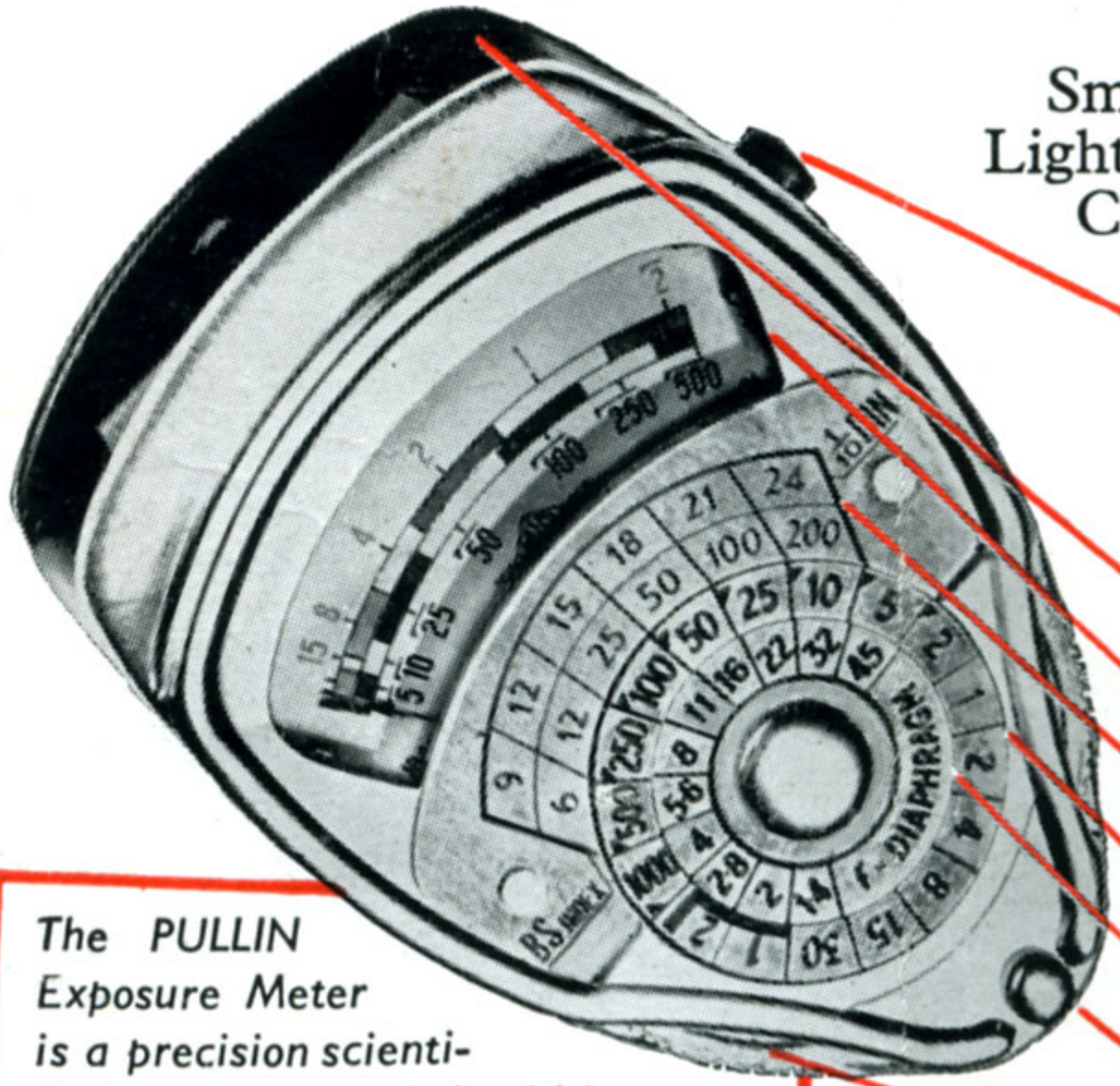
PULLIN

PULLIN OPTICS

PHOTO - ELECTRIC EXPOSURE METER

FEATURES OF THE PULLIN EXPOSURE METER



Small size ($2\frac{1}{2}$" × $1\frac{3}{4}$" × 1"). Light weight (only 4 oz.). Completely dust-proof. No corners.

Low light button.

Photo-electric cell directional grille and lens.

Direct reading scale.

Emulsion speed scale.

Shutter speed scale.

Diaphragm or stop f-number.

