

modern tests

no observable fringing at smaller apertures.

Central spherical aberration (causes focus shift and flare): In the lab, we observed only slight flare wide open and it was almost gone at f/2.8. Focus shift was a safe 0.05mm. In actual picture taking, we found spherical aberration to be very well-corrected, just as our optical bench observations had indicated. In out-of-focus images, no double line effect was observed.

Resolution Power

50mm f/2 Summicron-R No. 2588838 At 1:50 Magnification				
f/no.	Center Lines/mm	Corner Lines/mm		
2	V/Good	56	V/Good	35
2.8	V/Good	63	Good	45
4	Exc.	80	Good	50
5.6	V/Good	70	V/Good	56
8	V/Good	70	V/Good	56
11	V/Good	63	Exc.	56
16	V/Good	63	V/Good	50

Actual Focal Length: 50.9mm

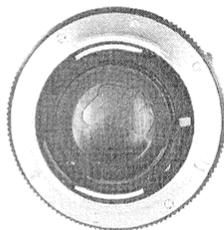
Image Contrast

50mm f/2 Summicron-R No. 2588838 At 30 lines/mm				
f/no.	Center Percentage	Corner Percentage		
2	Low	47	Medium	32
2.8	Low	56	Low	36
4	Medium	68	High	61
5.6	Medium	77	High	66
8	Medium	70	High	65
11	High	68	High	58
16	Medium	61	High	53

Edge lateral color fringing (causes persistent image unsharpness, possible multiple colored images): On the optical bench, lateral color appeared very well controlled across the field, becoming noticeable only in the corners. Again, our analysis of test slides confirmed these observations. Only a very weak, thin red fringe was observed at the extreme corners.

Edge astigmatism (causes image streaks): Moderate astigmatism in the zonal area was observed on the optical bench at f/4 and at larger apertures. Towards the corners, astigmatism appeared rather well controlled at f/5.6, astigmatism was well under control across the entire field. Astigmatism was less prominent in our test slides, appearing only as a slight outward streak on distant subjects at the corners.

Edge coma (causes flare): On the bench, we found moderate skew-ray flare wide open, but it was gone by f/4. Coma was quite slight at f/4, except in the extreme corners. The corners cleared up at f/5.6. In actual picture taking, we observed fairly strong flare wide open, but it disappeared by f/4.

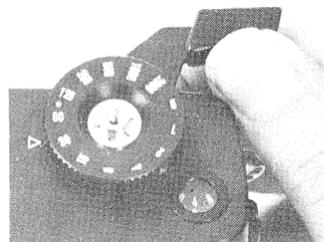


Top arc-shaped cam puts f/stop in finder; bottom one keys aperture into meter system.

Optical decentering (causes problems in all areas): The Summicron appeared to be perfectly centered.

Residual ghosts and flare: When shooting against a very bright light source, we found ghosting to be very slight. At f/2, flare was rather strong, but stopping down to f/4 virtually eliminated it.

Linear distortion: We measured about 1.0 percent barrel distortion—a normal amount for a lens of this focal length and speed.



Thumbs are less likely to slip off SL 2's new, angled film-advance lever.

Whatever your emotional reaction to the Leicaflex SL 2, you have to admit Leitz has done it again. They have created a supreme photographic instrument capable of the finest photographic performance—a durable

investment capable of a lifetime of picture taking under normal circumstances, or perhaps half a lifetime's worth of hard professional use. But the question persists: is it worth \$1,300?

Compared to the Leicaflex SL still listed in the Leitz catalogue at \$1,197 with the 50mm f/2 Summicron lens, we'd say unqualifiedly yes. But \$1,300 will still buy two mighty fine top-grade Japanese SLR's complete with normal lenses, or a creditably fine dark-room setup plus a good serviceable camera. There are some people, however, who must own the finest "because it's there," and others who'd sooner compromise design where necessary than give a millimeter in terms of ultimate mechanical precision. It is these uncompromising, well-heeled connoisseurs and professional photographers who will continue to comprise the bulk of Leicaflex owners.

135MM F/2.3 VIVITAR FOCUSES TO 3 FT.

MANUFACTURER'S SPECIFICATIONS: 135mm f/2.3 Vivitar Series 1 in mounts for Pentax, Canon, Nikon, Minolta, Olympus OM-1, Konica and similar cameras. FEATURES: Apertures to f/22, focusing to 3 ft., accepts 72mm accessories, built-in telescoping lens hood. PRICE: \$219.50.

