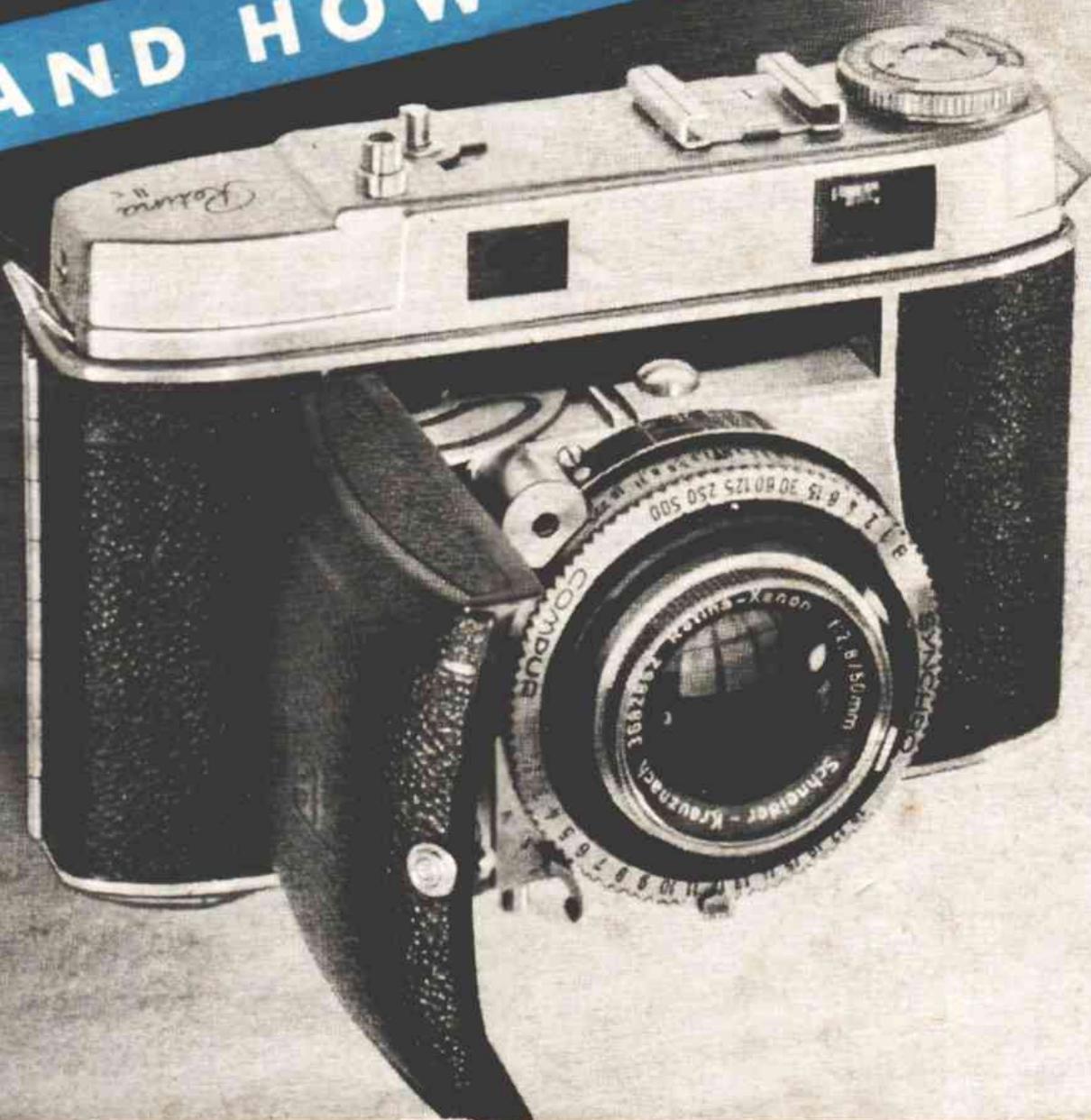


Kodak
Retina

IIIC

AND HOW TO USE IT



The KODAK RETINA IIc

is a perfected miniature camera to meet the highest demands. It has interchangeable lenses, a coupled rangefinder combined with the new viewfinder with reflected line frame, the new Synchro-Compur shutter with light value settings and self-timer, a collapsible lens panel which locks open absolutely rigidly, a rapid winding lever, double exposure lock, as well as a large number of other technical requirements.

The RETINA IIc was tested according to the strictest standards before it reached you. It combines utmost precision with unsurpassed performance and thus satisfies every possible requirement for first-class results. The name KODAK is your guarantee for that. Make the best use of the many advantages of your camera. And here is at once the most important piece.

of advice: read the first part of these instructions specially carefully — whether you are a beginner or an experienced photographer — and practise the operations described without a film in the camera. The controls of your RETINA work equally well with or without a film. Then, once you have mastered the elementary manipulation, load the camera with a film and take your first picture. The later sections in this booklet will give you a number of further tips for successful pictures. So do not skip that part of the instructions but follow the advice given there. You will soon realise how easy and enjoyable picture taking is with the RETINA II c.

KODAK AG · STUTTGART-WANGEN · GERMANY

First get to know the

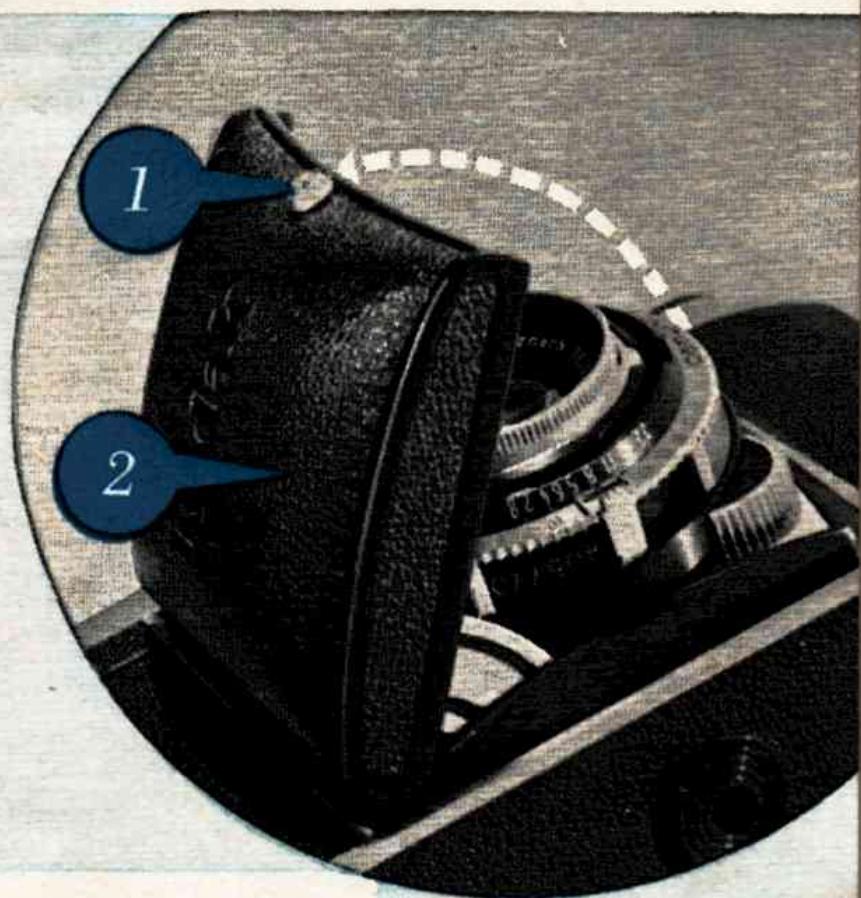
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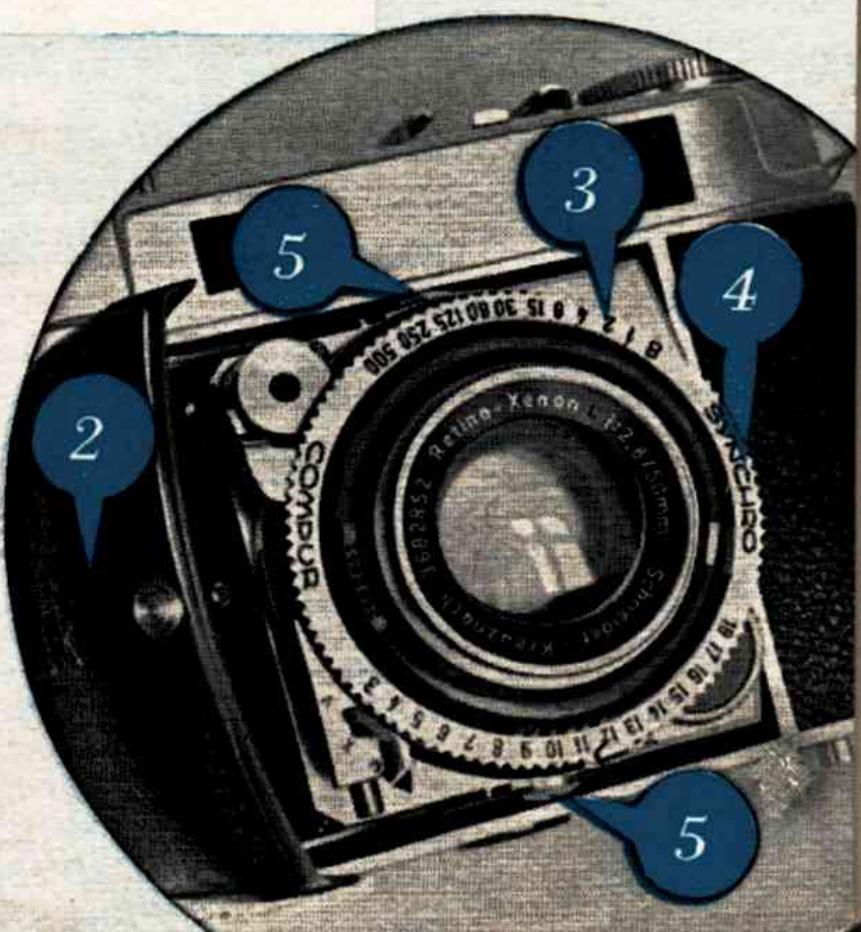
main points of operation