Lanyard pin.

Easy-set knurled wheel.

The PULLIN Exposure Meter is a precision scientific instrument and should be handled accordingly. Treat it as carefully as you would your watch.

PULLIN

PHOTO-ELECTRIC EXPOSURE METER

The PULLIN photo-electric exposure meter enables the photographer to give correct exposures under practically all lighting conditions. The meter comprises a highly sensitive electrical measuring instrument and a high quality photo-electric cell which generates a current proportional to the intensity of the light falling upon it. The instrument is very simple to use and has been designed to give quick direct readings. It is light in weight and at the same time very robust in construction ; there are no corners and it easily fits into the Vest-pocket.

It is designed so that it may be worn on the wrist whilst in use if desired, thus leaving both hands free.

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THE PULLIN METER . .

DESIGNED TO FIT THE HAND

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MOVEMENT CONSTRUCTION OF THE PULLIN METER

The movement used in this meter has been specially designed to give maximum sensitivity, quick action, and light weight. The high grade permanent magnet used is fully screened against stray magnetic fields and the meter can be worn on the same wrist as a watch without any risk of affecting the latter.

The movement itself pivots on two precision jewelled bearings, spring loaded against shock. A very light weight index pointer is fitted so that the minimum overswing takes place if the instrument is jolted while a reading is being taken.

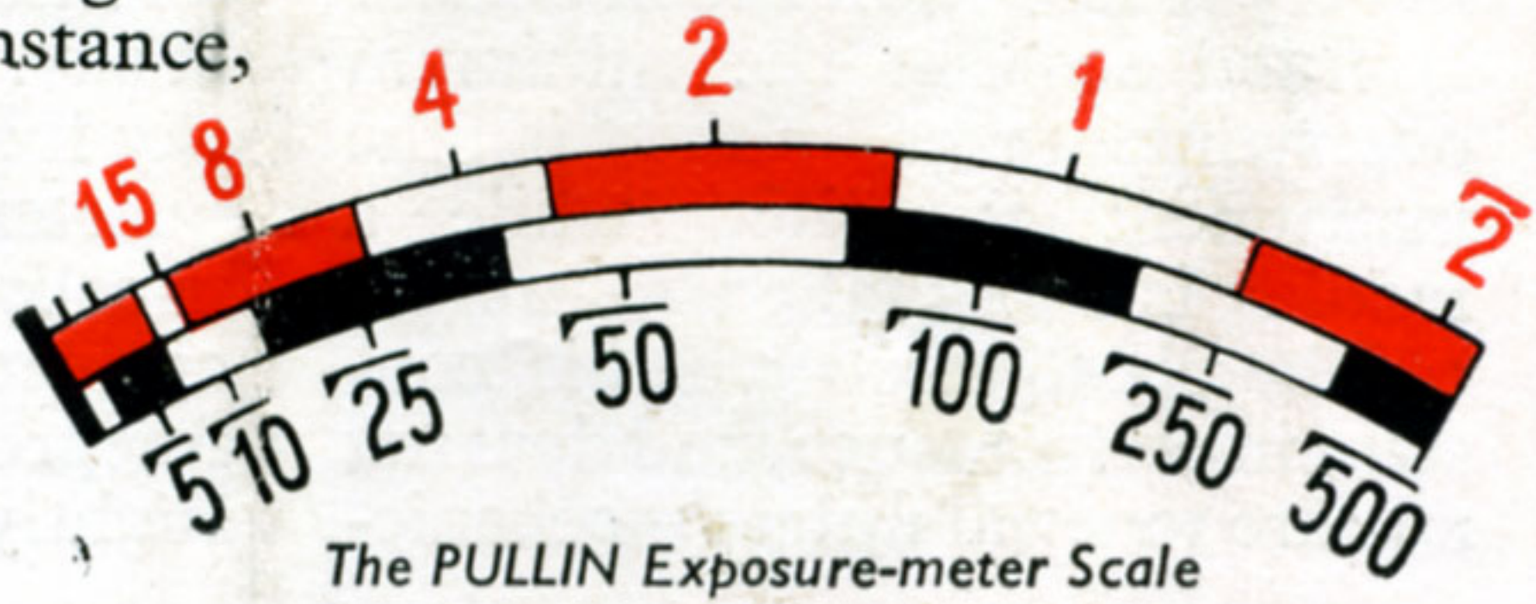
The photo electric cell is constant in performance, and does not require renewal unless mechanically damaged. It is important to keep the lens of the meter clean. Dust or smears may cause incorrect readings and over-exposed negatives.

