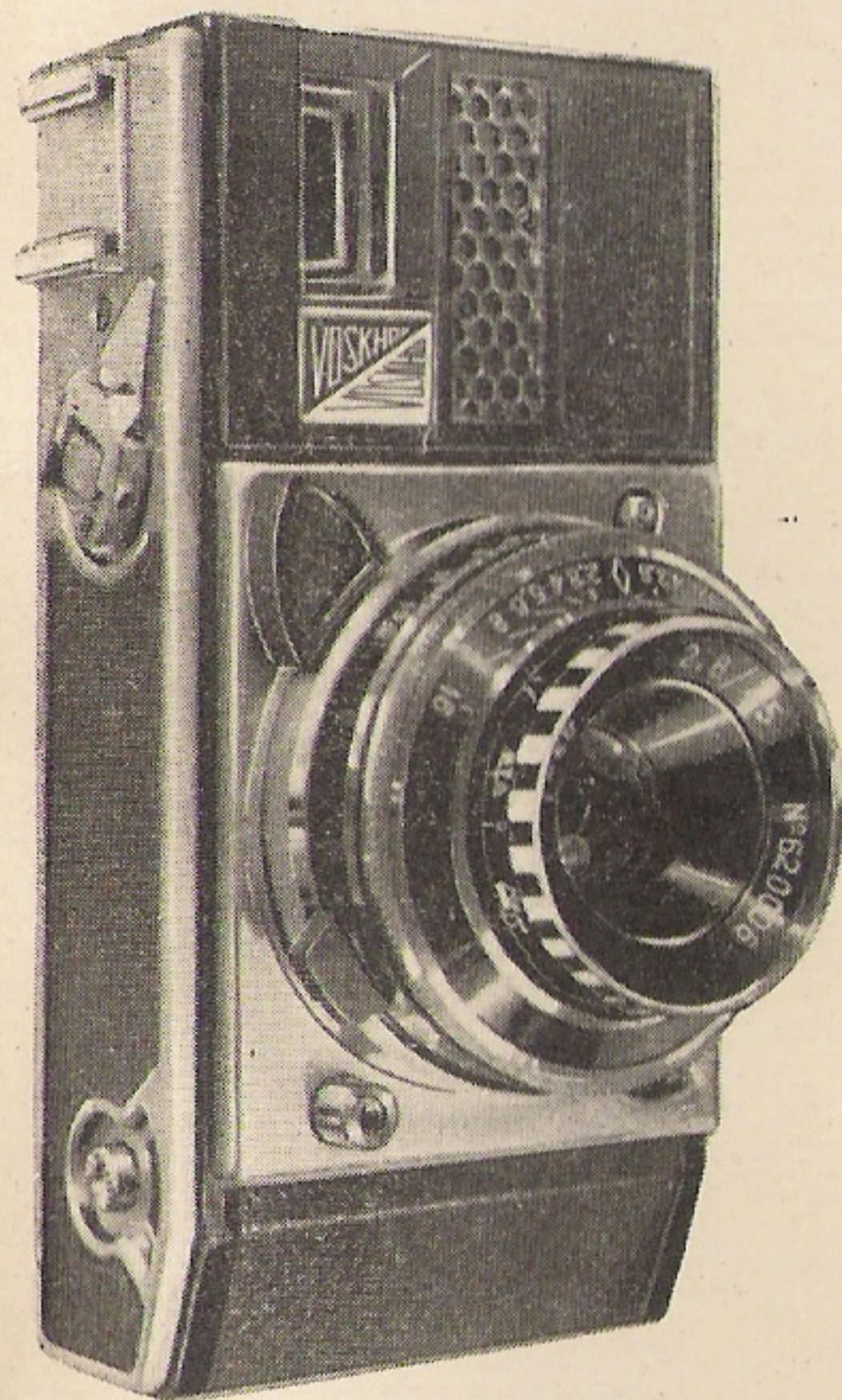


camera  
VOISKHO



Leningrad  
Optical-Mechanical  
Enterprises,  
Amalgamated



VOSKHOD

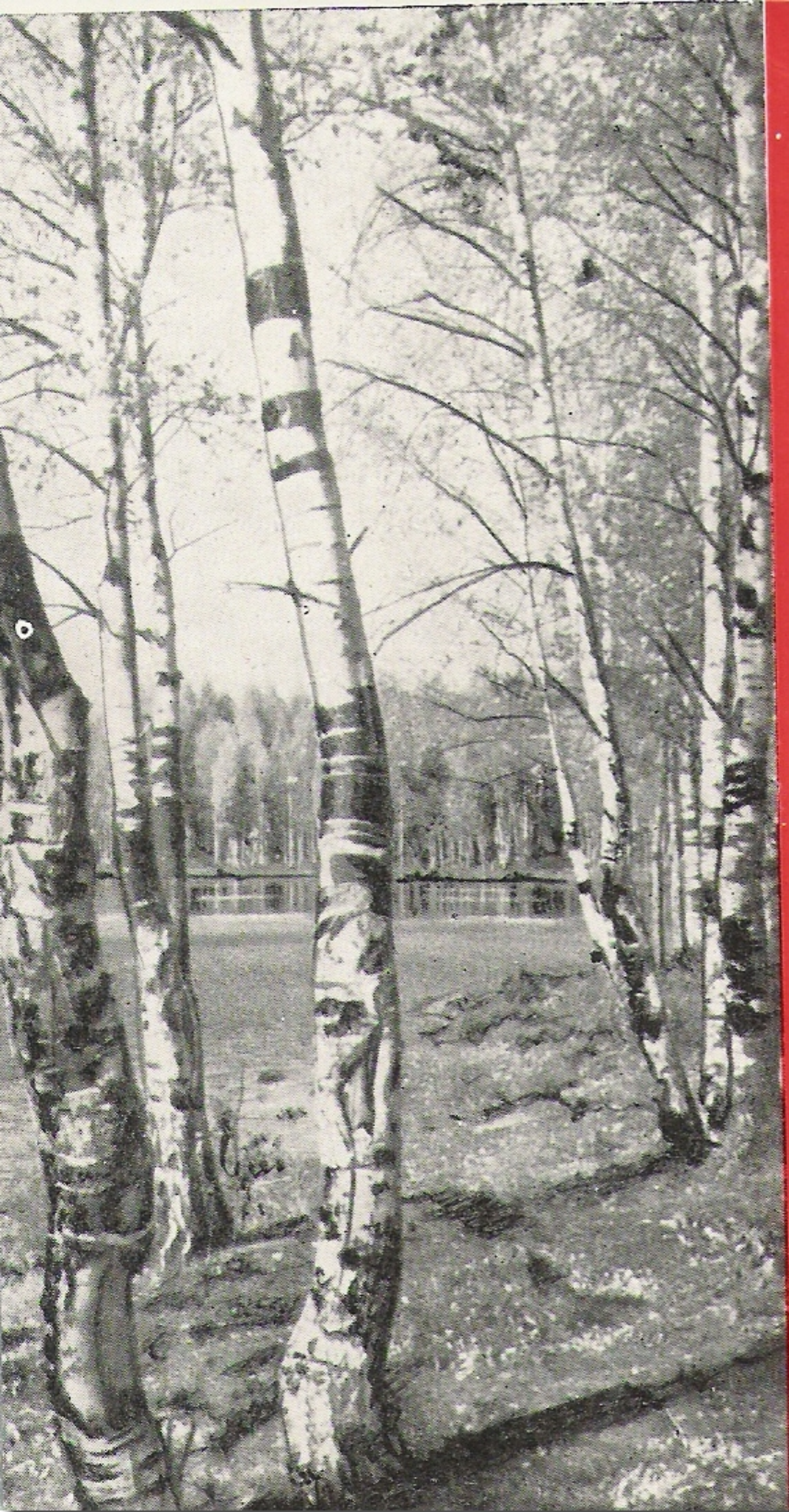
THE VOSKHOD PRESENT-DAY CAMERA of original design is intended for amateur picture taking on black-and-white and full colour films 35 mm wide.

The camera is provided with one f/2.8 4.5 cm T-48 lens and view finder with illuminated frames.

Lens optics is made of lanthanum glass which considerably improves the image quality.

The vertical position of view finder, control and scale units as well as availability of mechanism for semi-automatic exposure control are featu-





res which favourably compare Voskhod with other cameras.

The vertical position of these units facilitates the vertical arrangement of the picture and at the same time does not deprive the photoamateur of opportunity to take picture of horizontally arranged image.

If you master correct using of the semi-automatic camera Voskhod you will take negatives and positives of normal density even if you don't possess photographing experience.

Between-the-lens shutter is speeded from 1 to 1/250 second plus «B» controlled by hand. The shutter is also provided with a synchronizer to operate with an electron flash units.

Focusing is effected by rotating the front component of the lens by the use of the distance scale provided with figures and symbols.

Optical view finder with illuminated frames permits easy and accurate composition of the picture.

The camera is provided with a film rewind mechanism. Fully loaded cassette (1.65 m of film) permits thirty six 24 mm×36 mm pictures to be taken. The camera may be loaded in daylight. For convenience purposes, the camera back is fastened to the camera by means of hinges.

The camera has a film counter which shows the number of shots you've got left.

The trigger mechanism will transport the film exactly one frame forward, will cock the shutter, and will interlock to prevent double exposure.