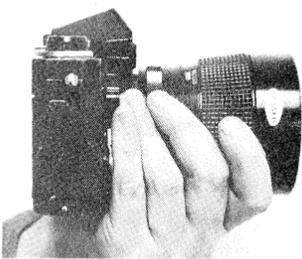
The chief claim to fame of the Vivitar Series 1, until now, has not been its optical excellence, but its scarcity. Announced in 1972 as the first trio of an entirely new, super lens series with super features, the now-famous first macrozoom 70-210mm f/3.5, the 135mm f/2.3 and the 200mm f/3 became conspicuous lenses because of their absence from the photo dealers' shelves. At last the 70-210mm made its appearance, and we're pleased now to announce the 135mm. To those made grumpy by the long wait, we can only say that this lens was worth the waiting.

It is perhaps the most convenient and versatile 135mm lens we have ever tested. What other similar lens weighing but 27 oz. (766 g) and measuring 4.7 in. (12 cm) in length provides an f/2.3 aperture and allows focusing close enough to move in for an eyes-only portrait?

The lens has an all-bright black finish, very large numerals, and a 2 1/4-in. diameter at the lens mount end. This flares 1 1/4 in. outwards to a maximum width of 3 1/2 in. The flaring part of the mount serves as the focusing ring, having a 1-in.-wide rubberized gripping band with a diamond-studded pattern grip. At the front of the lens is a 3/4-in.-wide, smooth working, built-in collapsible lens hood. As a fast-action, low-light or portrait lens, it would be very hard to fault. While the lens passed its practical use tests in our hands with flying

colors, let's see how well it did in the lab and in slide analysis. **Central color fringing** (causes image unsharpness with color fringing): A rather strong reddish fringing could be seen on the optical bench. It persisted to f/4, but was mostly gone by f/5.6. Although the fringing was bright, the size of the pattern was very small. Our pictures indicated the same fringing, but we felt the correction for it was good.

Central spherical aberration (causes focus shift and flare): A moderate amount of flare wide open was substantially gone by f/4. However, in our pictures we found flare stronger, and noted that it didn't disappear until f/5.6.



Large aperture, close-focusing Vivitar makes a compact, convenient handfuf.

Edge lateral color fringing (causes persistent image unsharpness, possible multiple colored images): On the bench, we noted a very slight greenish to purplish fringing from 3/4 of the way out to the corners. However, the fringe appeared to be very small—a fact borne out in our test pictures.

Edge astigmatism (causes image streaks): Very little astigmatism could be seen on the optical bench, even at maximum apertures. At the extreme corners, astigmatism was very slight at f/4 and almost all gone by f/5.6. From our slides we judged astigmatism to be very well-corrected.

Resolution Power

135mm f/2.3 Vivitar Series 1 No. 2822002 At 1:50 Magnification				
f/no.	Center Lines/mm	Corner Lines/mm		
2.3	Exc.	50	Exc.	35
2.8	Exc.	50	Exc.	40
4	V/Good	50	Exc.	45
5.6	Good	45	Exc.	40
8	V/Good	50	Exc.	40
11	Exc.	56	Exc.	45
16	Exc.	50	Exc.	45
22	V/Good	45	V/Good	35

Actual Focal Length: 133.7mm

Image Contrast

135mm f/2.3 Vivitar Series 1 No. 2822002 At 30 lines/mm				
f/no.	Center Percentage	Corner Percentage		
2.3	Low	38	Low	30
2.8	Low	44	Low	32
4	Low	49	Medium	49
5.6	Medium	57	High	50
8	Medium	63	Medium	49
11	Medium	58	Medium	48
16	Medium	56	Medium	43
22	Low	46	Low	38

matism to be very well-corrected. **Edge coma** (causes flare): Moderate skew-ray flare could be seen on the bench at f/2.3, but was mostly gone by f/3.5. Coma was well-controlled over the entire field—moderate at f/4 near the corners, and almost gone by f/5.6. Our test slides confirmed that coma was well corrected.

Optical decentering (causes problems in all areas): None observable.

Residual ghosts and flare: Only a normal amount present.

Linear distortion: We measured about one percent pincushion distortion—rather low for a lens of this focal length and speed.

With its fast handling and close-focusing capabilities, we found the new Vivitar to be an impressive performer.

