LEICA
PHOTOGRAPHY

LEICA PHOTOGRAPHY

Volume 25 Number 1 1972

Leica Photography is published by E. Leitz, Inc., Rockleigh, New Jersey for Leica owners and Leica Dealers in the United States and its possessions. Purchasers of new equipment who send in a registration card to permanently register the equipment, as a protection against loss and to obtain a guarantee, will automatically receive a free subscription. Other Leica owners may obtain a free subscription by writing *Leica Photography*, E. Leitz, Inc., Rockleigh, New Jersey 07647. *Leica Photography* has no set schedule regarding either time or frequency of appearance in a given year. We reserve the right to terminate all free subscriptions at any time, and publish as few or as many issues as we choose in any given year.

The following are registered trademarks:

BINDOMAT®
CINOVID®
CLASSIMAT®
COLORPLAN®
DYGON®
E. LEITZ, INC.®
E. LEITZ, WETZLAR®
ELCAN®
ELMAR®
ELMARIT®
FOCOSLIDE®
HEKTOR®
LEICA®
LEICAFLEX®
LEICA-METER®
LEICA PHOTOGRAPHY®
LEICINA®
LEITZ®
ORTHOLUX®
PANPHOT®
PERFLEKTOMETER®
PRADOVIT®
REPROVIT®
SIMPLEX®
SUMMARON®
SUMMICRON®
SUMMILUX®
TERICAN®
TRINOVID®
VISOFLEX®

CONTENTS

The editors are happy to consider original articles on photography with the Leica and photographs taken with Leica cameras and lenses. All manuscripts and photographs should be accompanied by stamped, self-addressed return labels.

LEICA M5

A review by Geoffrey Crawley FRPS, DGPh

Condensed from *The British Journal of Photography*

The new M5 differs in size, shape, layout and, to some extent, operation from earlier M models, but the main new added feature is a through-the-lens exposure meter.

General Construction

The M5 is 6.06 inches in length, 3.46 inches in height and 1.30 inches in width. The weight is 24.7 oz. In comparison with the M4 these dimensions represent a .63 in. increase in length, a .47 in. increase in height. The M5 weighs 3.53 oz. more than the M4, but if the Leicameter is clipped on to the M4 to provide a comparison, then the M5 is .88 oz. heavier than the M4. In fact the actual top plate of the M5 is only some .16 in. higher than that of the earlier Ms' but the accessory shoe and film speed setting device are both raised above the top plate level.

The height difference will explain the gap between the Visoflex III fitting and the earlier Ms to puzzled users and which shows how long the M5 basic shape has been established—although presumably the built-in meter always envisaged, eventually became a through-the-lens meter. The quarter-deck has virtually disappeared and only remains vestigially to accommodate the shutter speed setting dial, which is thus flush with the remainder of the top plate.

The most noticeable difference is really in the length of the camera and this is the main reason for the apparent increase in bulk.

The increase in body length is virtually entirely on the lefthand side of the camera. It appears to be mostly due to the incorporation of a built-in meter system and the battery compartment.

A fundamental departure with the new Leica involves the neckstrap attachment. From the beginning, 35mm cameras have been held by means of eyelets on either side of the body. The M5, however, has two heavy-duty strap lugs both on the left side of the camera. The apertures are wide enough to take a strap just less than a ½ inch in width.

The first sight of a camera dangling sideways by one end over the shoulder or round the neck provides a negative reaction, but only very brief actual use is required to prove the logic of the new arrangement. Most importantly, the right end of the camera is left completely free of all impediments to the hand operating it. There is no possibility of the lever-wind becoming entangled with the strap or the strap getting in the way of any of your fingers. Photographers who festoon themselves with a number of cameras may find the arrangement less convenient, but this is a question of personal preference.

The feel of the camera in the hand is entirely Leica-like and its controls work with the same fluidity of engineering excellence that is the envy of other manufacturers. The increase in length does not seem to be disconcerting, although earlier M models definitely feel smaller when handled after the M5.

The M5 will be available in two finishes: in the usual satin chrome and in black chrome. It will be the first camera on the market to be available in a black chrome rather than an anodized black finish. Previous Leica models available in a black finish have been enamelled and after a period of time this has worn off to reveal the brass beneath. The black chrome on the M5 is as tough and hard-wearing as the more familiar silver and satin chrome finishes, so the camera should retain its color indefinitely.