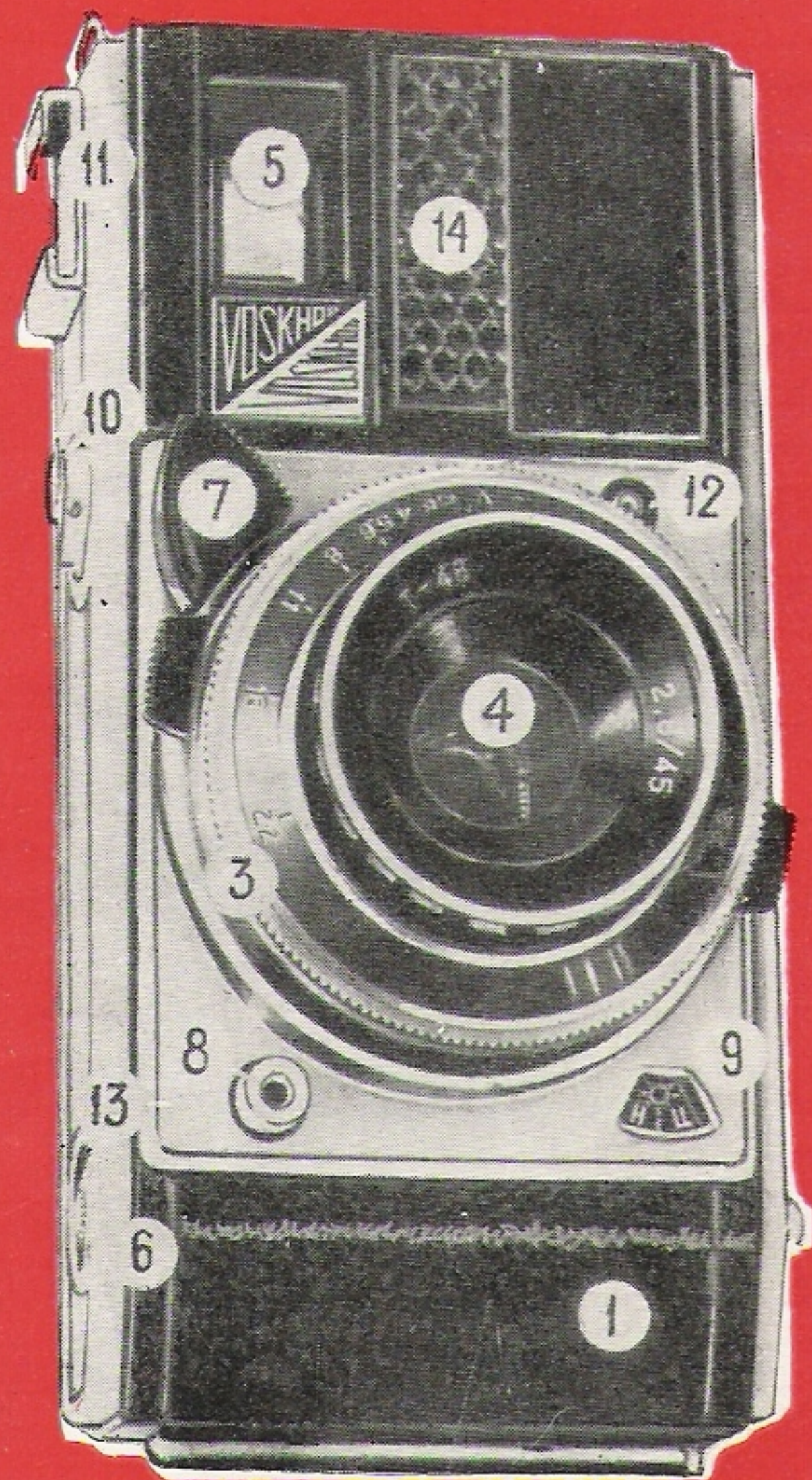


Fig. 1

## PRINCIPAL PARTS AND THEIR PURPOSE

Camera body 1 (see Fig. 1) and camera back 2 (Fig. 2) are hinge-connected. The camera body has shutter 3 (Fig. 1) with lens 4 view finder 5, film counter 6, lever 7 to cock shutter, shutter release 8, film reminder 9, film rewind knob 10, accessory shoe 11, flash synch socket 12, button 13 to set the film counter to read «36» honey-komb window 14 of the light cell, sprocket 15 to fasten and wind film (see Fig. 2), cassette 16, film gate ways 17, button 18 to engage film rewind mechanism, eyes 19 to affix the carrying strap, tripod bush 20, and film speed scale 21.

Fastened on camera back 2 are: pressure pad 22, camera back latch 23 connecting the camera back with body and hinge 24.

On the lens and shutter tube there is ring 25 (Fig. 3) provided with a scale to set the distance, field depth scale 26, shutter speed wheel 27, lens opening wheel 28, pointer 29 of the shutter speed, lens opening and distance scales, movable knob 30 and stationary knob 31 of lens opening wheel.