ROKKOR-X WIDE ANGLES FOR MOST MINOLTA SLR'S

MANUFACTURER'S SPECIFICATIONS: 21mm f/2.8 MC W Rokkor-X for Minolta SR-T 100, 101, 102 and XK cameras. FEATURES: Apertures to f/16, focusing to 9 1/2 in., accepts 55mm accessories. PRICE: \$355.

28mm f/3.5 MC W Rokkor-X for cameras as above. FEATURES: Apertures to f/16, focusing to 2 ft., accepts 55mm accessories. PRICE: \$178.

28mm f/2.5 MC W Rokkor-X for cameras as above. FEATURES: Apertures to f/16, focusing to 21 in., accepts 55mm accessories. PRICE: \$239.

35mm f/2.8 MC W Rokkor-X for cameras as above. FEATURES: Apertures to f/16, focusing to 15 in., accepts 55mm accessories. PRICE: \$152.

35mm f/1.8 MC W Rokkor-X for cameras as above. FEATURES: Apertures to f/16, focusing to 12 in., accepts 55mm accessories. PRICE: \$233.

When Minolta announced "a family of 26 high-performance, computer-designed lenses bearing the Rokkor-X designation, for use with the new Minolta XK electronic single-lens-reflex," there was more than a little confusion among Minolta fans.

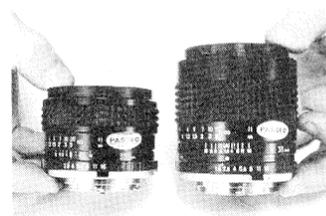
Were these brand new optical designs? Did the announcement mean, as it seemed to indicate, that the new lenses wouldn't fit and operate on old Minoltas? What is a Rokkor-X lens? And, new lenses or old, new mount or old, just how good were they?

We promptly requested all the lenses for testing, and lo, they began to arrive in large batches. First, some general observations. The new Rokkor-X line of lenses is basically the older MC Rokkor line with the same mount, fitting the same cameras and having the same optical makeup (except for new lenses added to the line). The older MC lenses will work perfectly on the new XK camera, and the Rokkor-X lenses

will work perfectly on older Minoltas this side of the SR-7. In other words, all lenses for the XK, 100, 101, 102, the overseas-designated 303 and Super (which are the same as the 102), and the forthcoming XE-7 automatic are interchangeable between camera bodies. Secondly, the new Rokkor-X lenses do not have any special additional features or characteristics which would make them infinitely superior to the MC lenses. All offer the same basic operation features. Why then the new X-designation? This stands primarily for exterior cosmetic changes. There are four: 1) The all-metal knurling of the focusing rings has been replaced with a much more convenient rubberized, diamond-pattern strip; 2) The lens-attaching lineup dot is now a raised hemisphere for easy fitting by touch; 3) Each lens has the focal length engraved in orange on the lens barrel near the mount for quick recognition; 4) The diaphragm-setting ring is now all black with highly legible white-on-black numerals—very easy to see in the finders of the SR-T 102 and XK cameras.

We have been testing Minolta Rokkor MC lenses in dribs and drabs, as they have become available, ever since the SR-T 101 cameras were introduced in 1966. Some of our tests go far back when our evaluations and procedures were much more primitive. We, therefore, now intend to catch up on Rokkoriana, X-style, by testing the entire line except for those lenses which we tested completely quite recently.

This will be wide-angle month. In ensuing months, we will tackle the moderate teles and long teles, plus some of the specialized lenses. A quick glance at the total list of Minolta lenses will reveal the Rokkor game plan. For the most popular focal lengths, two alternate lenses are offered: a high-speed, fairly bulky and somewhat expensive lens, and a



Can there really be much difference in the size of 35mm lenses? And how! See text as to why one is big and one is small.

moderate-speed, very compact, lower-priced lens. Hence we have two distinct 28mm lenses, with the nine-element f/2.5 running some 3 1/4 oz. heavier and a little over 1/2 in. longer than the seven-element f/3.5. The remarkably fast eight-element 35mm f/1.8 lens is some 6 oz.

heavier and nearly an inch longer than the seven-element f/2.8 version. The 12-element 21mm f/2.8 is very fast and on the larger side at 1 lb. 2 oz. and about 2 1/2 in., so we wouldn't at all be surprised at a 20 or 21mm f/4 (or so) lens joining the party in the future. (We have already tested the 24mm f/2.8 MC Rokkor in "Modern Tests," June 1974.) All lenses are extremely well finished in satin black, with large easy-to-see green and white numerals, click half-stop settings and smooth focusing mounts.