Finally, in connection with the general appearance, it is interesting to note that the 50mm f/1.2 Noctilux, which rather over-powers an earlier M body, looks just right on the M5. The 50mm f/2 Summicron looks a bit small, but the 50mm f/1.4 Summilux is precisely in scale.

Top plate controls

Frame counter. The frame counter has been moved from close to forward on the radius of the earlier Ms' right side to the rear—or from 2 o'clock to 5 o'clock. This may have been necessitated by the increased diameter of the shutter speed setting dial, but it is in fact more conveniently placed here for reading. It is now topped by plain glass instead of the former condensor lens and the index pointer is now, more logically, on the operator's side of the counter dial instead of above it. The counter dial remains indexed for each frame with engraved numerals for the half decades. The frame counter zeros when the baseplate has barely been eased up for removal.

Lever-wind. Although the shank differs slightly in profile, having a rather narrower elbow, the lever-wind on the M5 can be regarded as virtually identical to that on the M4. The camera is easy to use by either left or right-eyed photographers.

Shutter release. This remains set in the hub of the lever-wind and is threaded for standard taper-fitting cable release. There is little or no change in the feel of the shutter release button when depressed. However, there is a notable change in the function of the shutter release which influences this operation. This is because the initial travel of the release button swings the through-the-lens meter-cell arm out of the optical path into a recess in the well of the camera dark chamber. The shutter will only fire after the cell arm has moved. For this reason, the shutter release should not be pretensioned to make an exposure while taking a meter reading.

The meter reading cell is returned to the reading position as the lever-wind is cycled and this action also switches on the meter.

Shutter speed dial. A major functional change on the M5 is that the shutter-speed setting wheel is now co-axial with the lever-wind and the shutter release button. With the earlier Ms, it was located separately to the left near the accessory shoe and the clip-on exposure meters locked on to it. On the M5, the wheel, which has a finely milled edge, is large in diameter, 1.06 in., and projects over the forward edge of the camera top-plate. It is only necessary to push the forefinger along the forward edge of the camera top-plate to operate the shutter speed setting and this is facilitated by the absence of a neckstrap fitting on the right side of the camera. The click stop wheel has just the right tension and comes to a full stop at either end on the scale.

The numerals, owing to the larger diameter setting wheel, are very legible but the calibration is unconventional. The M5 shutter is speeded ½ to 1/1000 second and this range is calibrated with click stops. After the ½ second, the dial is further calibrated with a range of 'B' settings from 1 to 30 seconds over which the setting wheel moves smoothly without click stops. These settings act as a calculator when taking a meter reading on a subject requiring a time exposure. The shutter speed setting also appears at the end of the match needle system illuminated strip below the viewfinder, as will be discussed later. Here, these long exposures—1, 2, 4, 15, 30 seconds—also show, but are preceded by the letter 'B'.

Accessory shoe. The M5 has an accessory shoe with a 'hot' or center contact flash fitting. Incidentally, the camera's serial number appears on the right arm of the accessory shoe fitting. An 'X' is engraved just forward of the accessory shoe to remind the user that the center contact provides synchronization for this type for electronic flash, AG-1, AG-3 and flashcubes. The circuit for this hot shoe fitting is independent of the other X contact—a standard 3 mm type as on the M4—which lies with the M contact on the back of the camera.

The two contacts on the back of the camera are now closer together, .39 in. apart instead of .67 in. A great boon will be the fact that the two contact caps are now linked by a thin arm of plastic, so that when one is removed it remains attached to the other. This should prevent the hitherto almost inevitable loss of these small items.

Film speed setting. The final feature on the top-plate is the film speed setting device for the exposure meter. This is just to the left of the accessory shoe and immediately forward of the film plane index mark which has been added to the Leica with the M5. The setting is changed merely by turning this wheel with the finger tip through click third stops against fair inertia. The DIN window has equal prominence on the left with the ASA window on the right of the setting wheel and the calibrations are bold and easily read. The ASA settings are from 6-3200 in click ⅓ stops indexed on the doubling series and the DIN range is from 9-36 in ⅓ stops. The setting mechanism is to be commended, because it is large and easy to handle.

The Shutter

On the M5 shutter speeds are set on the dial as described above and the speed set is indicated at the extreme left end of the illuminated match-needle strip along the bottom end of the viewfinder. The speeds available are ½ to 1/1000 second. The omission of the 1 second has enabled Leitz to improve the shutter design and provide an important new facility: over its range, settings are continuously variable with exception of a small gap between 1/40 and 1/50 second, the latter is the X synchronization speed marked by a dot, before the 1/60 setting.