Hold the RETINA in your hand and push the button (1) towards the word KODAK. At the same time pull open the baseboard (2) until it audibly clicks into position. The camera is now ready to shoot.

Before you close the camera remember to set the focusing scale (4) to infinity (inf). Only then can you close the camera. Simultaneously press in the two buttons (5) at each side of the lens panel (3); the baseboard (2) will then easily fold up — even with a filter screwed into the lens.



how to open how to close



Handling is really simple:



Whenever possible, grip the camera with both hands. The illustrations show the position for horizontal and upright pictures. They are however mainly intended as a guide; you can of course hold the camera in other ways too. So try a few positions to find which suits you best. And when you have found your ideal hold stick to it!



Setting the distance

Hold the camera in the shooting position and look through the eyepiece (13) of the combined view and rangefinder. You will see the subject as well as the reflected line frame superimposed on it (we shall have more to say about that on page 23).

In the centre of the field of view you will notice a bright diamond-shaped rangefinder field. Until the camera is focused for the correct distance, this field shows part of the subject with double outlines. To set the distance turn the focusing knob (14) until the outlines of the double image move together and coincide



so that only one image is visible. The lens is now correctly set to the subject distance.

But note that this is the distance from the subject to the focal plane (which corresponds approximately to the rear edge of the top plate of the camera).

Practise focusing in this way with various subjects at different distances. Close the camera now and again and then pretend that you have just noticed a good subject and want to focus the camera on it. Try the same with the camera held upright. The better you get at handling your RETINA the better the results you will achieve.

An important feature of your RETINA:

You will surely have noticed that the shutter of your camera carries, in addition to the shutter speed and aperture scales, also a red scale engraved with numbers from 3 to 18. This is the light value scale (10). The light values are determined with the aid of the KODALUX L exposure meter — which is almost indispensable for colour shots — or from the light value table (see pages 30—31).

To set the selected light value on the camera, pull the aperture lever (8) slightly outwards and move it to the appropriate light value on the speed setting ring (9). The aperture scale (11) and the shutter speed index mark (12) now show the aperture and shutter speed in use.

The shutter speed and aperture values are now evenly spaced out on their respective scales. Together with the aperture — speed coupling of the new shutter, they easily permit the selection of any combination of aperture and speed for a given light value. To change the combination, turn the speed setting ring (9), at the same time pressing the aperture lever against it with one finger as shown in our illustration. When you set the shutter to a faster speed in this way, the aperture-speed coupling automatically opens the lens. Conversely, when you stop down the lens the exposure time is increased, so that the effective exposure always remains the same.

Thus a light value of 12 may correspond to a combination of $\frac{1}{60}$ second at aperture f/8. If you now want to take a fast action shot with $\frac{1}{500}$ second, turn the speed setting ring (9) to $\frac{1}{500}$ second. This automatically adjusts the aperture to f/2.8. The amount of light reaching the film therefore always remains the same whether you change the shutter speed or the aperture.

Setting exposures by light values

If you want to set the exposure without reference to the light value, be sure to set the shutter speed first and the aperture afterwards. If you proceed in the reverse order, setting the shutter speed will also change the aperture, due to the aperture-speed coupling.

To set the shutter speed turn the setting ring (9) until the shutter speed index mark (12) is opposite the required speed. To set the aperture pull the aperture lever (8) slightly outwards and move it to the desired number on the aperture scale (11).

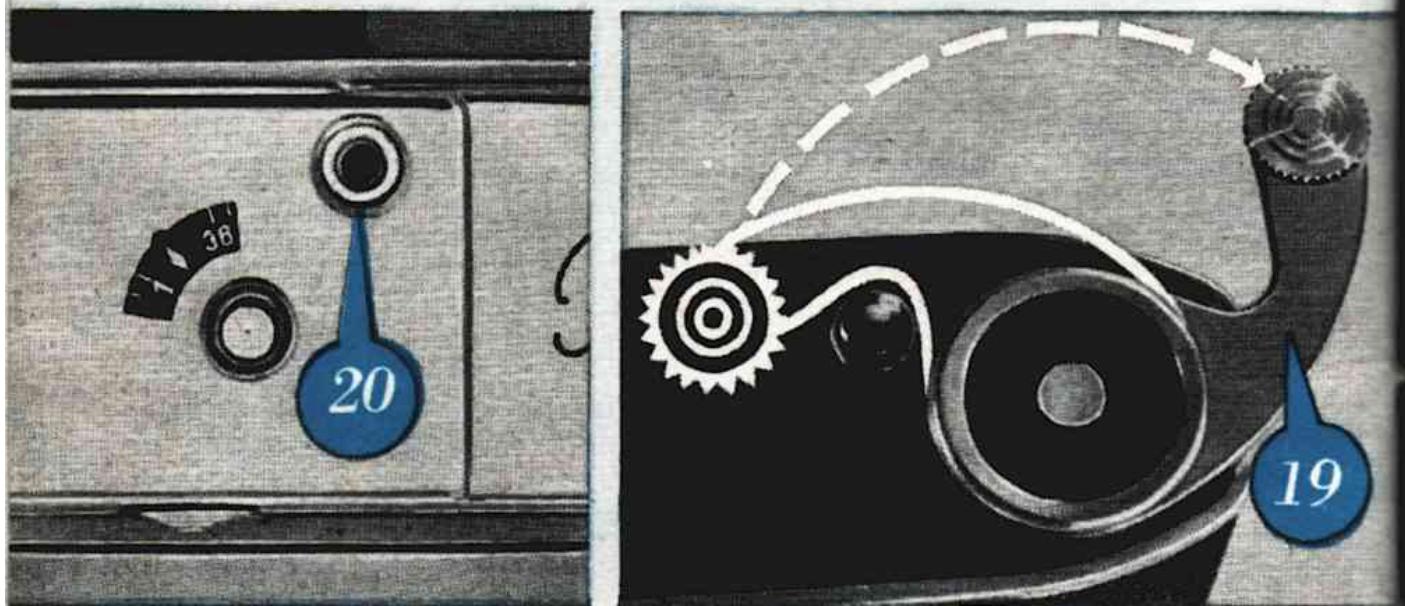


Even if you have set the exposure in this way you can still change either the shutter speed or the aperture as required by turning the speed setting ring (9) as described above.

However, there may be still occasions when the aperture lever comes up against the limit of its movement, when you turn the setting ring to a fast shutter speed or a large aperture. This indicates that the light conditions are inadequate for an exposure with the intended fast speed even at full aperture.

Quick winding and releasing

Put the camera to your eye, sight the subject in the finder, and press the release button (20). You cannot press the button until you have tensioned the shutter. To tension the shutter pull out the rapid winding lever (19) in one movement as far as it will go. Then let it shoot back into its original position. If it does not move back you did not pull out far enough, so carry on to complete the transport move-



ment. This at the same time tensions the shutter and — when the camera is loaded with a film — winds on the film by one frame and advances the film counter (see page 13).

Now you can release. You will notice how smoothly the release button operates; this is important to avoid camera shake.

