suitable for those photographers who use the ordinary field camera and to whom high speed is but a secondary consideration. The components can also be used separately with a medium stop.

Prices of Ross Homocentric Lenses

No.	Equiv. Focus.	Plate Covered. Full Aperture.	Plate Covered. Medium Stops.	Price in Iris Setting. £ s. d.
F/5·6				
*00	3 in.	$2\frac{1}{8} \times 1\frac{5}{8}$	$2\frac{1}{2} \times 2$	9 12 0
1	5 ,,	$4\frac{1}{4} \times 3\frac{1}{4}$	$4\frac{3}{4} \times 3\frac{1}{2}$	10 4 0
2	$5\frac{1}{2}$,,	$4\frac{3}{4} \times 3\frac{1}{2}$	5 × 4	11 2 0
3	6 ,,	5 × 4	$6\frac{1}{2} \times 4\frac{3}{4}$	12 0 0
4	7 ,,	$6\frac{1}{2} \times 4\frac{3}{4}$	$7\frac{1}{2} \times 5$	14 2 0
5	$8\frac{1}{2}$,,	$7\frac{1}{2} \times 5$	$8\frac{1}{2} \times 6\frac{1}{2}$	17 2 0
6	10 ,,	$8\frac{1}{2} \times 6\frac{1}{2}$	10 × 8	24 0 0
F/6·3				
000	$2\frac{3}{4}$ in.	$1\frac{3}{4} \times 1\frac{3}{4}$	3 × 2	7 10 0
00	$3\frac{1}{2}$,,	2 × 2	$3\frac{1}{4} \times 2\frac{1}{2}$	7 10 0
0	4 ,,	$3\frac{1}{2} \times 2\frac{1}{2}$	$3\frac{1}{2} \times 3\frac{1}{2}$	7 10 0
1	5 ,,	$4\frac{1}{4} \times 3\frac{1}{4}$	5 × 4	8 2 0
2	$5\frac{1}{2}$,,	$4\frac{3}{4} \times 3\frac{1}{2}$	6 × 5	8 14 0
3	6 ,,	5 × 4	$6\frac{1}{2} \times 4\frac{3}{4}$	9 0 0
4	7 ,,	$6\frac{1}{2} \times 4\frac{3}{4}$	$7\frac{1}{2} \times 5$	11 2 0
5	$8\frac{1}{2}$,,	$7\frac{1}{2} \times 5$	$8\frac{1}{2} \times 6\frac{1}{2}$	14 2 0
6	10 ,,	$8\frac{1}{2} \times 6\frac{1}{2}$	10 × 8	19 4 0
F/6·8				
000	$2\frac{3}{4}$ in.	$1\frac{3}{4} \times 1\frac{3}{4}$	3 × 2	7 10 0
00	$3\frac{1}{2}$,,	2 × 2	$3\frac{1}{2} \times 2\frac{1}{2}$	7 10 0
0	$4\frac{1}{4}$,,	$3\frac{1}{2} \times 2\frac{1}{2}$	$4\frac{1}{4} \times 3\frac{1}{4}$	7 10 0
1	5 ,,	$4\frac{1}{4} \times 3\frac{1}{4}$	$6\frac{1}{2} \times 4\frac{3}{4}$	8 2 0
2	$5\frac{1}{2}$,,	$4\frac{3}{4} \times 3\frac{1}{2}$	7 × 5	8 14 0
3	6 ,,	5 × 4	$7\frac{1}{2} \times 5$	9 0 0
4	7 ,,	$6\frac{1}{2} \times 4\frac{3}{4}$	$8\frac{1}{2} \times 6\frac{1}{2}$	11 2 0
5	$8\frac{1}{2}$,,	$7\frac{1}{2} \times 5$	10 × 8	14 2 0
6	10 ,,	$8\frac{1}{2} \times 6\frac{1}{2}$	12 × 10	19 4 0
F/8				
1	5 in.	$4\frac{1}{4} \times 3\frac{1}{4}$	$6\frac{1}{2} \times 4\frac{3}{4}$	7 4 0
2	$5\frac{1}{2}$,,	$4\frac{3}{4} \times 3\frac{1}{2}$	7 × 5	7 10 0
3	6 ,,	5 × 4	$7\frac{1}{2} \times 5$	8 2 0
4	7 ,,	$6\frac{1}{2} \times 4\frac{3}{4}$	$8\frac{1}{2} \times 6\frac{1}{2}$	10 4 0
5	$8\frac{1}{2}$,,	$7\frac{1}{2} \times 5$	10 × 8	12 0 0
6	10 ,,	$8\frac{1}{2} \times 6\frac{1}{2}$	12 × 10	16 4 0

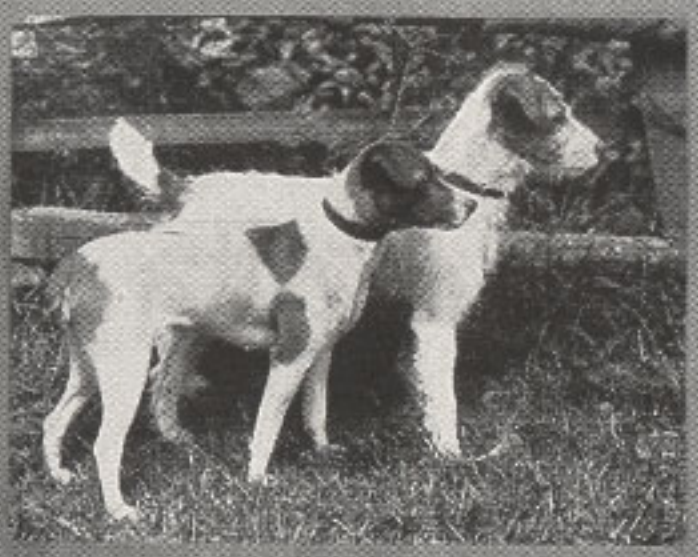
*This Lens works at F/4·8. Cost of pairing two lenses for stereoscopic work. 17/6.

Price of lenses to cover larger plates, also lenses in Focussing Mounts and Between-Lens Shutters, on application.

Pleasant going

Photographs taken with the ROSS HOMOCENTRIC LENS

Throwing the Shot



Who said Rats