The lens is a coated three-element 4.5 cm f/2.8 anastigmatic unit that will permit negatives and positives of high quality to be obtained.

The between-the-lens shutter is speeded: 1, 1/2, 1/4, 1/8, 1/15, 1/30, 1/60, 1/125, 1/250 second and «B», which is hand-controlled. When the camera is set at «B», the shutter will remain open from the moment the starting button is depressed until it is released.

The shutter will work in conjunction with the semi-automatic exposure control mechanism at shutter speeds of 1/15 through 1/250 sec.

The view finder will clearly show the picture edges. Through the view finder one can see the illuminated



frames and the pointer of the semi-automatic exposure control mechanism. For parallax correction purpose at a distance of one metre, the picture should be framed to agree with the lines inside the illuminated frames.

The semi-automatic exposure control system comprises one light meter built into the camera, and the mechanism that summates data on film speed, exposure time, and f/number. To correctly determine exposure time, proceed as follows:

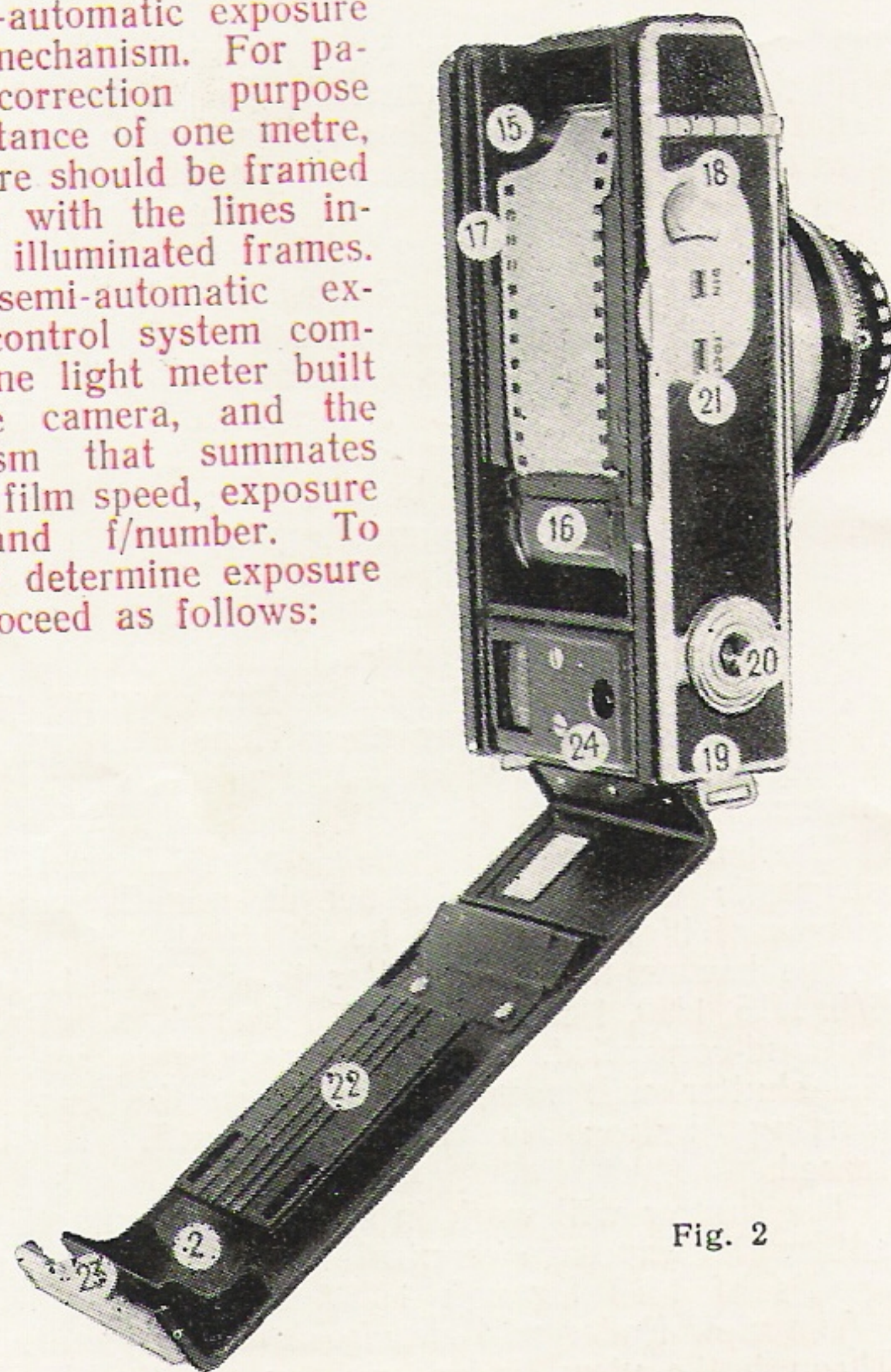


Fig. 2

Use the scale to set the speed of the film loaded into the camera in GOST or DIN units.