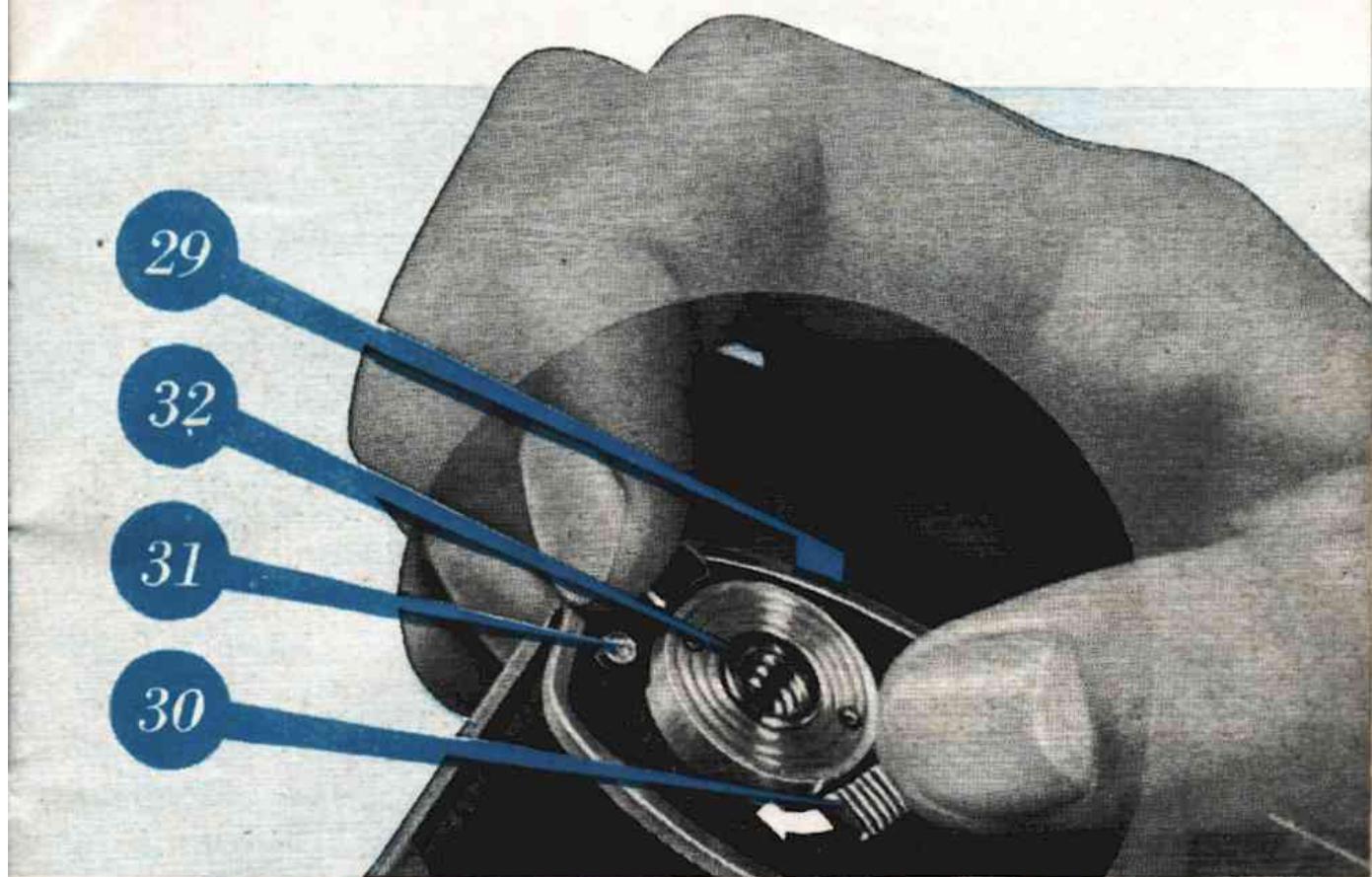
Make a habit of operating the rapid winding lever immediately after every exposure so as to have your camera always ready for action. Keeping the shutter

Preparing for the first exposure

tensioned — even for some time — does not harm it in any way.

You should by now be familiar with the most important operations and are ready to load a film and take your first picture.

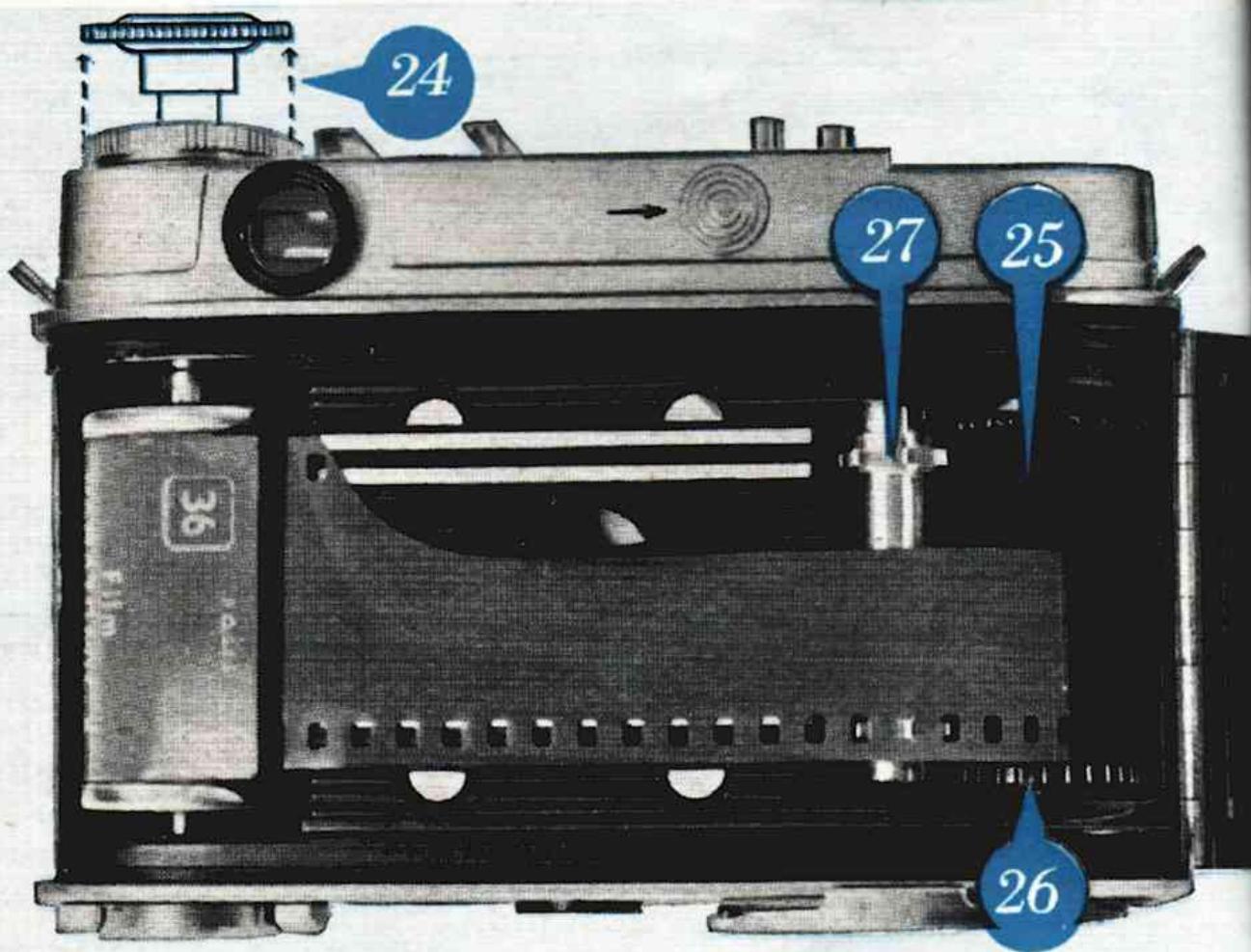
Before you carry on, however, check all camera controls and make sure that you remember them all.



To insert the film open the camera back. On the bottom of the camera you will find the tripod bush (32). This is surrounded by a double lever (30). If you push the milled end of the lever in the direction of the arrow the opposite end uncovers a button (31). Depress this button and the camera back (29) will spring open.