The shrouding and the fins fitted behind the lens are designed to restrict the angle of light falling on the photo-electric cell so that this angle approximates to that of an average camera lens. Their purpose is to guard against false readings due to the inclusion of, for instance, too large a proportion of sky. For subjects in which the sky forms more than about three quarters of the picture area it is usually advisable further to guard against under-exposure of the foreground by tilting the meter slightly downwards.

HOW TO USE YOUR PULLIN EXPOSURE METER

Point the lens covering the cell of the exposure meter towards the subject to be photographed, as though using a camera, and note the value indicated by the pointer on the meter black scale. If the light is too poor to give a readable indication on the black scale press the red button. This increases the sensitivity of the meter and enables a reading to be taken from the red scale.

If the subject is of great contrast, including, for instance, deep shadows and bright sky, it is advisable to take a reading for each in turn and then select the exposure which will give greatest detail in the most important part of the picture. Turn the milled wheel until the reading indicated by the pointer is set opposite the emulsion speed of the film. This gives the shutter speed and diaphragm size in a straight line as will be seen in Fig. 1. Alternative shutter speeds with their relative diaphragm stops are also indicated so that the most suitable combination for the subject can be selected.



The PULLIN Exposure-meter Scale

Example

With an emulsion speed of 50 B.S. Index or 18/10 D.I.N. and the meter reading of 1/50th second the diaphragm size would be f/16 as shown in the illustration.

Colour Photography

When using a colour film, two close-up readings should be taken, one at the brightest and one at the darkest colour, and the two readings averaged.