Set the required exposure time or the f/number. To set the shutter speed, it is necessary to compress, using two fingers of one hand, the movable and the stationary knobs and rotate, using the other hand, the shutter speed wheel. To set the f/number, it is necessary to compress, using two fingers of one hand, the movable and the stationary knobs and rotate the diaphragm wheel.

If after setting the camera for the required shutter speed and f/stop, the light meter pointer rests in the middle of the slot in the illuminated frames, the exposure selected is correct, and you may take pictures. If the light meter pointer rests not in the middle of the slot in the illuminated frames, this pointer should be set in the central position, by rotating either the shutter speed wheel or the f/stop wheel.

Keep in mind the inperpendicular position of the light meter pointer in the middle of the view finder frame as well as the pointer sight displacement, when the camera is turned from horizontal to vertical position, are of no importance.

After correct setting of the light meter pointer the shutter allows to change the combination of exposure and f/stop, while the exposure time remains unchanged. To do this rotate the shutter speed wheel without giving pressure to the movable knob of lens opening wheel. Both the wheels can move together only until the extreme value of f/stop or speed scales is reached. For further turning one of the wheels, press the movable knob of f/stop wheel.

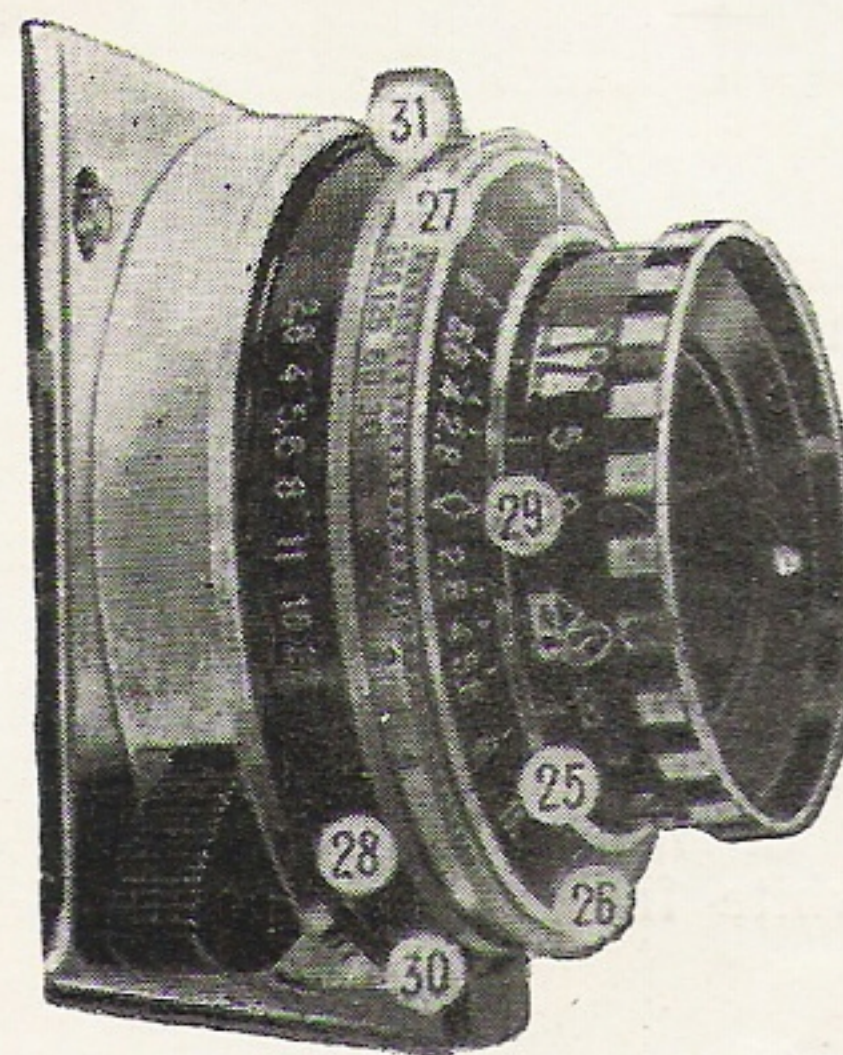


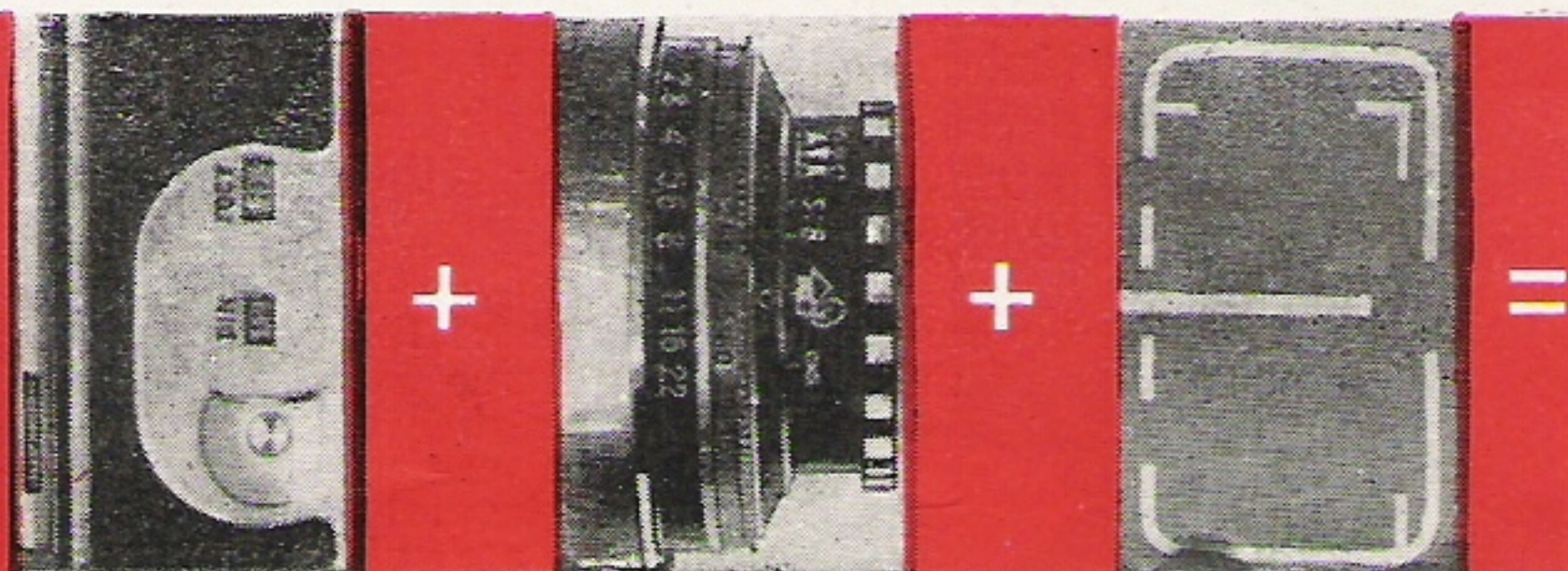
Fig. 3



The wheels should be turned in conjunction if you have, for instance, such a combination as  $1/30$  sec. and  $f/8$  and a moving subject is to be shot. In this case turn both the wheels to show  $1/125$  sec. and  $f/4$  or  $1/250$  sec. and  $f/2.8$ .