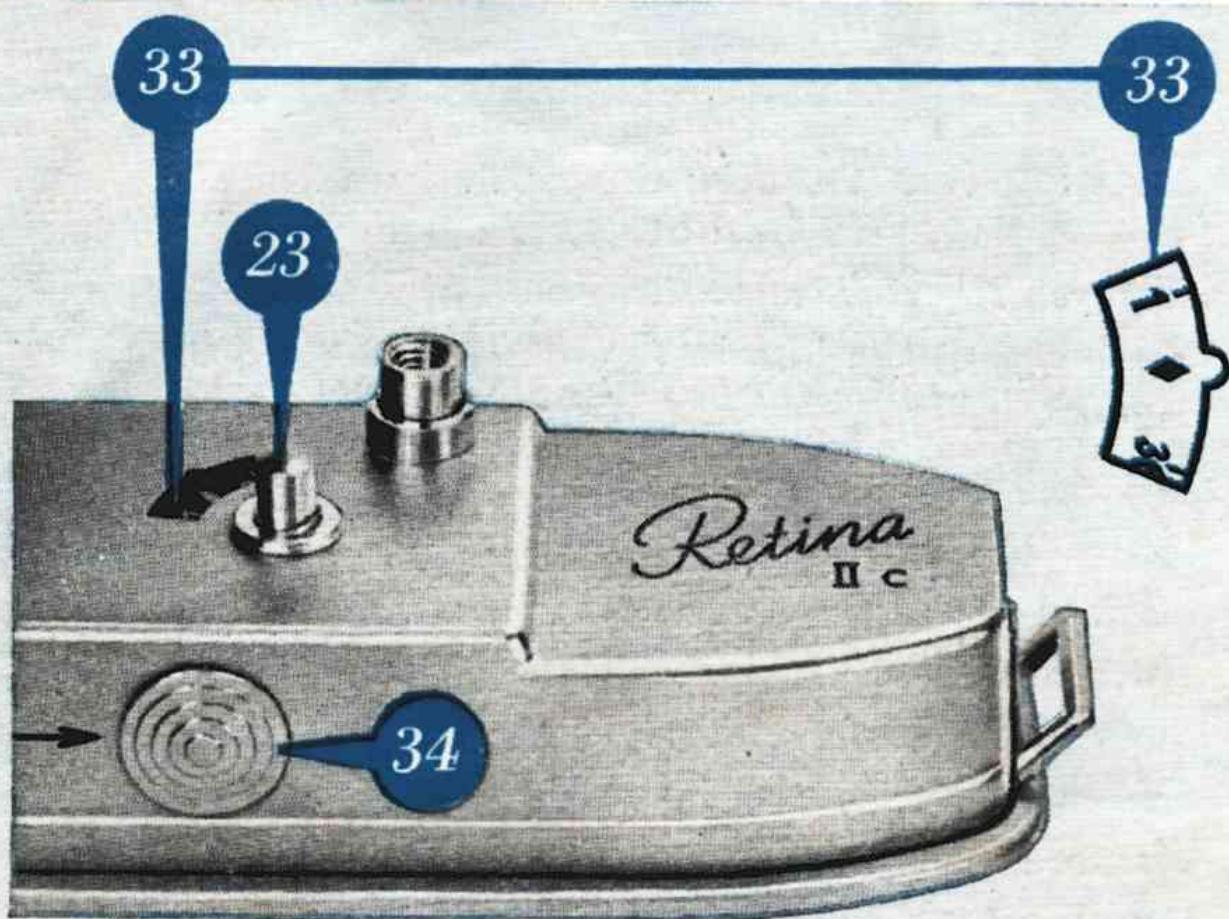
This locking system has obvious advantages. You can only open the camera deliberately and not by any accidental movement or knock.

Now insert the film . . .



To insert the film fully pull out the rewind knob (24) to its second stop. Turn the built-in take-up spool (25) by its serrated flange (26) until the slit in the spool points upwards. Push the trimmed end of the film protruding from the cassette sufficiently far into this slit and anchor it. Then pull the film across the film track and insert the cassette into the cassette chamber. When the film end and cassette are correctly in position push back the rewind knob, turning it at the same time in the direction of the arrow to tension the film. Make sure that the teeth of the transport sprocket (27) engage the film perforations at both sides. Push the button (34) in the direction of the arrow and at the same time depress the film release button (23).

... and set the film counter



Repeat this until the diamond-shaped mark ♦ near No. 36 on the film counter (33) is opposite the notch in the upper edge of the film counter window. If you are using a 20-exposure cassette, set to the index mark ♦ between No. 20 and 25.

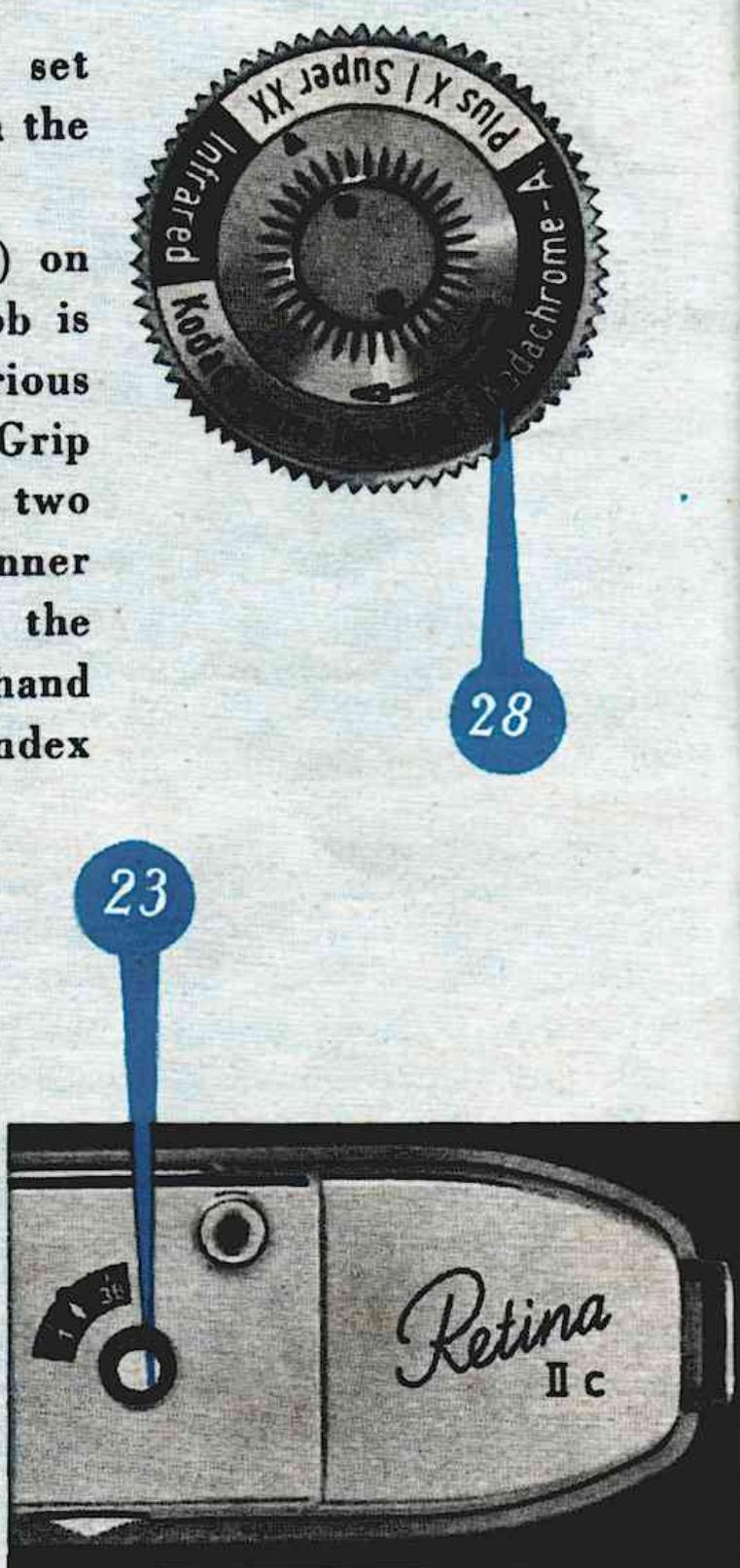
Now work the rapid winding lever and press the film release button (23). Repeat this until the film counter indicates No. 36 or 20 respectively. At the same time the rewind knob (24) should rotate against the direction of the arrow engraved on it. This shows that the film is advancing correctly. The film counter always shows the number of shots still available. When it has reached No. 1, and thus the whole film is exposed, a transport lock automatically comes into operation.

Remember the film speed:

Setting the film indicator

Always remember to set the speed of the film in the camera.

The film indicator (28) on top of the rewind knob is marked for the various types of film available. Grip the rewind knob with two fingers and turn the inner serrated ring with the thumb of the other hand until the triangular index mark ▼ points to the type of the film loaded in the camera. Everything is now ready for the first exposure. Recapitulate once more all the required operations which you have been practising.