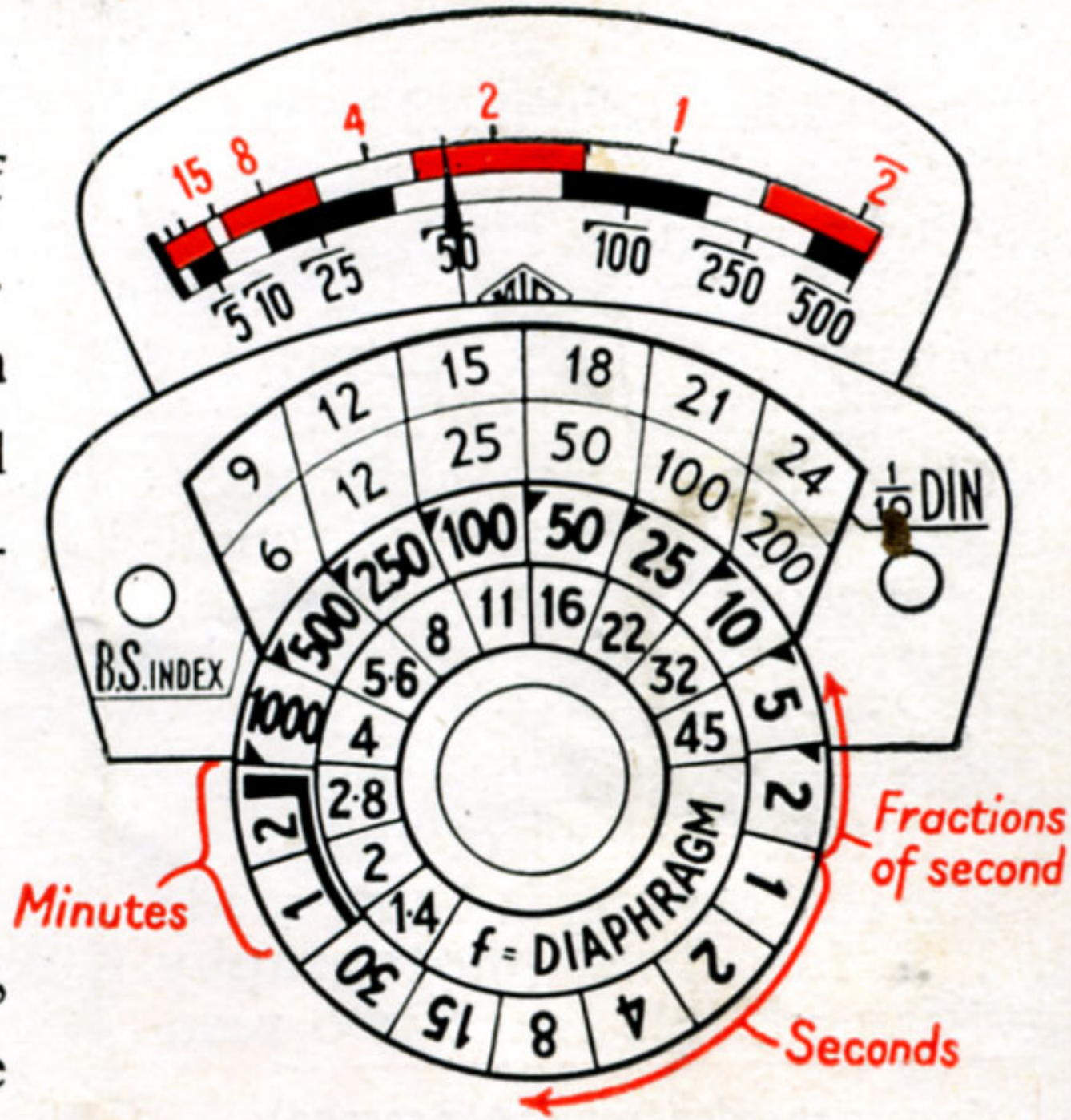


FIG. 1

The scales of the PULLIN meter showing the pointer giving a direct reading of $\frac{1}{50}$ sec.

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USING YOUR PULLIN METER

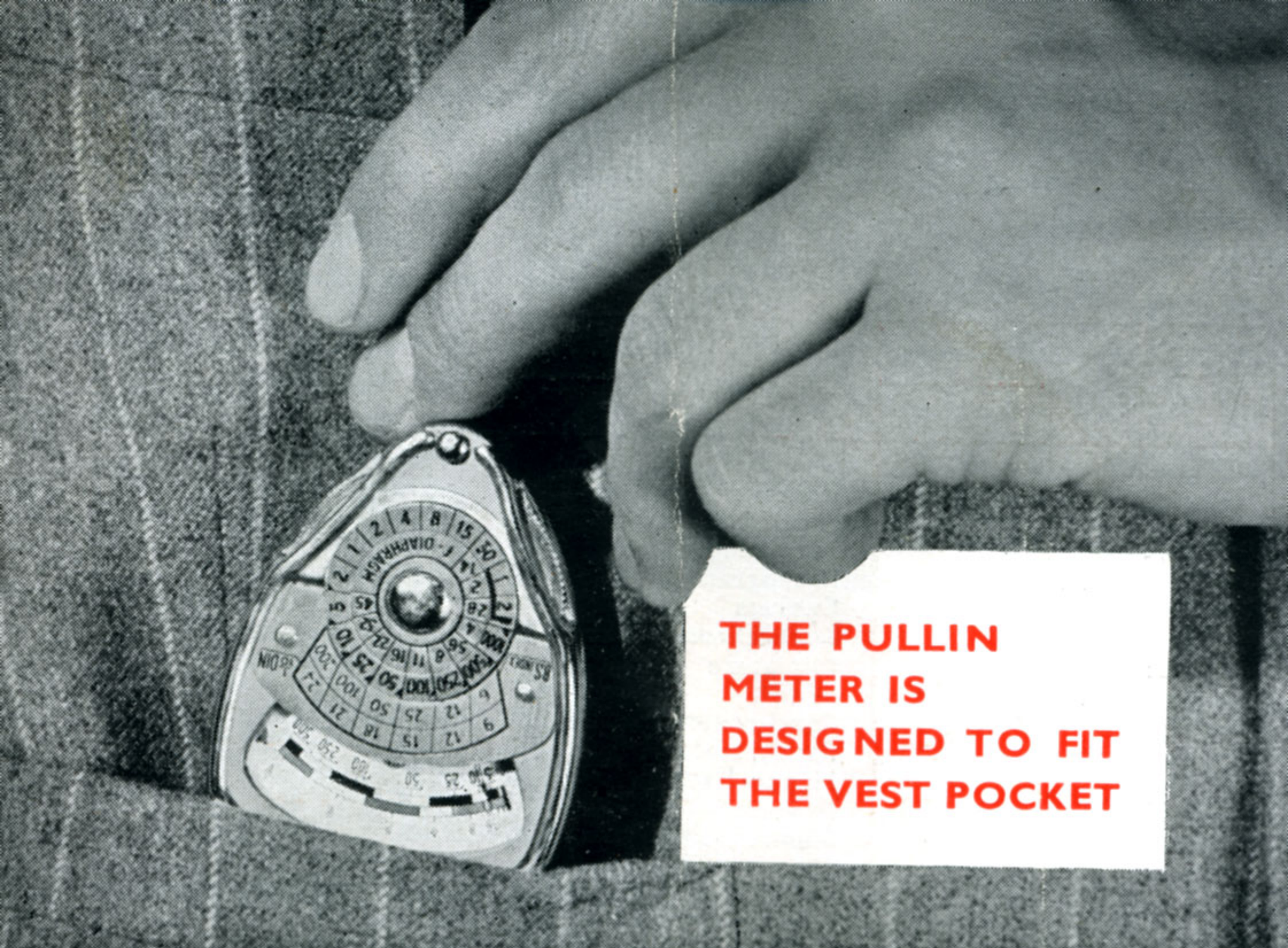
. . in artificial light. The meter is calibrated to give accurate readings in most kinds of artificial light, including that from ordinary gas filled lamps and over-run filament bulbs, but in all cases the film manufacturer's instructions concerning the emulsion speeds in these lights should be carefully noted.