Located on the shutter are the scales to read distance,  $f$ /numbers and depth of field. The distance scale is graduated to read metres. The symbols «portrait», «group» and «landscape» correspond respectively to the distances of 1.3 m, 4 m and 15 m.

The shutter wheel has on both sides of the distance scale pointer numbers for approximate determination of



field depth under various  $f$ /stop setting. For instance, if the distance scale is set at 1.3 m, and the diaphragm is stopped down to  $f/8$ , the picture will be sufficiently sharp within 1.1 m to 1.5 m. More accurate data on field depth values may be found in the tabulation.

The film reminder scale is at the bottom part of the shutter housing. Lest you should forget what type of film is in the camera, rotate the milled wheel to set it to the required indication of film reminder scale: «H» — negative black-and-white film; «П» — positive





# TABLE OF FIELD DEPTH

Distance in metres		Diaphragm set at							
		f/2.8	f/4	f/5.6	f/8	f/11	f/16	f/22	
		Depth of field in metres							
1		0.96—1.04	0.95—1.06	0.93—1.09	0.9—1.14	0.87—1.20	0.82—1.31	0.77—1.48	
1.1		1.06—1.15	1.03—1.18	1.01—1.21	0.98—1.27	0.94—1.34	0.89—1.49	0.83—1.71	
1.2		1.15—1.26	1.13—1.29	1.1—1.33	1.06—1.40	1.01—1.49	0.95—1.68	0.88—1.96	
1.3		1.26—1.37	1.21—1.41	1.18—1.46	1.14—1.54	1.08—1.65	1.01—1.88	0.93—2.24	
1.5		1.42—1.60	1.38—1.65	1.34—1.71	1.30—1.78	1.22—1.98	1.13—2.32	1.03—2.90	
1.7		1.59—1.83	1.55—1.89	1.50—1.98	1.43—2.12	1.35—2.34	1.23—2.82	1.12—3.74	
2		1.85—2.18	1.80—2.27	1.73—2.39	1.63—2.61	1.53—2.95	1.38—3.75	1.24—5.54	
2.5		2.27—2.78	2.19—2.93	2.09—3.14	1.95—3.53	1.80—4.17	1.60—5.96	1.41—12.22	
3		2.68—3.42	2.56—3.64	2.42—3.97	2.24—4.61	2.05—5.76	1.79—9.83	1.56—62.07	
4		3.45—4.78	3.26—5.21	3.03—5.93	2.75—7.46	2.47—11.01	2.10—51.92	1.79—∞	
5		4.17—6.27	3.89—7.04	3.58—8.41	3.19—11.86	2.81—24.27	2.35—∞	1.96—∞	
8		6.06—11.83	5.49—14.88	4.88—22.65	4.18—∞	3.55—∞	2.84—∞	2.29—∞	
15		9.36—38.06	8.07—111.0	6.81—∞	5.52—∞	4.47—∞	3.40—∞	2.64—∞	
∞		24.79—∞	17.35—∞	12.39—∞	9.67—∞	6.31—∞	4.34—∞	3.15—∞	