Meter needle and index pointer may be accurately aligned for exposure purposes either by moving the lens aperture ring or shutter speed setting dial. The 1 second setting will not be greatly missed and the advantage of the continuously variable shutter should be considered an advantage outweighing its loss. After the ½ second, the speed dial can be moved over the calibrated range 1-30 seconds in order to align the match-needle system, should the lighting conditions or the lens aperture at which it is desired to work require exposures of this length. The shutter remains set on 'B' over this range. *It must be remembered that these settings are meter readings only and that reciprocity failure must be taken into account for exposures over this span.* The material of the shutter is the same rubberized cloth used in earlier Leicas.

Baseplate

As with all M Leicas, the M5 remains a base-loading camera with removable back flap. The M5 baseplate and its functions are, however, quite different. It differs, naturally, in length and shape, following the body shape. Also the opening key is now at the right end, as the camera is operated, and the location occupied by the base unlocking key on the earlier M cameras, now houses the fold-away film rewind crank.

To retain the same position for the tripod bush, .59 in. in from the right end, it has been necessary to make this coaxial with the base-plate unlocking key, and it appears to be very soundly constructed. The coaxial siting does however remove one useful facility. Since Leicas are moored to a tripod or set-up by a bush at the right end of the baseplate, the left end usually projects far enough to allow access to the base unlocking key. To reload the camera without disturbing its alignment it has been possible to undo this key and ease the camera body off the right end of the baseplate, returning it after reloading. Since the fold-away rewind crank now occupies the former location of the baseplate key, it is still possible to rewind the film with the camera screwed to a support, but it must be removed to load in another film.

Leica M5 with 50mm Summilux f/1.4 lens.

The holders for the strap of the Leica M5 are on one side.

The rewind crank is an extremely neat device, strongly built with a rotating finger grip on the crank and a 1:1 operation. A ratchet restricts the movement of the crank to the rewind direction as soon as the crank handle is folded out ready for use. When folded away, the assembly will revolve in either direction so that correct film transport can be observed by watching it turn. Were the camera to be used with an ordinary type ever-ready case, it would mean that the rewind could not be cranked without removal of the camera from the case, nor could turning of the rewind crank be observed as a check on film loading and transport. As has been noted, these factors have been taken into account by the drop-down design of the case.

There is one restriction encountered with the rewind crank mechanism on the M5, however. 35mm camera users are wont to check whether a film is loaded in by turning the rewind knob or crank anti-clockwise. This is less conveniently done on the M5, because the rewind assembly has to be moved by the finger tips with the crank folded away, since it will only move clockwise once the crank arm is unfolded. An arrow on the crank arm indicates the direction of turn for rewind.

Since the rewind crank shaft does not pull out—and such baseplate rewind systems have an unpleasant knack of loosening their retaining springs and hanging pathetically down after hard use—the key located in the cassette core to engage for rewind is spring loaded, so that it can slip into place if the cassette is offered in an incorrect attitude. Only cassettes with a key in the long end of the core—such as have been standard for a few years now—may be used.

Film loading and transport

As already described, the M5, like its predecessors, is a base-loading camera. The quick-threading feature on the take-up spool is a compromise between the M4 fixed fitting and the removable quick-thread spool made available for M3 and M2 cameras after the M4 appeared. This means that the M cameras have three different loading diagrams, in addition to the conventional one with the unconverted M2 and M3s. With the quick-thread conversion on an M2 or M3, it is necessary to pull the conversion take-up spool out in order to zero the frame counter. On the M4, the counter zeros as the baseplate is removed; the M5 has this feature, although the take-up spool is removable. It will, unlike the M4 type, take untongued leader, which will assist those who roll their own from bulk. Obviously, the rearrangement of base key and rewind assembly make the use of the Leica cassette impossible in the M5, as it already is in the Leicaflex. The removable take-up spool means that the user, should he wish, can load the film in the conventional Leica way, inserting the film leader in the take-up spool, stretching it along the camera base, then dropping the take-up spool and feed-cassette into place.

The film register and tracking rails remain of the slim design favored by Leitz, the only significant difference being the omission of the upper tracking rail above the picture gate area, although there is a small stud centered in the gap. The two large studs at either end of the upper tracking rail found on earlier Ms remain.