Care should be taken to see that direct rays from the light source do not fall on the lens of the meter while the reading is being made.

. . . for Cine photography. Where possible make two readings, one of the brightest and one of the darkest area, avoiding reflections from shining objects. Average the two readings and set the result opposite the emulsion speed. Since a cine camera has no means of altering the shutter speed the exposure must be controlled by adjusting the diaphragm. For the normal camera running-speed of 16 frames per second the correct f-number will be indicated opposite 1/25th sec. Average shutter speeds at different camera speeds are shown below :—

Camera speeds (Frames per second) ...	8	16	24	32	48	64
Shutter speeds (seconds)	1/15	1/30	1/45	1/60	1/90	1/120
Pullin Meter Speeds	1/10	1/25	1/50	1/50*	1/100*	1/100

* *Increase aperture accordingly.*


f - DIAPHRAGM
1 2 4 8 15 30
ASA
DIN
THE PULLIN
METER IS
DESIGNED TO FIT
THE VEST POCKET

FILM SPEED VALUES

The following table shows the approximate B.S.I. value of sensitized materials in general use. A table showing the approximate comparative values between Scheiner (European), Din and B.S.I. (Arithmetic) is also given. Although these values are not exactly comparable, the tables may be used with complete confidence. American Scheiner values are approximately 4° less than European Scheiner values.

D—Daylight Speed *A—Artificial Light (Tungsten) Speed*

Make	B.S. Index		Make	B.S. Index		Make	B.S. Index	
	D	A		D	A		D	A
DEFENDER			GEVAERT			Pan. Micro-		
Dupac ...	6	12	Rollfilm :			gran ...	25	12
Tripac ...	6	6	Panchromosa	100	50	Gevacolor ...	12	12
DUFAY-			Panchromosa			ILFORD		
COLOR ...	6	12	Microgran ...	25	12	Rollfilm :		
DUPONT			Express ...			H.P.3 ...	100	50
Miniature			Superchrome	25	12	F.P.3 ...	50	25
Films:			Miniature			Selochrome	50	25
Superior II ...	50	25	Films			Miniature		
Superior III	100	50	Panchromosa	50	25	Films :		
Microcopy	—	12	Panchromosa			H.P.3 ...	100	50
ENSIGN			Hyper Rapid	100	50	F.P.3 ...	25	12
Ultrachrome	50	25	Express			Pan F ...	25	12
Fine Grain Pan	50	25	Superchrome	50	25			

Make	B.S. Index D	B.S. Index A
Ilford Colour	12	12
Ilford Colour "A" ...	12	12
Plates :		
H.P.3 ...	200	100
F.P.3 ...	100	50
Selochrome	50	25
S.G. Pan ...	25	12
Flat Films :		
H.P.3 ...	100	50
Hyper-chromatic	100	100
Selochrome	50	25

Make	B.S. Index D	B.S. Index A
F.P.3 ...	25	12
KODAK		
Roll Film :		
Super XX ...	100	50
Plus X ...	50	25
Panatomic X	25	12
Verichrome	50	25
Miniature Films :		
Super XX ...	100	50
Plus X ...	50	25
Panatomic X	25	12
Kodachrome Regular ...	12	—

Make	B.S. Index D	B.S. Index A
Kodachrome "A"	—	12
Plates :		
P.1500 ...	100	50
P.1200 ...	50	25
P.300 ...	25	12
O.800 ...	50	25
Flat Films :		
Super XX	100	50
Panatomic X	25	12
Ortho—X	100	50
Super Panchro Press ...	100	50

COMPARATIVE SPEED RATINGS

$\frac{1}{10}$ Din.	B.S.I. (Arith.)	*E.Sch.	$\frac{1}{10}$ Din.	B.S.I. (Arith.)	*E.Sch.	$\frac{1}{10}$ Din.	B.S.I. (Arith.)	*E.Sch
9	6	19°	15	25	25°	21	100	31°
12	12	22°	18	50	28°	24	200	34°

*European Scheiner.