When the film is finished: Unloading



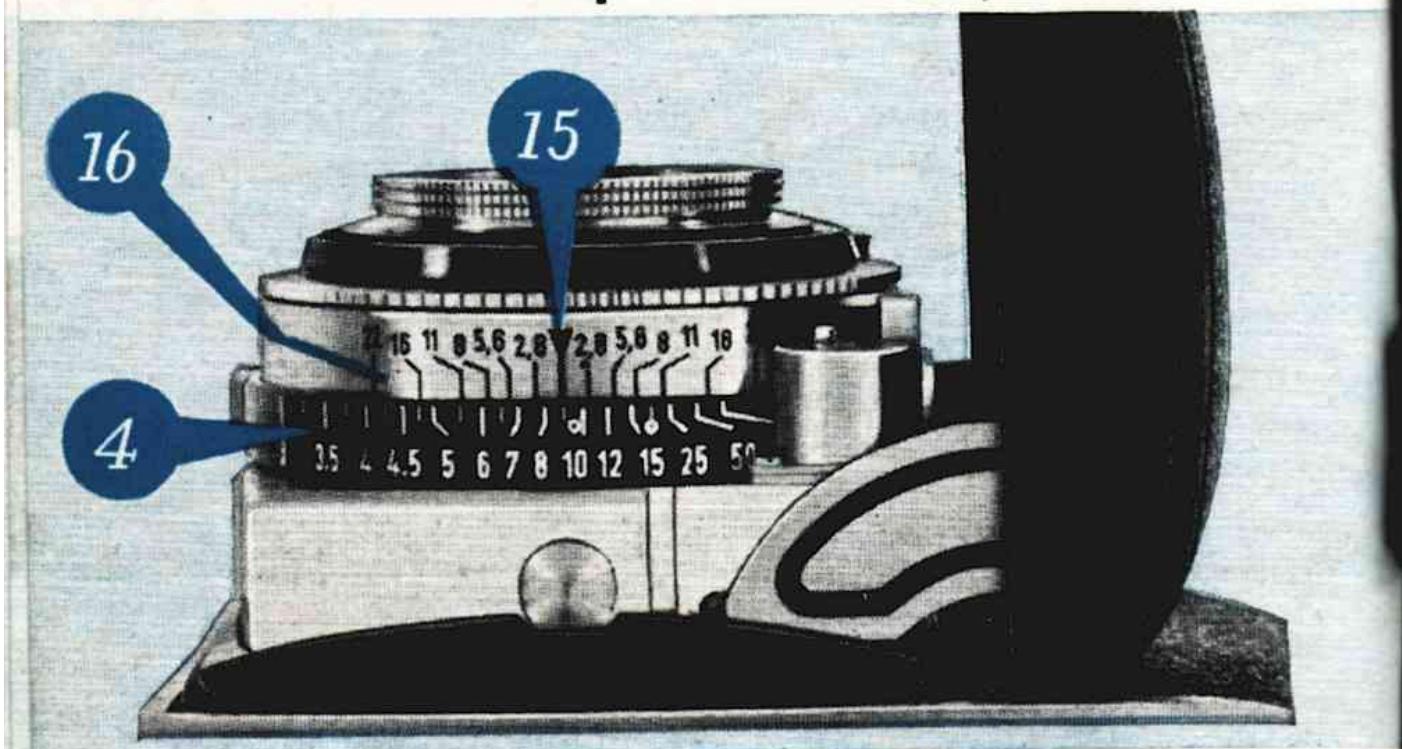
To rewind the exposed film depress the reversing button (35) in the base of the camera and half pull out the rewind knob (24) to get at it more easily. Then turn the rewind knob in the direction of the arrow until the reversing button ceases to rotate. This is easily observed by the small black dot near the rim of the button.

You have now rewound the film into its cassette. Open the camera back, fully pull out the rewind knob, and remove the cassette.

The film release

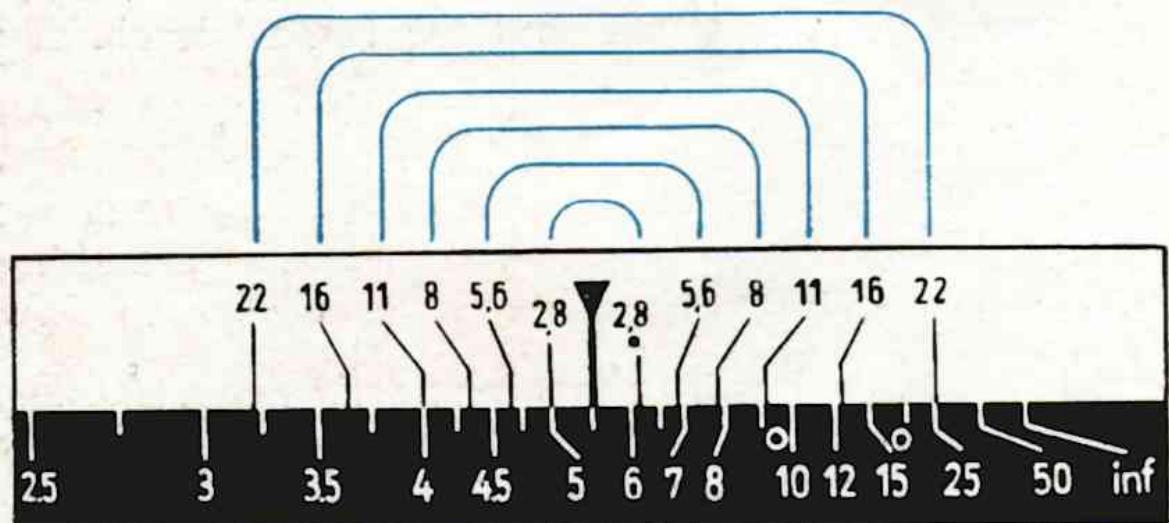
Apart from its use when changing partly exposed films, the film release button (23) can also deal with any blockage of the rapid winding lever that may occur. Just press the film release button and the rapid winding lever will spring back into its rest position without wasting the frame or causing a double exposure. If however the film counter indicates No. 1, you have to unload the film from the camera.

Depth of field



The depth of field is an important factor in photography. What does this mean?

The lens reproduces sharply not only that part of the subject on which it is actually focused but also a certain zone in front and behind. This zone is called the depth of field.



To permit instant readings of the depth of field for any aperture and distance, a depth of field scale (16) is arranged symmetrically around the distance index

Zone focus settings

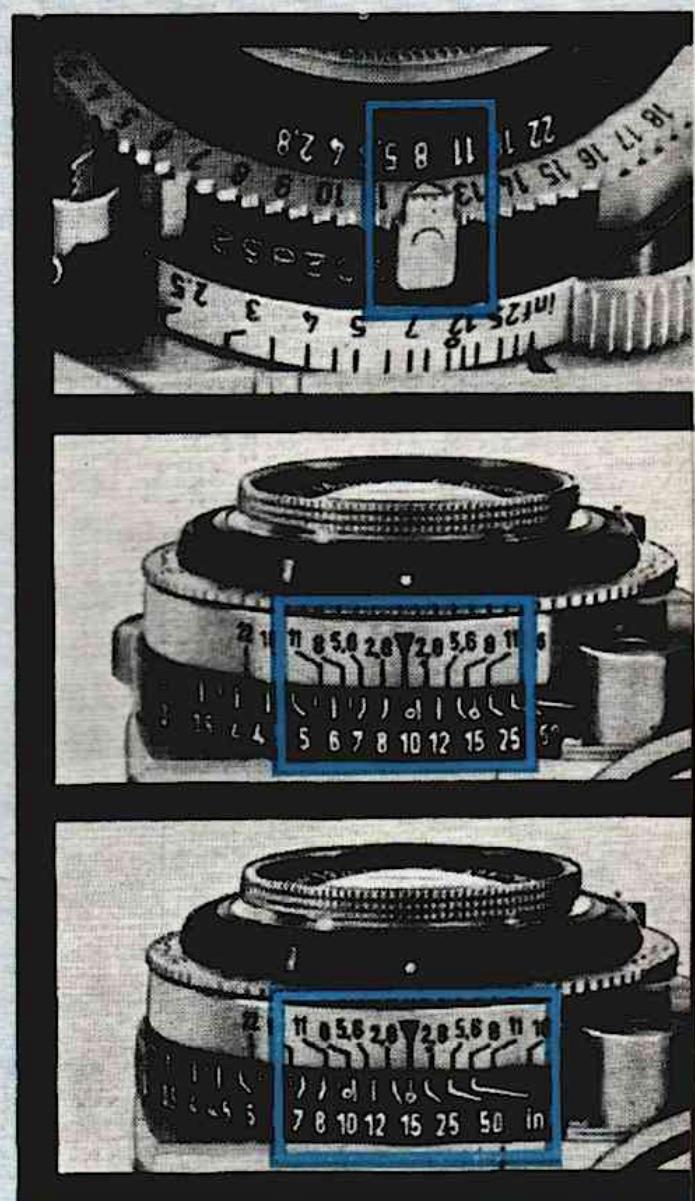
(15). Suppose you have set the aperture to f/11 and the distance to $5\frac{1}{2}$ feet. This is how you read off the depth: to the left of the distance index the line marked with the figure 11 is opposite 4 feet. To the right of the index another line for aperture f/11 points to about 9 feet. This tells you that you have a depth of field zone from $5\frac{1}{2}$ to 9 feet. Within this zone everything will be sharp.