In general, take-up spool apart, the Leica user will find no difference in the handling of the M5 as regards film transport. The lever which releases the transport sprocket to enable the film to be rewound is sited in the same position on the front right of the camera as on earlier M models, and is of the rectangular M4 design. Transporting the film on the M5 retains the ghost-like smoothness of that on earlier M cameras. This fact, combined with the retention of the shutter release button travel smoothness—despite the use of its initial travel to recess the meter cell arm in the camera dark chamber—gives the M5 precisely the same feel as its M predecessors.

Camera Back

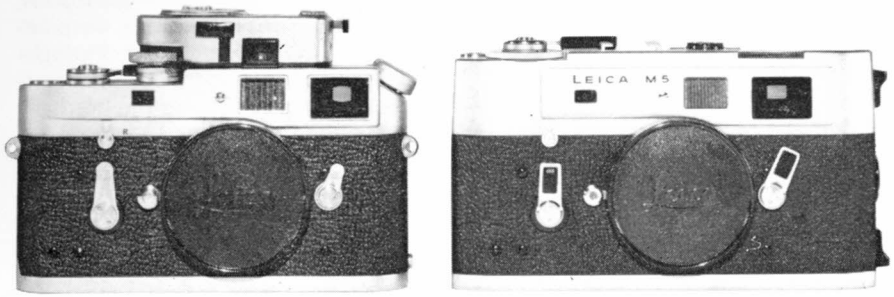
There are three features on the M5 camera back, as on earlier models. Central on the inspection flap is a new film type reminder dial and—rather remarkably—an exposure calculator. Since the assumption is made that the built-in meter will have been set for the speed of the film in use, it is no longer necessary to incorporate a film speed reminder facility, and the central wheel in the calculator merely has symbols for black and white, color negative, daylight and artificial light reversal color material types. The surrounding exposure calculator serves to remind the Leica user that, if the indicated exposure is 1/125 at f/8, he will also gain correct exposure by using the settings 1/250 at f/5.6, or indeed, 1/60 at 1/11! The aim is presumably purely decorative and the only interesting point to note is that the scale is calibrated for f/1.

The second feature on the camera back is the two flash contacts already described, now marked 'X' and 'M'. The old lightning flash and flash-bulb symbols have been discontinued, since AG and flash-cubes require X synchronization, originally reserved for electronic flash units.

The third feature on the back is the viewfinder ocular which is threaded to take the same eyesight correction pieces as the earlier M models.

Viewfinder

The M5 viewfinder is basically of the M4 type, giving a magnification of 0.7X and showing bright-line frames for the 35mm, 50mm, 90mm and 135mm lenses when they are inserted in the camera—the 35mm and 135mm frame are both visible simultaneously. The bright-line frames on all M models define very accurately the field of view of the various lenses with automatic parallax compensation. They do not, however, take into account the change in image magnification as the lens is



The Leica M5 weighs less than an ounce more than the M4.

racked out to focus at subject distances toward the nearer end of its focusing range, an advantage of an SLR, presuming its viewfinder is accurate.

With the M3, the 135mm bright-line frame is of just sufficient apparent size to be a practical proposition, while on the M4 and M5 it truly is getting too small to be of great value. With these cameras the 135mm f/2.8 Elmarit, with the magnifying viewfinder attachment which makes the 90mm bright-line frame show the field of the 135mm lens, is really desirable. The limits of the various bright-line frames are defined in the identical manner to those in the M4, with the exception that, on the M5 with the 35mm focal-length bright-line frame, the line at the bottom of the finder has been omitted except for two short bars at either end. This has presumably been done to prevent confusion with the match-needle system that appears immediately below it.

In addition to the M4 bright-line indications there are four white arcs surrounding the rangefinder patch that indicate the field being metered when the 50mm lens is on the camera. (See accompanying illustration.) These short arcs are very thin and do not interfere with viewing; they indicate the measuring field of the built-in through-the-lens meter when the 50mm lens is attached to the camera. The super-imposed rangefinder spot is of the same color as in other M models, but different in shape in that the sides are now curved. If these curves are imagined to extend to complete a circle, this defined the through-the-lens meter reading area with a 90mm lens attached to the camera. This aspect of the M5, together with the match-needle system visible along the bottom edge of the viewfinder, will be discussed in greater detail when dealing with the through-the-lens exposure meter.