The Pullin Meter can be worn on the wrist leaving both hands free

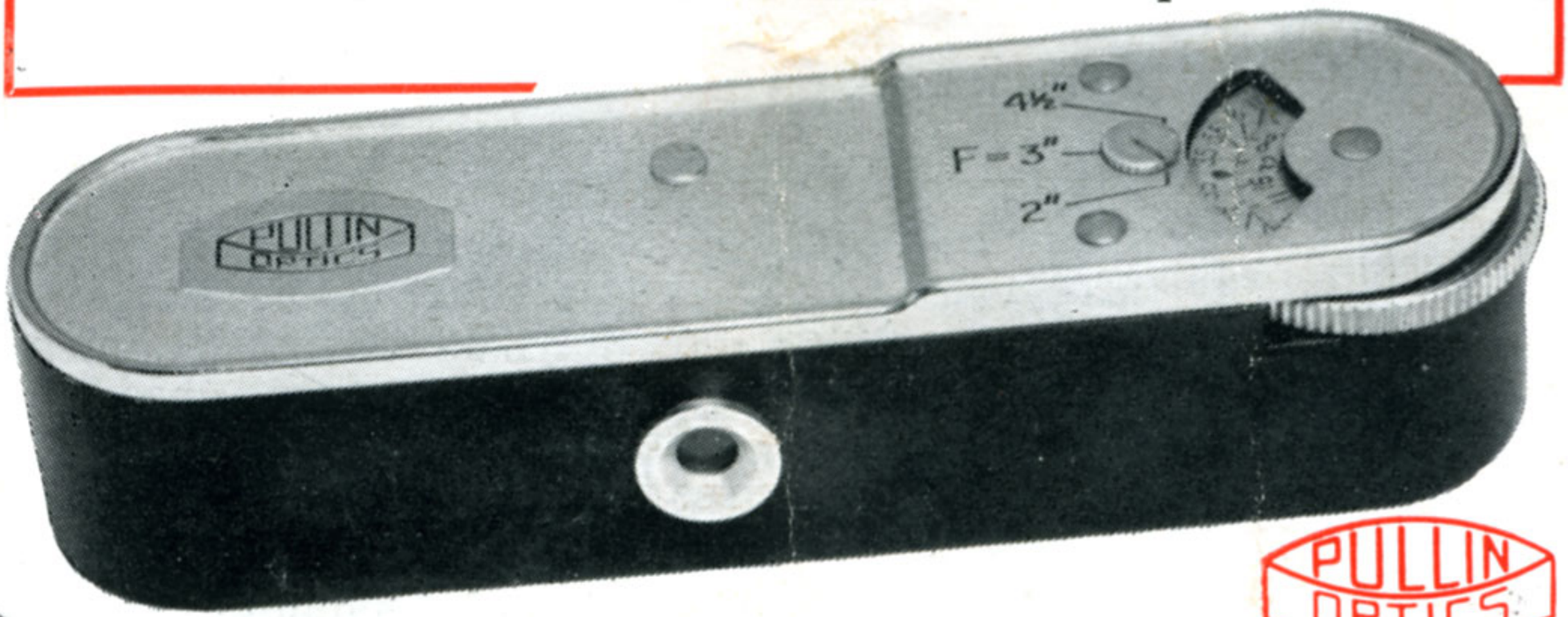
Every PULLIN exposure meter is fitted with a recessed rectangular rivet at the back for clipping to a wrist strap. Wrist straps can be supplied with a complementary fitment into which the rivet is inserted: a half-turn of the meter secures it firmly in place.

A velvet-lined leather Ever-Ready Case is also available.

. . and this is the **NEW**

PULLIN RANGE FINDER

Split field—coincident image. Inter-changeable depth-of-focus scale. Gives readings from 2 feet—also available calibrated in metres. Leaflet available on request.