However, you may come across subjects where you just have not the time to work out the ideal setting or to use the rangefinder, if you don't want to miss the picture (as in sports and action shots, children at play, etc.). For such occasions your RETINA camera carries two zone focus settings: one for near and one for distant subjects.

For near subjects set the distance to the small circle near the 10 feet mark, and the aperture to f/8. This gives you a depth of field from about $6\frac{1}{4}$ to 13 feet.

For more distant subjects use the small circle at the 20 feet mark and an aperture of f/8. This gives a depth of field from about 10 feet to infinity.

With these settings you must however have sufficient light. Your KODALUX L exposure meter or the light value table (pages 31—32) should indicate a light value of at least 12.



Live shots with flash

Your RETINA has a speed-synchronized Synchro-Compur shutter. That means that you can take flash shots with flash bulbs and electronic flash units at any shutter speed up to the fastest setting of $1/500$ second.

The holder of the flash socket (22) carries three letters engraved on it, M, X and V.

M and X are synchronizing settings for flash, while V is the self-timer setting.

The three settings are adjusted by means of the green synchronizing lever (21). The flash is fired on releasing the camera shutter.

The table (right) shows the suitable shutter speeds and the required setting of the synchronizing lever for the different types of flash. The aperture to be used can be obtained from the so-called guide numbers which are included with each package of flash bulbs. Divide this guide number by the distance; the result is the aperture number to be used. For instance, if the guide number is 120 and you are 15 feet from the subject, $120 : 15 = 8$. In other words you set the aperture to f/8.



Position of Synchronizing Lever	Flash Bulbs	Class	F
M Shutter faster than flash	X Shutter slower than flash	Type	Make
	1 to $1/125$	SM	G. E. C. Mazda, G. E., Westingh.
		SF	Sylvania
		No. 3	G. E. C., Mazda
			Oiram
			XO. XP
M	Not suitable for speed-synchronization		

.... and the built-in self-timer

The self-timer

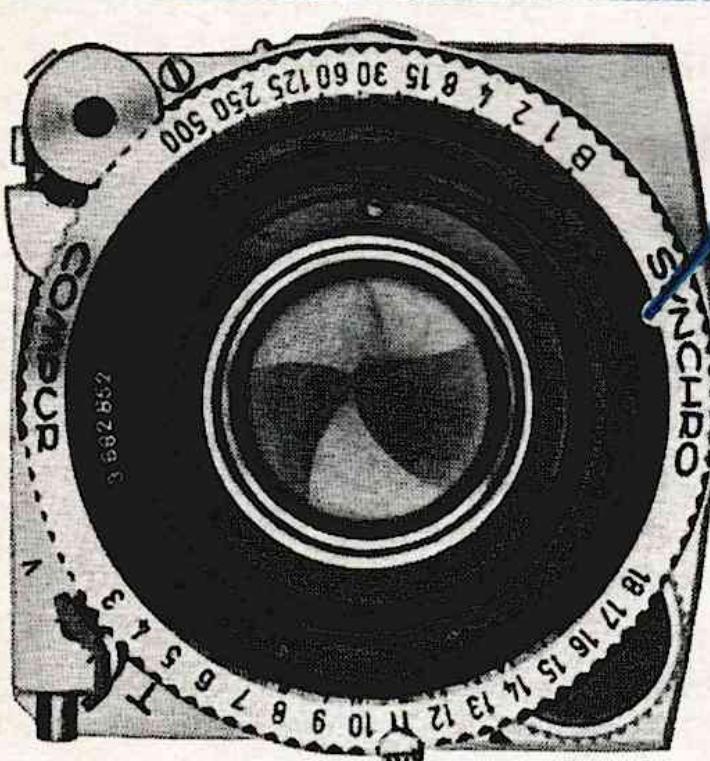
If you want to include yourself in a shot, set the synchronizing lever (21) to V. But first operate the rapid winding lever. Start the self-timer mechanism by pressing the release button. The shutter will go off after about 10 seconds; you therefore have sufficient time to take your place in the picture.

If you use the self-timer with flash shots, the camera works with the X-synchronization. As the self-timer runs down, the synchronizing lever automatically moves to X. Be sure to use the appropriate shutter speed setting for X-synchronization. (See table.)

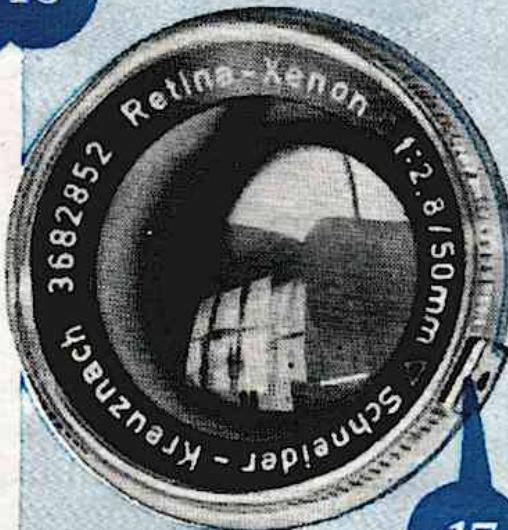
Suitable shutter speeds in seconds

		M	S	Class	X	F
1/30 to 1/500	1 to 1/15	S 0	S 2	Osram		
		PF 3 PF 14 PF 25 PF 38 PF 60	No. 5 No. 11 No. 22	G.E.C., Mazda, Westinghouse		
1/60 to 1/500	1 to 1/30	Press No. 25 No. 40 No. 50 No. 0	No. 2	Sylvania		
		PF 100		Philips		
1/60 to 1/125	1 to 1/30		No. 3	G.E.C., Mazda, Westinghouse		
				Sylvania		
1/15 to 1/30	1 to 1/15			Electronic Flash		
				Instantaneous firing		
				5 ms firing delay		
		Synchronizing lever set to X Shutter slower than flash				
		1 to 1/500				
		1 to 1/125				

The RETINA interchangeable lenses



18



17

The standard lens of the RETINA is a 6-element
RETINA Xenon C or
RETINA Heligon C

with a focal length of 2 inches and a maximum aperture f/2.8.

To remove the interchangeable part of the standard lens, turn the mount anti-clockwise as far as it will go and lift out of the shutter. For easy removal and safe storage we strongly recommend the standard container designed for the standard lens.

In place of the standard lens removed, two alternative units can be inserted as required:

- a) A telephoto lens, the 3 $\frac{1}{8}$ inch (80 mm.) RETINA Longar-Xenon C f/4 or RETINA Heligon C f/4; or,
- b) A wide-angle lens, the 1 $\frac{3}{8}$ inch (35 mm.) RETINA Curtar-Xenon C f/5.6 or RETINA Heligon C f/5.6.

Preferably avoid changing lenses in brilliant sunshine. The alternative lenses can only be fitted to the camera when the red dot on the lens mount (17) is exactly opposite the red dot on the bayonet ring (18). Turn the lens clockwise to lock it securely in place.

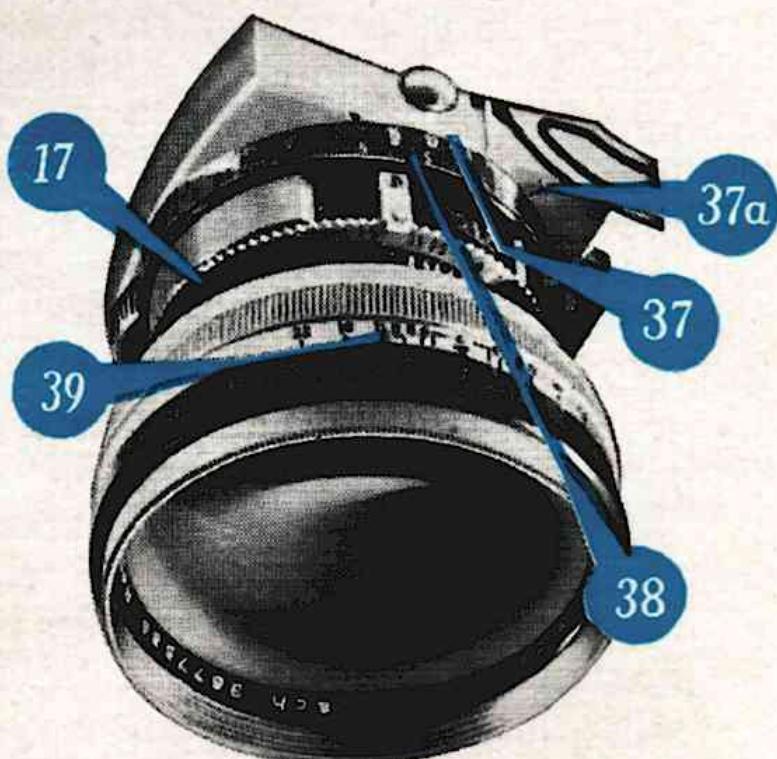
Telephoto shots

Before taking a picture with the telephoto lens, measure the distance of the subject with the rangefinder of your RETINA and read off the distance against the index (15) on the focusing scale (4). Then turn the camera towards you and transfer this distance reading to the focusing scale for the telephoto lens (37) marked with white figures on black. To do this, turn the focusing knob until the appropriate distance on the telephoto scale (37) is opposite the T-mark (37 a). But do not use the scale on the black ring (39) of the telephoto lens for this purpose. This ring only indicates the depth of field available.