Although the eyepiece on the M5 viewfinder is identical in dimensions with that in the M4, the mask is slightly larger. This increase over the M4 is no doubt incorporated to permit easier scanning of the match-needle exposure meter indication. Those who wear glasses will probably find it better, or even for some individuals, necessary, to use the eyesight correction pieces rather than their glasses.

The M5 range-viewfinder has been constructed like those on earlier M models to make it unnecessary to center the eye in the exit pupil of the ocular before the bright-line frames and the rangefinder spot become fully visible. This advantage has not, however, been extended to the visibility of the match-needle and shutter speed indicating system along the lower edge of the viewfinder. This requires the eye to be more or less central in the exit pupil of the ocular before reaching maximum visibility.

The meter needle, the index mark, and the shutter speed indicator are in fact located at different distances from the viewfinder ocular and an ingenious system of small prisms and optical components has been necessary to bring them simultaneously in sharp focus in the viewfinder. Although certainly simultaneously in focus, their actual location in three planes introduces a parallax error, which can amount to ± ½ stop or so between the meter needle and the index pointer as the eye is moved across the viewfinder ocular. For this reason, as well as for visibility, it is best to always center the eye when taking a reading with the meter.

The Rangefinder

The M5 has an M2/M4 type rangefinder. The base length of the M2/4/5 rangefinders is 68.5mm although, since their viewfinder magnification is 0.72X, the optically effective rangefinder base length is just over 1.93 in. With wide angle lenses, even with the much improved focusing screens which are now available, the 35mm single-lens-reflex can only make a good guess at accurate focus and rely on depth of field to cover up; whereas the coupled rangefinder camera maintains its accuracy and rapidity with such lenses. In addition, the design of wide angle lenses is complicated by the long back-focus required for the SLR. However, a through-the-lens meter cell in the darkchamber of the M5, as will be described later, restricts the amount of recess possible with very wide angle lenses which will now need to be more retro-focus.

The Darkchamber

The darkchamber in the M5 is of identical layout and overall dimensions to the earlier M models. The rangefinder actuating cam at the top has the increased travel of that on the M4 so that, for example, the new six element 50mm f/2 Summicron, which can focus down to 28 in, is rangefinder-coupled down to that distance. On the M3 it couples only down to 36 in, 0.9m; although the stop arm on the M3 rangefinder cam can be modified to extend its coupling range.

The difference with the M5 interior is that the arm carrying the meter element rises from a recess at the back with a movement parallel to the focal plane shutter blind, coming to rest centered along the optical axis of the camera against light-spring loading. The arm swings up into position as the camera is wound on, and, at the same time, the exposure meter battery is switched on; the initial pressure on the shutter release button lowers the arm and, as soon as it is recessed, continuing pressure releases the shutter. If a lens is removed after the film has been advanced, the arm automatically recesses, to rise again into position as another lens is inserted.

To effect this, a pin projects at 6

o'clock in the front of the camera well, so that the lower bayonet tab of any Leica lens will automatically actuate it as it is inserted into the camera. The pin projects through a notch in the lower retaining spring on the camera lens flange.

The presence of the meter arm element 4mm in front of the shutter blind restricts the depth to which lenses may be recessed into the camera. The resulting limitation on compatibility of certain Leica lenses will be discussed later. In fact, with very few exceptions, Leica screw and bayonet lenses can be fitted.

M5 Through-the-Lens Meter

The light-sensitive CdS element rises, when the film is advanced and a lens is in position on the camera, aligning itself along the optical axis of the camera at a distance of 8mm from the film plane. The meter element consists of two intertwined CdS elements with a window diameter of about 8mm. This dual element is also used in the Leicaflex and results in the variation in the resistance of the combined element remaining linear to the light intensity falling upon it, across its whole range. The element is fronted by a light baffle consisting of a coiled watch hair-spring, the exact purpose of which will be described later.

Meter read-out is displayed along the lower edge of the viewfinder. An index cursor moves at an angle along a bright-line strip having a central black bar, to a position determined by the speed of the film in use as set on the device on the camera top-plate and influenced by the shutter speed set. The meter needle deflects along this bright bar and is normally brought to intersect the cursor by adjusting the lens aperture. Alternatively, if the operator wishes to work at a definite aperture, as often occurs, then this is set, and the cursor brought to intersect the meter needle by adjusting the shutter speed.