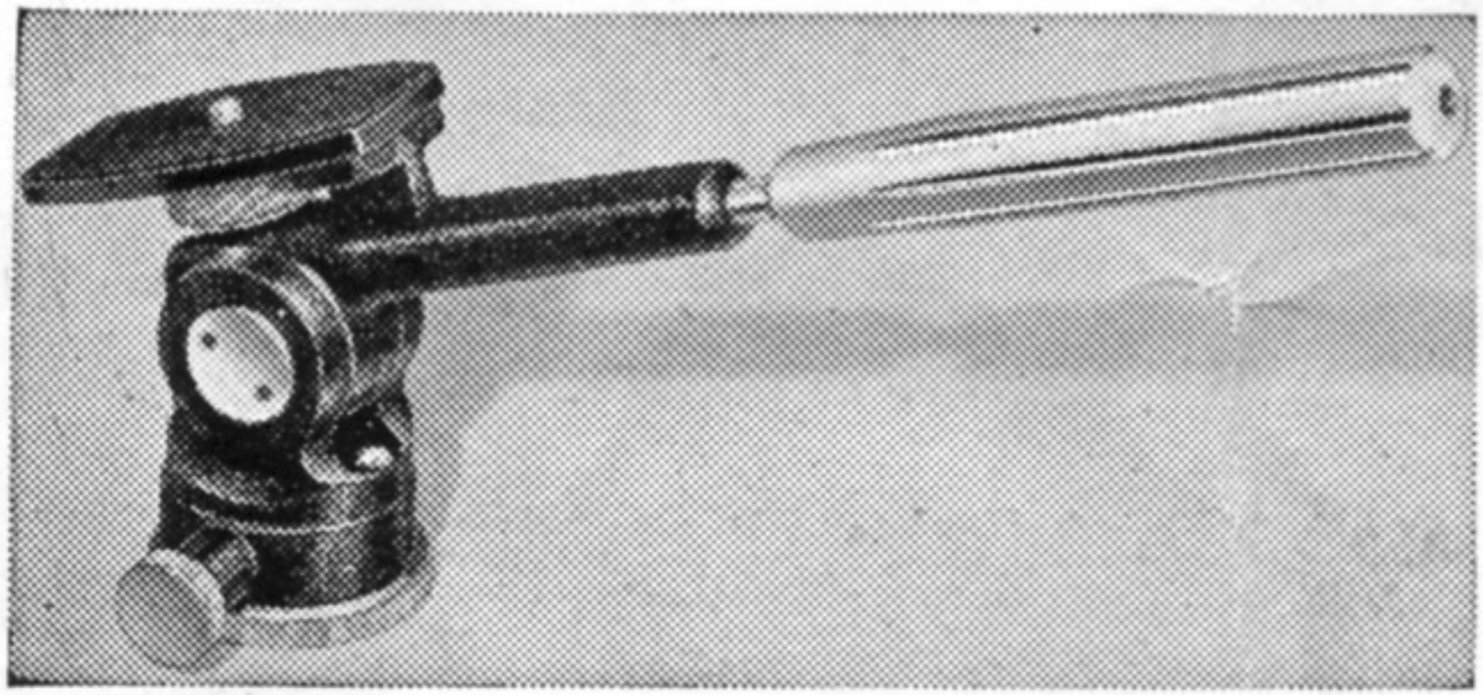
PULLIN
OPTICS

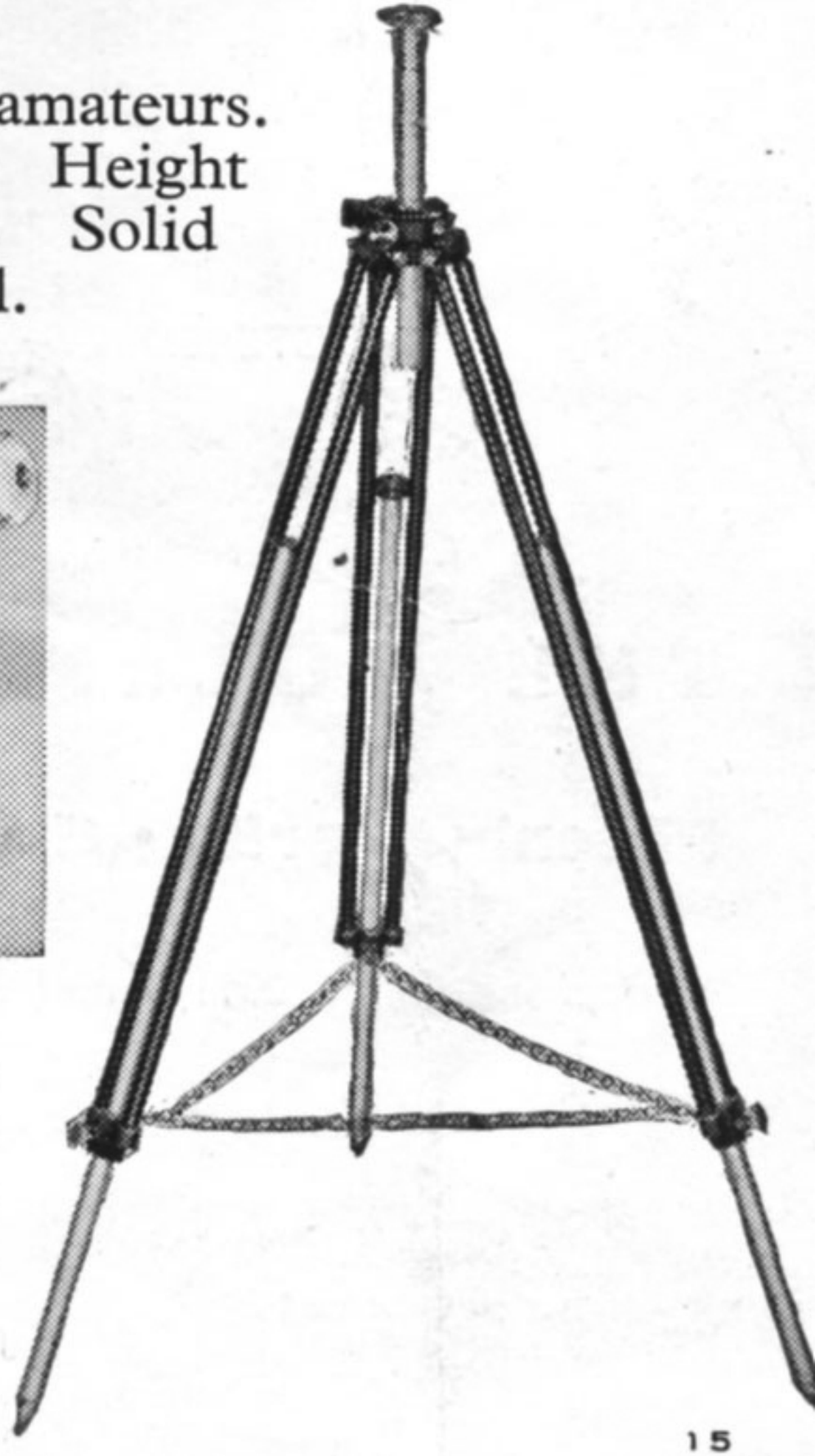
. . *and here are some more* **PULLIN** *Precision Products*

Model "C" 35 mm Enlarger, gives easy adjustment to limits of precision accuracy. New time-saving features. Unique glassless built-in carrier with condenser clamping holds negatives flat. 30″ sloping column gives enlargements to 10 diameters. 60—100 lamps. Controls are all instantly accessible. Lamphouse easily removable. Negative Carriers also available for 36 mm. x 24 mm., 24 mm. x 24 mm., 24 mm. x 18 mm.

Miniature Film Enlargers. (Model A—40″ Column, Model B—30″ Column). Quick trigger action to sliding Enlarger head. Rotating film carriers. Automatic safety filter. Smooth micro-focussing without backlash. Rotating head for large-scale magnification. Tilting head corrects verticals. Swivelling head for horizontal projections. New wire frame negative carriers available for 35 mm., $2\frac{1}{4}$″ x $2\frac{1}{4}$″, $2\frac{1}{2}$″ x $1\frac{5}{8}$″, 4 cm. x 4 cm., V.P.K. and 24mm. x 24mm.

All-Metal Tripod, for professionals and amateurs. Rigid, light in weight, strongly made. Height variable as desired between 2′ 2″ x 4′ 11″. Solid aluminium head with recessed spirit-level.





Pan and Tilt Head, for smooth one-handed operation. Positions instantaneously locked or released. Movements from 90° below horizontal (ensuring vertical focussing) to 45° above.

REGISTERED PULLIN OPTICS TRADE MARK

THE PULLIN OPTICAL CO LTD

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