my point of view

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Leica Lens Book

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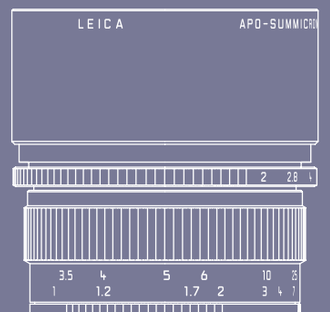
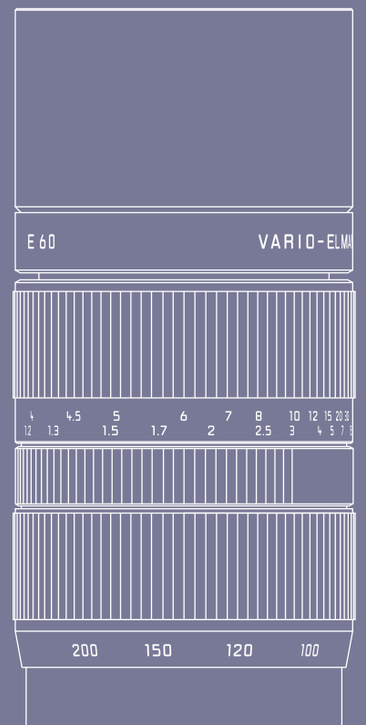
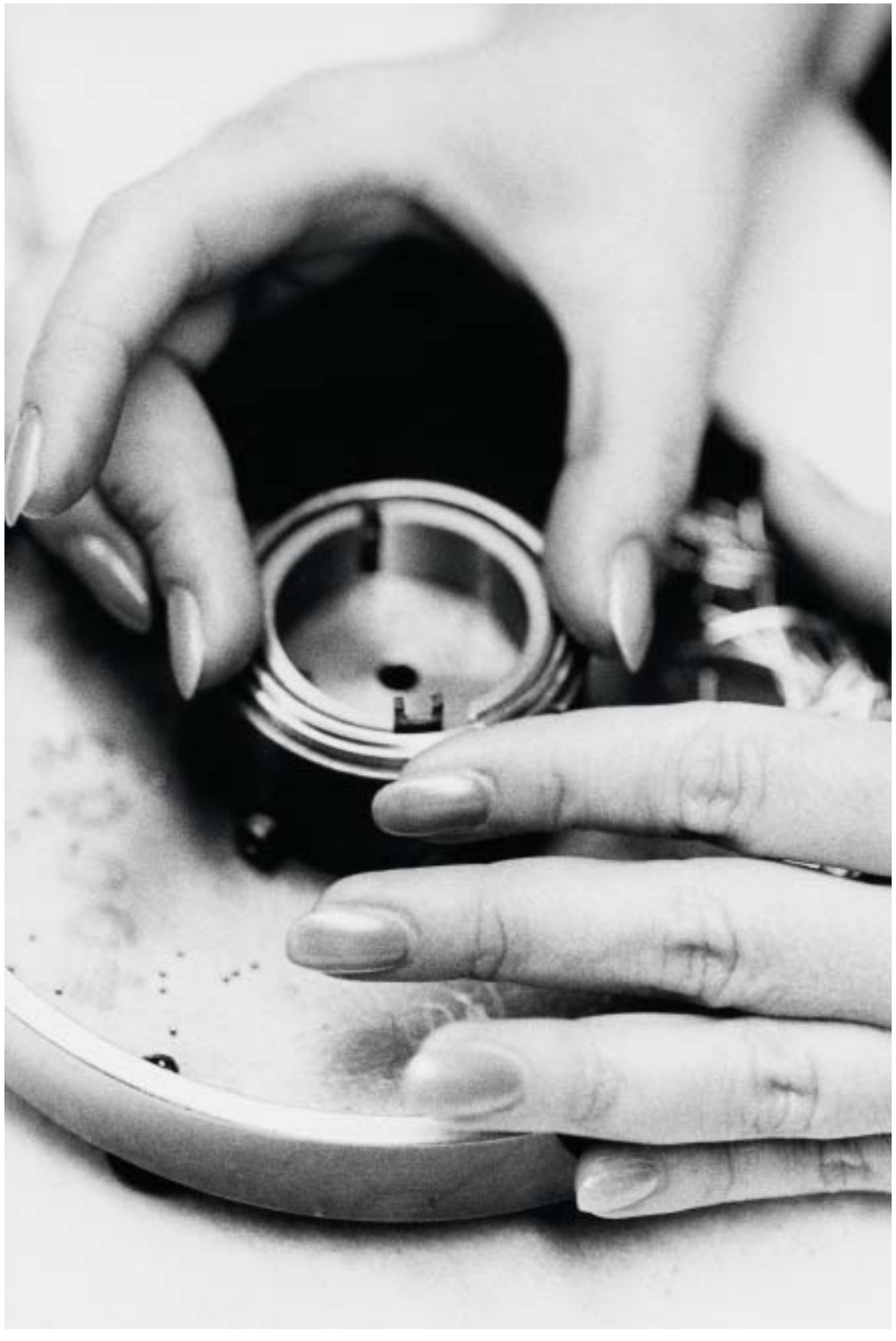
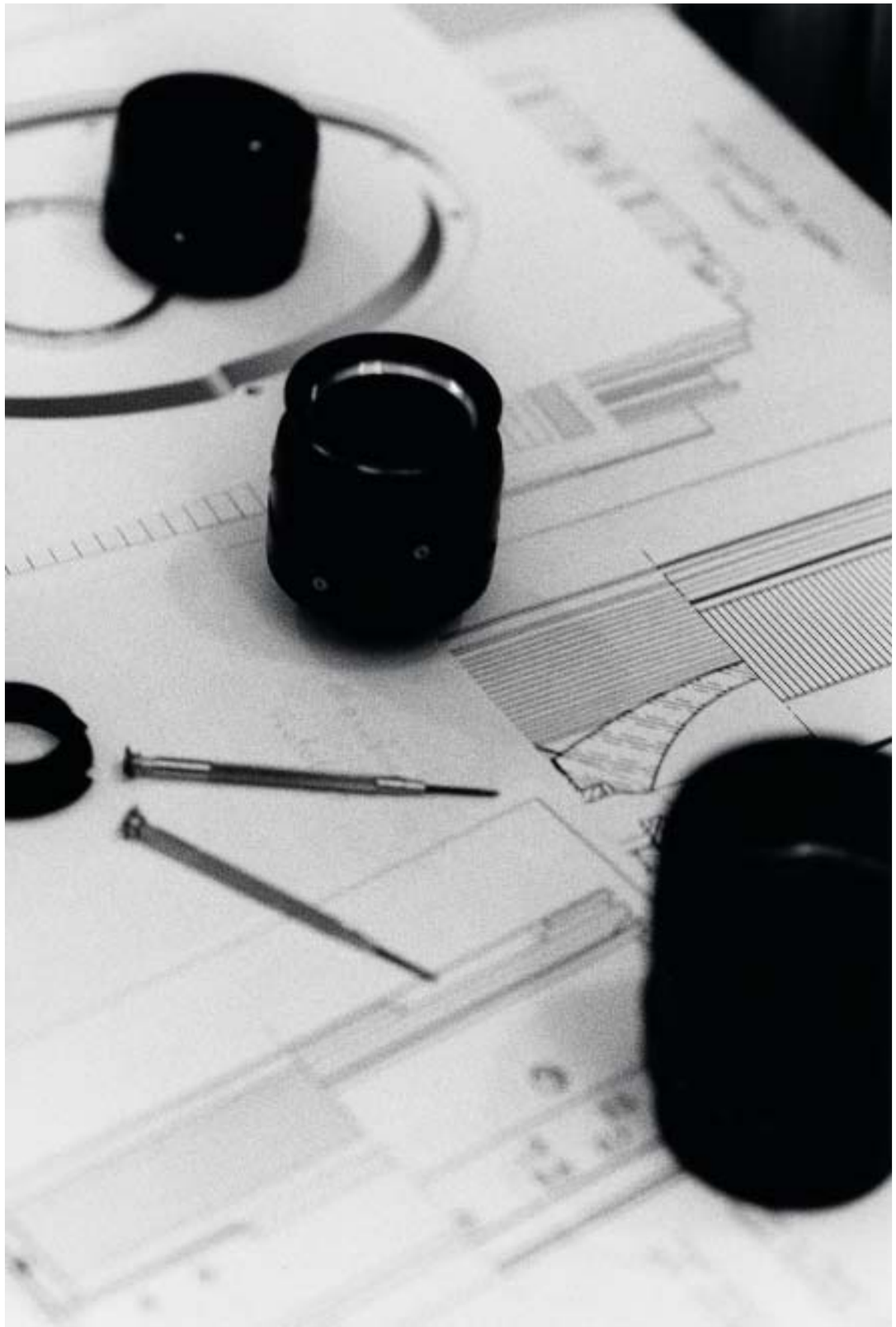
Leica M system, Leica R system