The M5 through-the-lens meter thus operates on what is usually termed the 'stopped-down' system. Readings are taken, that is, with the lens at the aperture which will be used when taking the photograph. To incorporate a system in which the reading is usually taken at full aperture would require a new range of lenses with automatic diaphragms and a feeler system to tell the meter in the camera body what aperture has been preset. This would entail all the extra size, weight, complexity and consequent increase in lens cost found with an SLR. The practical objection to stopped-down reading with SLR cameras—the darkening of the focusing screen when the reading is taken—naturally does not apply with the direct vision viewfinder of a coupled rangefinder camera.

Another point is that the danger of using a CRF camera without removing the lens cap does not apply with the M5, since, if it is not removed, the meter will not read.

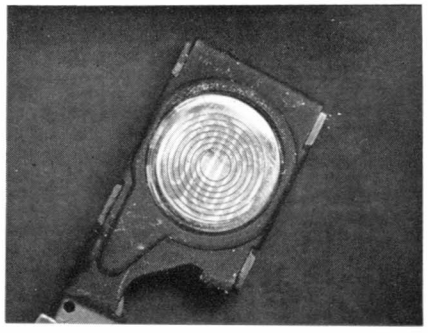
In addition to the match-needle system described, circular symbols at either end of the match-needle bar indicate whether the lens aperture should be opened or closed, and the shutter speed set is displayed at the extreme left. Toward the right of the bright line is an index point to which the meter needle should deflect when the battery condition is checked.

Meter Sensitivity

On the M5, as the maximum aperture of the lens attached increases, so the amount of light available to the meter increases, and the effective poor light reading capability is raised in its turn. Thus with an f/2 lens inserted, the M5 threshold point is 0.8 asb; with an f/1.4 lens inserted, the meter has a threshold point of 0.4 asb and, with the f/1.2 Noctilux, around 0.3 asb.

Taking the figure for an f/1.4 aperture, the M5 meter is about two stops less sensitive than the majority of off-camera CdS meters; about four stops less sensitive than the Gossen Lunasix; about two stops more sensitive than the clip-on Leicameter MR for M models; three stops more sensitive than the Leicaflex SL. The criterion of f/1.4 has been used in the above comparisons, because it seems increasingly the practice with SLR cameras with through-the-lens metering for the manufacturers to regard an f/1.4 as the normally fitted standard lens.

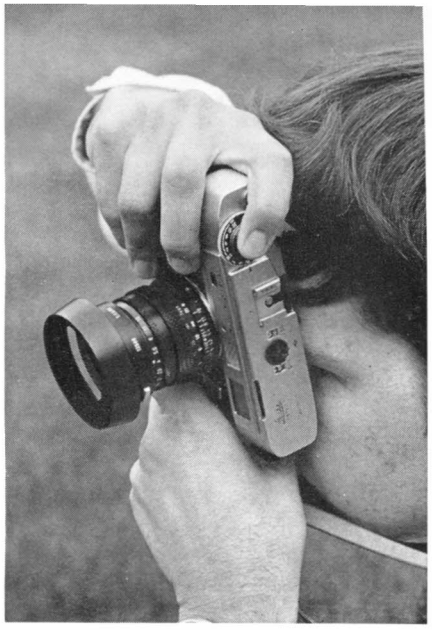
Two CDS elements of different sensitivity give more accurate response.



In practice, in ISO sensitivity terms, it means that the M5 with an f/1.4 lens can read an exposure of 1 minute at f/8 on ASA100 film. This sensitivity, in terms of ASA400 film gives a figure of 15 seconds (that amount of light requiring one quarter the exposure on the material of that speed) and with the lens at f/1.4 the same threshold light level would require an exposure of ½ second on ASA400 material. Thus the poor light sensitivity of the M5 meter with a lens at f/1.4 is reached with an exposure time of ½ second on ASA400 material. The threshold sensitivity of the meter is fixed and this is then expressed in terms of different shutter speeds, apertures and film speeds.

At the opposite end of the scale, in extreme bright light, another interesting point arises about which there may be some confusion. For example, with the M5, the maximum light level that can be read is around 100,000 asb—the level generally accepted as the maximum possible reflected light value to be encountered on earth. With a stopped-down reading through-the-lens meter, the brightest light level in which it will read is determined by the smallest stop. In other words, under lighting conditions when, employing the commonly used ASA100 film speed criterion, the M5 meter peaked with a reading of 1/1000 at f/16, then if the lens were capable of being stopped to f/22, and the shutter remained at its fastest 1/1000 speed, the meter would be able to read 200,000 asb and at f/32, 400,000 asb. This brightness is two light values beyond the theoretical limit of reflected light readings on this earth, but could presumably be reached in taking direct readings, say, of rocket exhausts, steel furnaces and incandescent sources generally. This point naturally applies to all through-the-lens meters capable of stopped-down readings, referred of course to their own particular measuring range peak and cross-coupling system.