black-and-white film; «ПЛ» and «НЛ» with the symbol «sun» — colour positive and colour negative film, respectively, — for day-light; «ПЛ» and «НЛ» with symbol «lamp» — colour positive and colour negative film, respectively, — for artificial light.

The film counter is placed under the camera back and is mechanically coupled to the film transport. The counter which shows the number of pictures you've got left is to be set to read «36».

The synchronization mechanism is intended for agreement of flash operation with full opening of shutter. When using an electron flash unit, the shutter may be set at any camera speed. The synchronizator works automatically at the moment the shutter is being released.

Note. When using the single flash the shutter is to be set to  $\frac{1}{15}$  sec. or «B».

## TO GET READY FOR PICTURE TAKING

Take the cassette out of the camera. To this end, take hold of the camera with your right hand, lens facing palm, and hold the camera back, as shown in Figure 4, to move the latch and to swing away the camera back. Now, throw away the film rewind lever and pull it as far as it will go to set the cassette free.



Fig. 4



## TO LOAD THE CAMERA

1. Open the camera back lock and hinge the back away.
2. Insert the cassette in such a manner that the film rewind fork has entered the spool.
3. Connect the end of film, that protrudes from the cassette, with the sprocket by pushing the film into the slot. Turn the shutter cocking lever to slightly tension the film and make it level. The film should rest on the film gate ways without warping. Perforated holes should be in mesh with sprockets, as shown in Figure 2.
4. Close the camera by snapping the camera back lock shut.
5. Wind the film that was exposed to light in loading the camera. To this advance the film as far as two frames. Winding is effected by smoothly turning the shutter cocking lever with subsequent depression of the shutter release button.
6. Rotate the button anticlockwise to set the film counter indicator to read «36». If it is not obtained press the button to engage film rewinding mechanism.
7. Rotate the wheel to set the film speed on scale.

Note. When using light filters, it is necessary to introduce correction on the film speed scale. Thus in the case of 2<sup>x</sup> filter and the film speed of 65 ISO units, the wheel should be set to read «32» on the scale. In the case of 1.5<sup>x</sup> filter, the wheel is set to read «45». Once the filter is removed, the film speed setting should correspond to actual speed of film in the camera.

## TO TAKE PICTURES

1. Open the carrying case.
2. Set the shutter for the required speed and cock it. Shutter speeds may be set also with the shutter in the cocked position, by turning the adjustment wheel until the rhombic index has agreed with the dot indicating the required exposure time. The shutter is cocked by turning the cocking lever as far as it will go.
3. Set the lens for distance, using distance scale and coinciding the relevant digit or symbol on the scale with the rhombic index.
4. Look through the view finder to compose the picture.
5. Rotate the diaphragm wheel to drive the light meter pointer, seen in the view finder window, to its middle position. The diaphragm wheel may be conveniently rotated by compressing the movable and the stationary knobs with your two fingers as shown in Figure 5.

Note. When need be, the diaphragm may beforehand be stopped down to the required f/number, and the light meter pointer be moved to the middle position by rotating the shutter speed wheel. This may be easily done by compressing the movable and the stationary knobs with two fingers of one hand, and