LEICA NOCTILUX-M 50 mm f/1

LEICA NOCTILUX-M 50 mm f/1
The speed of the Noctilux surpasses even that of the human eye. As the world's first production f/1 lens for 35 mm photography it is a milestone in the history of photography. Its outstanding contrast rendition provides a delicate separation of barely discernible color differences and an exact resolution of the finest details. Its maximal freedom of stray light and coma results in a practically flare-free reproduction of point sources of light. This lens makes a unique and fascinating pictorial expression possible. It is not only excellently suitable for photography at twilight, but also for nighttime photography without flash. The light of a candle is sufficient for beautifully clear pictorial results. Image details can be emphasized by taking advantage of the very shallow depth of field at full aperture. The contours in the unsharp areas of such pictures dissolve in a nearly abstract form and color aesthetic.

LEICA SUMMILUX-M 50 mm f/1.4

LEICA SUMMILUX-M 50 mm f/1.4
This lens delivers very good overall performance at full aperture. It delivers an exact color differentiation and it is virtually free of coma. It is particularly well suited for available light photography. Its outstanding performance with regard to reflections leads to optimal exposures under extremely difficult light conditions – for example in night-time photography with strong light sources within the picture area. As a result, the 50 mm Summilux is not just a fast, compact all-around lens for all kinds of applications – it is also an excellent lens for natural-looking pictorial compositions at twilight. Portraits are particularly impressive because of the shallow depth of field at full aperture and the subtle contrast transition.

Santa Cruz, harbor restaurant

Santa Cruz, pier

LEICA APO-SUMMICRON-R 90 mm f/2 ASPH.

LEICA APO-SUMMICRON-R 90 mm f/2 ASPH.
Apochromatic correction and the use of a lens element with an aspherical surface are combined in this compact telephoto lens for high-performance imaging. Two of the five lens elements are made of high-refraction optical glass. Two other lens elements have anomalous partial dispersion. As a result, brilliance and resolution are exemplary, even at full aperture. Peak performance is achieved at full aperture. Vignetting is already minimal with the lens wide open. As a result of the large aperture of f/2 and impressive contrast rendition, it produces a particularly bright viewfinder image that permits very accurate and positive focusing, even in poor light. The nearest focusing distance is 0.7 m (27.5 in), so that subjects as small as 14 x 21 cm (5.5 x 8.25 in) can be explored. Combining this lens with the LEICA APO-EXTENDER-R 2 x produces a high-performance tele combination of 180 mm f/4.

LEICA APO-MACRO-ELMARIT-R 100 mm f/2.8

LEICA APO-MACRO-ELMARIT-R 100 mm f/2.8
Its overall performance makes it the great role model in the 35 mm field : Where else are sharpness and contrast, vignetting and distortion at all focusing distances and in all applications so exemplary ? That extends the range of applications of the LEICA APO-MACRO-ELMARIT-R 100 mm f/2.8 far beyond macro photography. Thus it also produces brilliant results in situations that are typical for medium tele lenses. And its focal length of 100 mm already enables it to enlarge subjects from a distance. That makes it much easier, for instance, to illuminate and to photograph shy small animals. When combined with the LEICA ELPRO 1:2–1:1, designed especially for use with this lens, the macro range can be explored down to a reproduction ratio of 1:1.

Littlerock, store front

Littlerock, haphazard find

LEICA VARIO-APO-ELMARIT-R 70-180 mm f/2.8

LEICA VARIO-APO-ELMARIT-R 70-180 mm f/2.8
A particularly complex lens: The optical computation is based on 13 lens elements in 10 groups, using 12 different optical glasses – five of them being special glass with anomalous partial dispersion. The performance characteristics of this apochromatically corrected zoom lens with its high uniform speed of f/2.8 are comparable to those of Leica lenses with fixed focal lengths. This lens distinguishes itself in the high contrast and clear differentiation even of intricate color gradations at all focal length settings and across the entire picture area, all the way into the close-up range. Both coma and astigmatism are hardly detectable. As a result, the application possibilities of this zoom lens are virtually unlimited : Stationary subjects in fashion photography ; or for reportage, in which a fast, yet careful change of cropping is important. The rubber-armored pullout lens hood can be used to set the outfit down or to rest it on a rigid surface, and the large, rotating tripod base has special click stops for vertical and horizontal formats.

LEICA VARIO-ELMAR-R 80-200 mm f/4

LEICA VARIO-ELMAR-R 80-200 mm f/4
A very good imaging performance with high resolving power and contrast at full aperture, across the entire picture area and over the complete zoom range – that is a succinct description of this lens, which stands in comparison to the best lenses with fixed focal lengths. Coma and spherical aberration are very low and can be largely eliminated by slightly stopping down the aperture. The illumination of the picture area is uniform at all focal length settings, and in the close-up range down to 1.1 m (43.25 inches), the lens renders a reproduction ratio of 1:3.9. Thanks to its compact size it is a lightweight lens, which, together with its smooth focusing makes it a universal lens for traveling. In combination with the 21-35 mm and 35-70 mm Leica zoom lenses, one can, with only three lenses, achieve a stepless 1 to 10 range of focal lengths – and a uniformly high imaging quality.