Let's take a look at the 21mm f/2.8 MC W Rokkor-X first. **Central color fringing** (causes image unsharpness with color fringing): On the optical bench, some reddish to bluish fringing could be seen at full aperture, but was mostly gone by f/5.6. In actual picture taking, a slight purple fringe was visible, but it was less than the normal expected amount.

Resolution Power

21mm f/2.8 Rokkor-X No. 1615547 At 1:48 Magnification				
f/no.	Center Lines/mm	Corner Lines/mm		
2.8	Exc.	60	Good	30
4	Exc.	68	V/Good	34
5.6	Exc.	68	Exc.	38
8	Exc.	68	Exc.	38
11	Exc.	68	Exc.	43
16	Exc.	60	Exc.	43

Actual Focal Length: 21.5mm

Image Contrast

21mm f/2.8 Rokkor-X No. 1615547 At 30 lines/mm				
f/no.	Center Percentage	Corner Percentage		
2.8	Medium	53	High	56
4	High	66	High	59
5.6	High	75	High	72
8	High	76	High	78
11	High	70	High	75
16	High	65	High	73

Central spherical aberration (causes focus shift and flare): In the lab we could detect a very slight flare wide open that was gone by f/4—an excellent performance. In our slides the flare was not strong either.

Edge lateral color fringing (causes persistent image unsharpness, possible multiple colored images): Examination in our lab showed very well-controlled lateral color which, however, did manifest itself in actual pictures as a rather strong purple fringe. However, it wasn't so strong as to produce blurred or double images, which are rather common with extremely short wide-angle lenses of this type.

Edge coma (causes flare): A relatively small skew-ray flare could be seen in the lab at full aperture. However, coma was moderate across the field and well under control by f/5.6. Our color slides duplicated almost exactly what we had seen in our lab tests.

Edge astigmatism (causes image

Would you like to test your own lens? Get MODERN'S Lens Test Kit, \$4.50. Write to Lens Test Kit, MODERN PHOTOGRAPHY, 2160 Patterson Street, Cincinnati, Ohio 45214.

streaks): While there appeared to be substantial astigmatism visible on the optical bench from about halfway out to the corners, it was well under control by f/8 and, in pictures, appeared to be extremely low throughout. **Optical decentering** (causes problems in all areas): Only a very slight, virtually insignificant amount was detected in the lab. **Residual ghosts and flare**: We found these to be very low. **Linear distortion**: Pincushion-type distortion was measured as 1.5 percent, certainly acceptable in a true wide angle of such a short focal length.

Now let's take a look at the two 28mm lenses. At the outset, you might conclude that the faster f/2.5 is automatically a superior optic to the f/3.5. However, in our opinion, this might not hold true in the general run of the lenses. The particular f/3.5 which we tested had greater decentering problems than would normally be expected, which, we felt, was the reason its performance was inferior to the f/2.5. Let's look at the f/3.5 we examined:

Resolution Power

28mm f/3.5 Rokkor-X No. 1716532 At 1:51 Magnification				
f/no.	Center Lines/mm	Corner Lines/mm		
3.5	Exc.	57	Accept.	26
5.6	Exc.	57	Accept.	26
8	V/Good	57	Good	32
11	Exc.	57	V/Good	36
16	V/Good	51	V/Good	36

Actual Focal Length: 28.3mm

Image Contrast

28mm f/3.5 Rokkor-X No. 1716532 At 30 lines/mm				
f/no.	Center Percentage	Corner Percentage		
3.5	Low	44	High	53
5.6	Medium	59	High	58
8	Low	61	High	58
11	Medium	58	High	52
16	Low	48	High	46

Central color fringing: On the optical bench the fringe pattern was seen to be rather small, but the image lacked a sharp central core at full aperture (due, we think, to astigmatism caused by decentering, as already mentioned). The fringing was almost gone by f/5.6. The fringing was also visible in our slides but, again, disappeared by f/5.6.

Central spherical aberration: Moderate flare was observed in the lab and slides at large apertures, disappearing by f/5.6.

Edge lateral color fringing: This appeared to be moderate halfway

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