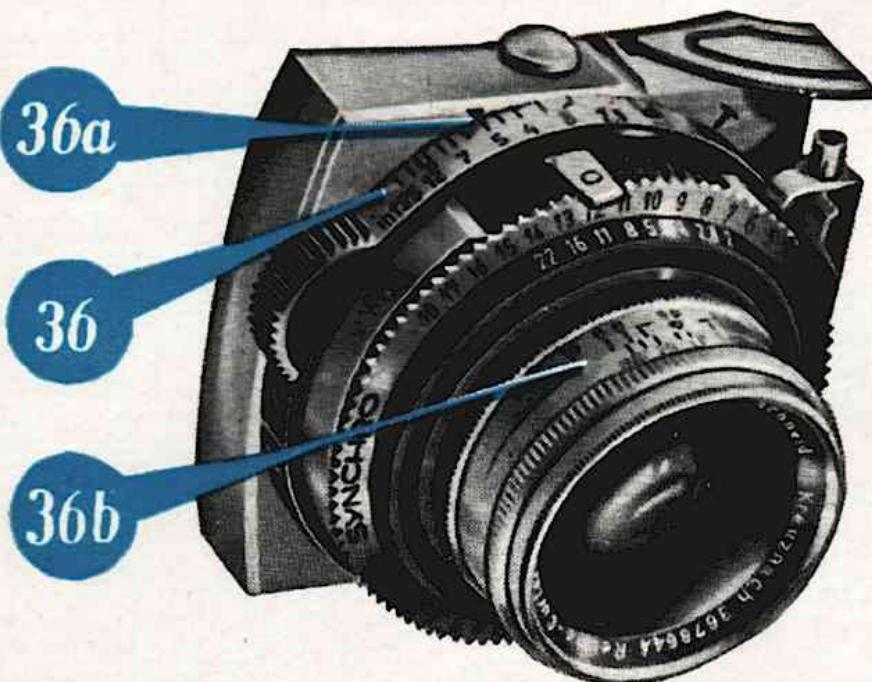
The telephoto lens permits shots from infinity down to $6\frac{1}{2}$ feet. By fitting a T 1 supplementary lens you can also focus down to about $3\frac{1}{2}$ feet. In that case transfer the distance reading to the scale (38) with yellow figures on black.

When reading off distances you will find the scale marked with subdivisions which are repeated on the focusing scale for the telephoto lens. This facilitates more accurate transfer of the readings.

To focus with the wide-angle lens, proceed in the same way as with the telephoto lens. Measure the distance with the rangefinder and transfer the reading



Wide-angle shots



to the wide-angle focusing scale (36) (black figures on white) opposite the ♦ index mark (36 a) by turning the focusing knob.

Always be sure to set the distance on the correct focusing scale when using interchangeable lenses.

Like the telephoto lens, the wide-angle lens carries a depth of field indicator (36 b). The rotating ring on the lens is engraved with a distance scale in the same background colour as the focusing scale for the appropriate interchangeable lens.

Note that for pictures with the interchangeable lenses the same aperture and shutter speed settings apply as with the standard lens. One point is, however, important: do not set a larger stop than the maximum aperture of the appropriate interchangeable lens ($f/4$ with the telephoto lens and $f/5.6$ with the wide-angle lens). Otherwise the picture will be underexposed.

Further, make sure that the standard lens supplied with the camera is not interchanged with the standard lens of any other RETINA. The serial number of the standard lens must therefore always correspond to the serial number engraved on the bayonet ring.

A few more important hints

If you have carefully read the previous sections and have understood the purpose and scope of the operations described, you will surely agree that the RETINA II c is much easier to handle than you first thought.

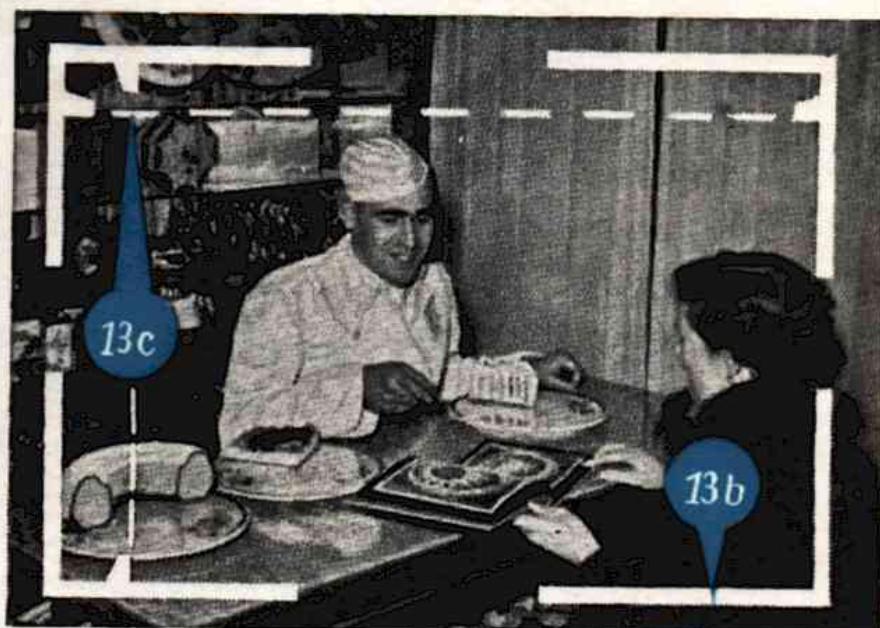
Before you put down this instruction booklet we would like to give you a few more hints.

The line frame finder as an aid to viewing

When you look correctly through the eyepiece of the finder (with your eye close up against it) you will see a reflected line frame (13 b). It accurately outlines your picture area

and is always plainly visible. This helps you to find the correct field of view and prevents faulty sighting.

This is specially important with colour shots as you cannot easily trim a colour transparency.



Parallax

To compensate for parallax with close shots between 2.5 and 6 feet, you have to imagine two lines (dotted in the illustration) between the pairs of opposite marks (13 c) in the line frame. With shots at such close range the subject must not go beyond these imagined lines.

Now you know your RETINA

Double Exposures

The double exposure lock of the RETINA prevents accidental double exposures. To make deliberate double exposures for special purposes, press the reversing button (35) after the first exposure and keep it depressed while tensioning the shutter with the rapid winding lever (19). The frictional resistance of the take-up spool (25) keeps the film in position for the second exposure on the same frame.

If you wear spectacles

The finder of the RETINA has been designed to give a complete view of the picture area even if you are wearing spectacles. Should your vision be faulty however and if you do not wear spectacles, we can supply correction lenses to special order. Just let us know your spectacle prescription (ask your optician for it). No correction lenses are available for astigmatism.

When you buy extra lenses

When you acquire a wide-angle or telephoto lens, be sure that it is the same make (Xenon C or Heligon C) as the standard lens. Your camera is designed in such a way that you can only use an interchangeable Xenon C lens with the standard RETINA Xenon C lens and an interchangeable Heligon C lens with the standard Heligon C lens.

The right finder for the right lens

When taking pictures with the telephoto or wide-angle lenses use the **Multiple Finder** specially designed for the interchangeable lenses. This shows the correct field of view with each lens. If you use only the standard and telephoto lenses, the **RETINA Frame Finder** model c will be sufficient. This is also suitable for close-ups with the supplementary N-lenses.

More scope with accessories

Infra-red shots

On the right side of the distance index mark (15) there is a small red dot. You use this red dot in place of the black index mark when exposing infra-red film. In other words, turn the focusing knob to bring the red dot opposite the figure for your subject distance. For infra-red shots you must use a suitable infra-red filter in front of the lens.

Accessories

The KODABLITZ. This efficient capacitor flash gun makes the RETINA photographer independent of the prevailing light. Extension units can also be connected for special purposes.

The Lens Hood and Filters. The new rectangular lens hood, suitable with a hood extension also for the wide-angle lens, and the various colour filters are indispensable aids to good pictures.

The KODALUX L is a photo-electric exposure meter with a wide measuring range which shows the correct light value as well as the aperture and shutter speed required. It is suitable for reflected light and incident light measurement.

The RETINA Frame Finder Model c. This serves for viewing the subject in natural size without parallax. It is suitable for the standard and telephoto lenses as well as for close-ups with the supplementary N-lenses.