Malibu, Jennifer

Malibu, rush hour

Focusing Bellows-R BR 2 / LEICA MACRO-ADAPTER-R

Focusing Bellows-R BR 2
Variable extension for stepless adjustment of the reproduction ratio. It incorporates a focusing rail. The automatic spring-loaded diaphragm function of the lens is preserved, aperture-preferred and manual exposure controls can also be used. The bellows focusing device can be used with all Leica lenses with focal lengths from 50 to 180 mm and also with the LEICA PHOTAR special lenses.

LEICA MACRO-ADAPTER-R
This intermediate ring increases the extension of a lens by 30 mm. The lens' open-aperture metering and its spring- loaded diaphragm function are preserved. Aperture-preferred and manual exposure controls remain fully functional on Leica R cameras.

LEICA PHOTAR lenses and LEICA PHOTAR-ADAPTER-R

LEICA PHOTAR lenses and LEICA PHOTAR-ADAPTER-R
There are three special lenses that can be used with a LEICA PHOTAR-ADAPTER-R on the Focusing Bellows-R BR 2. They are corrected for magnified reproduction. With their magnification of up to 18 x, they cover the field of micro photography with practically no gaps.

Common green lacewing

Glossary

Imaging errors (Aberrations) Light from a point on the subject must re-converge as a point in the picture in order for a sharp image to be formed. As a rule, a single lens element is not adequate for this purpose, because it has inherent deviations (image errors or aberrations) that are described below. By combining several lens elements, and by converting the computed lens design as accurately as possible into reality, all residual aberrations can be kept at a very low level. To illustrate these imaging errors, our pictorial examples show strongly exaggerated effects of the various types of aberrations. Because most of the imaging errors can be reduced or eliminated by stopping the lens down, a picture taken with the aperture of the lens wide open reveals the most about the imaging performance of a given lens. At Leica, great emphasis is placed on imaging quality already being very good at full aperture, so good that it can be enhanced only slightly by stopping the lens down. With a Leica lens it is possible, for example, to create a very sharp portrait with a dissolving background, thus giving that portrait an appealing dimensional effect.

Curvature of field – field flattening The natural shape of an image created by a lens element is curved, and this is referred to as curvature of field. If that image is recorded on a flat piece of film, the center of the image will be in sharp focus, but in practical terms the distance setting will be wrong for the edges of the picture, so that the image will not be sharp in that area. By re-focusing, the image can be sharpened at the edges. But that will cause the center of the image to be unsharp. Stopping the lens down increases the depth of field, and this attenuates this effect. The image can be flattened by means of appropriate lens configuration, so that the focus for all picture points will be on at least very close to the film plane.

Pictorial examples : The upper photograph shows a loss of sharpness towards its edges as a result of curvature of field. The lower picture shows great sharpness across the entire image.

Aperture errors – Spherical Aberration The closer to the edge that light rays pass through a lens, the more they will tend to arrive next to the actual picture point. Because this effect gets stronger as the aperture of the lens increases, it is referred to as aperture error, also called spherical aberration. Spherical aberration appears everywhere in the picture and it can be reduced by stopping the lens down. Aperture error leads to a loss in sharpness and contrast in the image. In extreme cases, flare can be noticed – halos appear around point sources of light, as can be seen on the street lanterns in the upper pictorial example.

Astigmatism The effect of astigmatism is similar to that of curvature of field, except for the additional fact that in this case the sharpness depends on the direction of the subject details. This effect also becomes more pronounced towards the edges of the picture. As an example, if we look at the corner of a picture of a chain link fence it will be noticeable, if astigmatism is present, that the wires that point towards the center of the picture are reproduced with a different sharpness than those that are oriented at a right angle to them. The wires oriented in either one or the other direction can be made to appear sharp by means of focusing, but not both at the same time. Astigmatism leads to a reduction of the imaging quality and in extreme cases it will cause an elongation of point sources of light. Here too, stopping the lens down will reduce this effect, but it will not eliminate it.

Coma When coma is present, light rays will deviate to one side from their picture point. The picture point will acquire a tail like a comet. This effect occurs more towards the edges of the picture and not in its center. Stopping the lens down reduces this effect. Coma leads to a loss of sharpness and contrast; in extreme cases the coma tail becomes noticeable on point sources of light, as demonstrated by the enlarged section of a star picture. This section was cropped from the left upper corner of the moon picture.

Distortion The term distortion is used to describe the effect that causes a scene not to be depicted at a uniform reproduction ratio. Distortion becomes especially apparent when long straight lines (such as masts or the corners of buildings) appear to be curved in the picture. Distortion occurs as a natural effect, especially with wide-angle lenses. Therefore, a small amount of distortion is a particular characteristic of these lenses.

Pictorial examples : In the distortion-free picture on the left, the ships' masts along the left edge of the picture are shown as straight lines. With pincushion distortion, middle portion of these masts appear bent towards the center of the picture. With barrel distortion, the middle portions of the masts appear bent towards the edges of the picture.

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