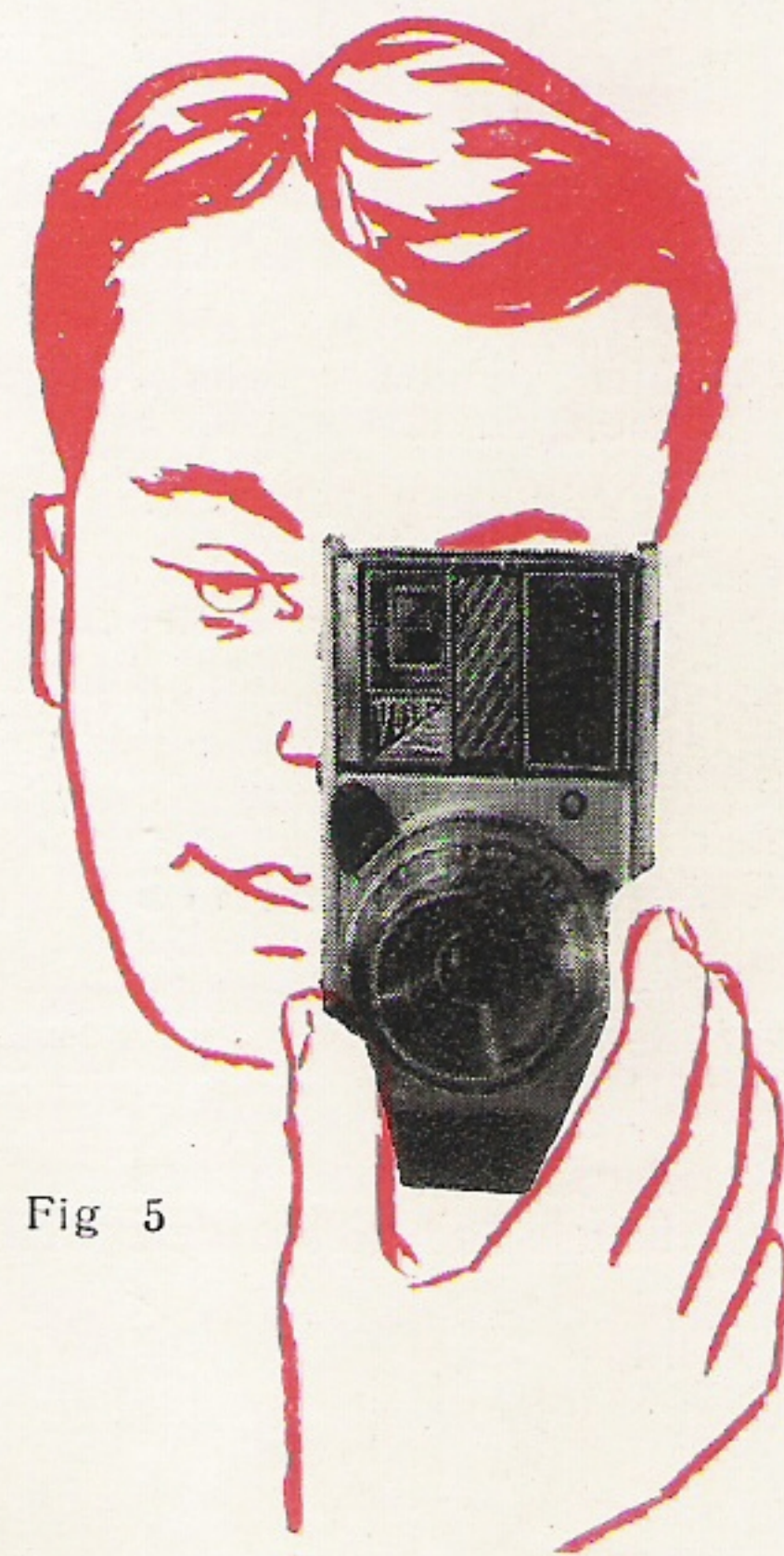


Fig 5



rotating the shutter speed wheel with the other hand. When taking pictures of subjects with dark foreground the exposure should be twice extended. For that aim move the film speed wheel by one step in the direction of the film speed decreasing and bring the indicator pointer into the middle position, for instance, if the film speed is 130 units FOCT, film speed decreasing by one step will be equal to 65 units.

6. Check to see that the picture is framed correctly and depress the shutter release.

7. Advance the film through one frame.

## TO UNLOAD THE CAMERA

1. Take the camera from its carrying case.

2. Throw off the film rewind level and connect it with the shaft.

3. Depress the film rewind engaging button, while rotating the film rewind lever in the direction shown by the arrow until the film has been rewound.

Note. One must keep in mind that film transport and film rewinding units will operate only provided the free film transport through the cassette slot.

4. Open the latch and hinge away the camera back.

5. Pull the film rewind lever.

6. Remove the cassette containing the exposed film.

## GENERAL HINTS

The camera needs careful handling. The lens and the view finder may be wiped only on the outside using a clean cotton cloth or a cotton wad. Before doing this, breath on the glass surface to make it warm. Don't touch the photo cell with fingers.

The photo cell should not be subjected to continuous action of bright light, as this may cause errors while exposure control is setting.

When heated above 50 deg. C or when cooled below 40 deg. C, the photo cell may lose its properties.

The camera should be protected to prevent any shock thereon.

The camera should not be taken apart, because this may interfere with adjustment of individual assemblies. All repairs and optical adjustment should be carried out by the experts qualified to do the job.