The quoting of the measuring range of a through-the-lens meter using the



stopped-down method in terms of the range of mechanical linkage between shutter speed and meter plus the aperture range of the lens in use has the following practical importance: It is the range of time/intensity reciprocal relationships referred to film speed which determine the extent to which the sensitivity of a through-the-lens meter or clip-on external meter cross coupled in this way can be exploited at a given film speed setting. For example, using material rated at ASA400, the briefest exposure which can be read with a lens capable of being stopped-down to f/16 will be two stops or light values below the peak bright-light sensitivity of the M5 meter or 25,000 asb, shutter set to 1/1000. This should be good enough for most normal purposes, but a lens capable of being stopped-down to f/32 would be required in order to be able to read from the peak sensitivity value of 100,000 asb. With material rated at ASA800, the brightest conditions readable at f/16 would be 12,500 asb, three stops below peak sensitivity, and f/45 would be required to fully exploit the meter's sensitivity at that film speed setting. Toward the other end of the scale, ASA25 material provides a peak sensitivity reading at 1/1000 at f/11 with a threshold sensitivity at 4 seconds at f/2. As regards the M5, the important point is that any combination of shutter speed to which the camera can be set and aperture to which the lens in use may be set can, under the appropriate lighting conditions, be read on the meter.

Reviews of cameras using exposure meters reading through the lens in the Journal have often emphasized the fact that only measurements made in the film plane or its geometrical equivalent are entirely problem free. It will already have been noted that the meter element in the M5 is located 8mm in front of the film plane and, were other steps not taken, this fact would introduce meter reading inconsistencies, especially with wide angle lenses. With a wide angle lens, the emerging light beam is more divergent as the focal length decreases in relation to the format to be covered. Consequently a meter reading element placed perhaps half way between film and lens, or nearer the lens even than that, is going to 'see' much more of the oblique rays than it will with longer focal-length lenses and their increasingly less divergent emerging rays. With the really longer focal-length lenses on the 35mm format, the whole picture area is covered by rays approaching the parallel.

In the Leicaflex this difficulty is overcome by using a secondary mirror looking through the reflex mirror and reflecting the image into a meter-reading element in the bottom of the camera darkchamber, so located as to be in the geometrical equivalent of the film plane. In the M5, designers presumably decided not to introduce an SLR condition by making use of a mirror in this way. Instead they have chosen to compensate for this variance in illuminating beam divergence by an ingenious device and one which had all the simplicity of true invention. A watch-type hair-spring is coiled in front of the meter element. This has the effect of preventing some oblique rays from reaching the light-sensitive element, while allowing the more parallel to pass. The more divergent the rays the more they are shut off. This does not, however, present a complete answer, for example, to the problem of exit pupil variation at a given aperture with lenses of different degrees of telephoto and retrofocus construction. It is, however, a simple practical solution at least as good as any of the other, sometimes more complex, compensating methods which have been used with through-the-lens meters in single-lens reflex cameras.

A moment's thought will show that the nature of the M5 reading will vary with the focal length of the lens in use. The longer the focal length the more closely defined will the area of the subject read become, and in fact it will eventually approach a true spot reading. This is because, with the more parallel emerging light beams from such lenses and the greater depth of focus at the film plane, the meter window will then actually be seeing a selected area of the subject, and the spring baffle will have little or no effect. As focal length decreases, the beam becomes more defocused when it meets the meter element window and the tendency for oblique rays, even in the presence of the coiled baffle, to have an influence on the meter reading will increase. Under these conditions, as focal length decreases, so the reading becomes more of what we have come to know as a center-weighted reading. In other words, the central area of the subject will have the major effect on the reading while the reflectance of the surrounding areas will modify this to some extent.