The Close-Up Rangefinder. The RETINA close-up rangefinder with its two supplementary lenses covers a range of subject distances between $38\frac{1}{4}$ and $11\frac{5}{8}$ inches from the camera.

More scope with accessories

The Table Stand. This is intended for close-ups of subjects which require or permit time exposures, and for many other types of pictures.

The Close-Up Attachment. A set of three close-up R-lenses with the close-up attachment permits shots at four fixed near distances.

The Stereo Attachment. If you are interested in three-dimensional photography, the stereo attachment will give you stereo shots which look amazingly life-like in the stereo viewer.

The Ground Glass Focusing Adaptor. This makes the advantages of ground glass screen focusing available.

The Micro Adaptor. This is an ideal accessory for making black-and-white or colour photomicrographs.

The Copying Stand. This is specially designed for copying documents, important letters, valuable prints, and the like, in the sizes $8\frac{1}{4} \times 11\frac{1}{2}$ inches and $5\frac{3}{4} \times 8\frac{1}{4}$ inches. A special lighting unit is also available.

The Camera Features

- 1 Button to open the camera
- 2 Baseboard
- 3 Lens panel
- 4 Focusing scale
- 5 Buttons to close the camera
- 6 Eyelets for carrying strap
- 7 Rangefinder window
- 8 Aperture lever
- 9 Shutter speed and light value setting ring
- 10 Shutter

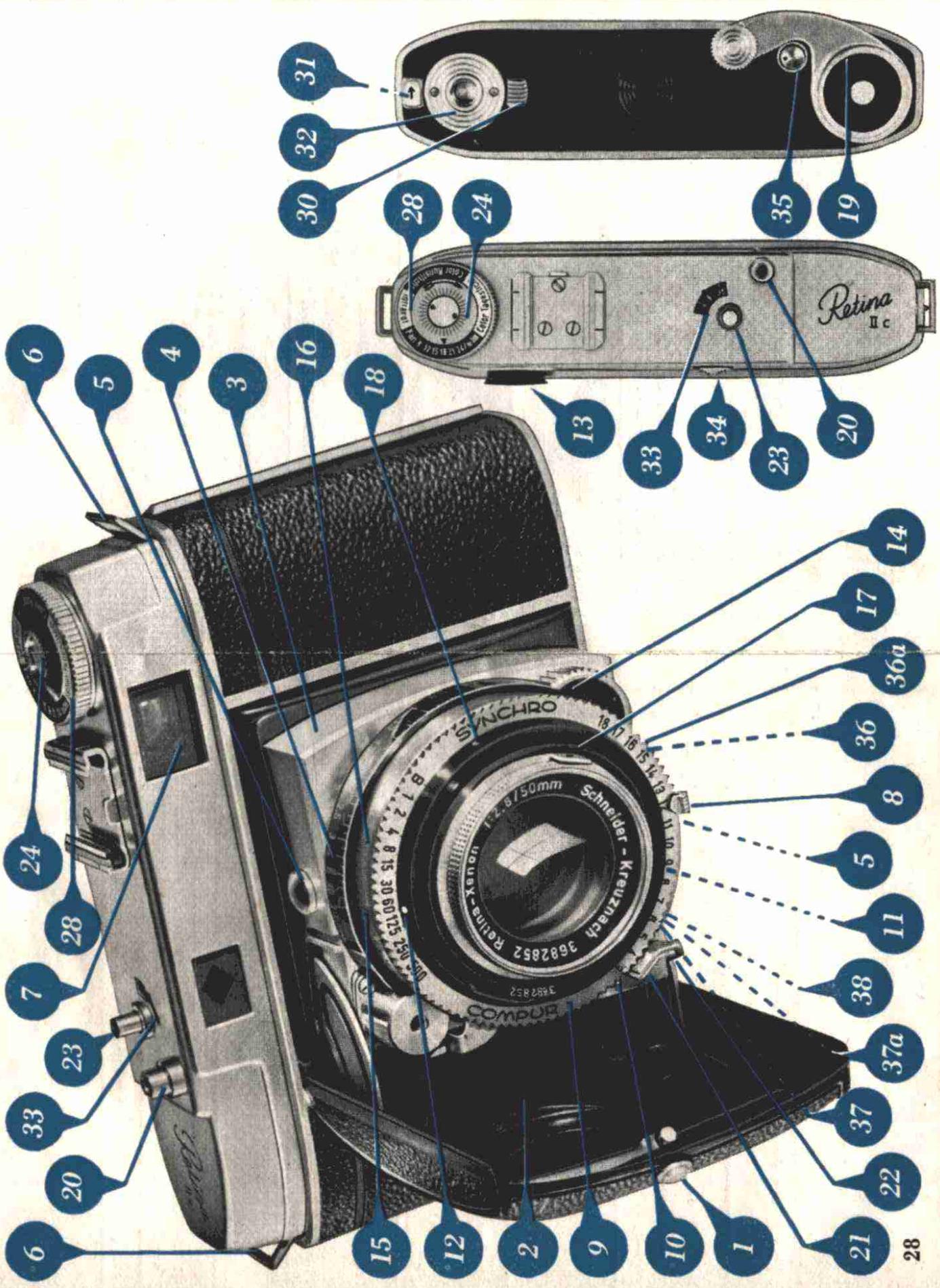
- 11 Aperture scale**
- 12 Shutter speed index mark**
- 13 Finder eyepiece**
- 13 a Diamond-shaped rangefinder field**
- 13 b Line frame**
- 13 c Parallax correction marks**
- 14 Focusing knob**
- 15 Distance index mark**
- 16 Depth of field scale**
- 17 Red dot on lens mount**
- 18 Red dot for positioning lens when changing**
- 19 Rapid winding lever**
- 20 Release button**
- 21 Synchronizing lever**
- 22 Flash socket**
- 23 Film release button**
- 24 Rewind knob**
- 25 Built-in take-up spool**
- 26 Serrated flange of take-up spool**
- 27 Transport sprocket**
- 28 Film indicator**
- 29 Camera back**
- 30 Safety cover for button 31**
- 31 Button to open camera back**
- 32 Tripod bush**
- 33 Film counter**
- 34 Button to set film counter**
- 35 Reversing button**
- 36 Distance scale for wide-angle lens**
- 36 a Distance setting index for wide-angle lens**
- 36 b Wide-angle depth of field scale**
- 37 Distance scale for telephoto lens**
- 37 a Distance setting index for telephoto lens**
- 38 Distance scale for telephoto lens with T 1 close-up lens**
- 39 Telephoto lens depth of field scale**

Changing partly exposed films

If you want to change a partly exposed film — for instance from black-and-white to Kodachrome — note on the film counter the number of pictures you have taken before you take the cassette out of the camera. When re-loading, first set the film counter to the diamond-shaped index mark in the same way as when you first loaded the film. Then load the partly exposed film, close the camera and alternately work the rapid winding lever and the film release button — not the shutter release! — until the film counter indicates the number at which you unloaded the film. To be on the safe side, advance the film by one additional frame.

Filter Factors

The various colour filters from light yellow to blue are often indispensable aids to good pictures. As you will probably know, every filter has a so-called filter factor which depends on how much light the filter lets through. This filter factor indicates that the exposure must be increased by the appropriate amount. For instance, the medium yellow filter has a factor of 2 times, requiring double the normal exposure. This means that you must use one stop larger or one shutter speed slower. Allow for the filter factor by adjusting the aperture lever to an appropriately lower light value. (For instance, for a factor of $1\frac{1}{2}$ times reduce the light value by $\frac{1}{2}$, for a factor of 2— $2\frac{1}{2}$ times reduce the light value by 1, for 3 times reduce by $1\frac{1}{2}$, 4 times by 2, and for a factor of 7—8 times reduce the light value by 3.)



RETINA light value table

Features of the Subject		Light Values for*				
		Brilliant Sun Clear sky, sharp shadows	Hazy Sun With indis- tinct shadows	Cloudy Bright No sun, no shadows	Cloudy Dark No sun, dark sky	
ASA Index	ASA Speed BS					
		22 25 28 31	12 13 14 15	12 13 13 14	11 12 13 14	10 11 12 13
		22 25 28 31	11 12 13 14	11,5 12,5 13 14	10,5 11,5 12 13	9 10,5 11 12
		22 25 28 31	10 11 12 13	11 12 13 14	8 9 10 11	7 8 9 10

If you are in any doubt about classifying the subject brightness, use the row for "Average Subjects".

* These values apply to front lighting. For side lighting reduce light value by $\frac{1}{2}$, for back lighting by 1.

This table of light values is valid for the months from May to August between 10 a.m. and 4 p.m. The light value should be decreased by 1 for the months of March, April, September and October, or when you take pictures between 9 and 11 a.m. or 4 and 6 p.m. Use 2 values lower for the winter months from November to February.