The M5 meter tends to provide the photographer with the type of reading of most practical use with the focal length lens he has on the camera. With longer focal-length lenses, the great advantage of the through-the-lens meter in being able to make a reading virtually as a telescope is preserved. As the focal-length gets shorter so the whole subject area tends to be integrated, but with the central area given most significance. Importantly for those who use the Leica in applied photography, it is a system which works very efficiently in photomacrography, for which the high sensitivity of the meter and the long time exposure calculating facility on the shutter speed dial are also helpful. The West German precision camera industry is so often criticized for adhering to optical and engineering principles so rigorously as to impede the workmanlike aspects of their products, that we should applaud the applicability of the M5 meter as a functional tool in practical work.

On Test

The use of a spiral stop to compensate for the 8mm difference between meter element window and film plane made tests of its efficiency of especial inter-

est. The short answer is that it does work, and remarkably well. In testing, ten Leica lenses were used from 28mm —the minimum focal length at present available for the M5—to 135mm, of differing maximum aperture at the same focal lengths and of different construction, including the three standard lenses of 50mm f/1.2, f/1.4 and f/2 maximum apertures. Readings were cross-checked at all apertures with this range of lenses at four different levels of constant illumination. The result was an almost precise correspondence of reading at a given aperture with focal lengths from 50mm to 135mm.

Turning to the 35mm and 28mm wide-angle lenses, slight discrepancies were noticed, but the maximum deviation at the apertures mostly used, that is down to f/11, was —½ stop.

The results of this testing were very impressive and, in consistency of reading, the M5 meter compared most favorably with any other on the market in the writer's experience.

Calibration

Having found that the M5 meter gives, within the limits described above, the same reading, irrespective of lens focal length or aperture, from a given surface brightness, the most important practical point is the nature of the calibration.

Tests indicate that the best method to adopt with the M5 meter is to regard it as giving what might be termed an integrated mid-tones reading. This corresponds with the manufacturer's recommendation to read off an area of the subject containing neither deep shadows or extreme highlights. They suggest that, in the majority of photographs, the suitable area for reading will be that used to focus on, and this works well on a surprisingly large number of occasions. Those accustomed to taking shadow readings for black and white film will find negatives somewhat over-exposed if they use the M5 meter in this way. It is not wise to regard this meter as giving a selected area reading in the same sense as the Leicaflex SL. Since the light-sensitive element is not in the film plane or its geometrical equivalent, despite the compensation provided by the cutting off of oblique rays by the coiled spring baffle described, the light will be defocused to varying degrees across the range of focal lengths with which the meter is used. With the longer focus lenses, beginning possibly with the 135mm lens at medium apertures and more especially with the Telyts, the image is sufficiently localized at the meter element window for a definable selected area to be read. As focal length shortens, however, so integration of a larger area of subject surface brightness occurs and the user can be less sure of the exact limits of the reading. As indicated earlier, in actual practical work, the M5 meter readings very much match the normal requirement with a given focal length of lens. So the solution it provides, although not an entirely scientific one, is certainly a very practical one. It provides a variation between selected area readings with long focal-length lenses down to center-weighted readings with wide-angle lenses. Over this whole range of lenses, and certainly until experience has been gained, a mid-tone area should be used as the basis for reading, or the range of readings over a given subject observed and the mean then set on the camera. There is no reason to regard the film speed to which the meter is set as sacrosanct and, if the user wishes to take highlight or shadow readings consistently, he should adjust the film speed setting in accordance with his experience. In general terms it can be applied like a narrow angle-off-camera CdS meter. One of the pleasant aspects of the addition of through-the-lens metering to the Leica is the ability to take a reading of a brightly illuminated subject from well back in the shadow, or through a window, etc.

Measuring fields

With the film plane equivalent measuring system in the Leicaflex SL, it is possible to be specific as to the measuring field of the meter with every focal length of lens. It is indeed possible to calculate the part of the angular field of different focal length lenses on the 24x36mm frame occupied by the meter element window on the M5, but, due to the out-of-focus effect described above, this is not so meaningful. For practical purposes the meter field with different focal-length lenses is referred to bright-line and other features in the viewfinder.

With a single lens reflex camera, it is only necessary to provide one indication of the measuring area of the through-the-lens meter on the focusing screen, for this will remain a constant, irrespective of what lens is fitted to the camera. The magnification given by any lens becomes apparent on the focusing screen. With the direct vision viewfinder on a coupled-rangefinder camera, however, this is not possible, since the angle of view corresponds to the field of the widest angle lens it has been designed to work with—on the M5 the 35mm lens field—and the fields for longer focal-length lenses are shown by bright-line frames decreasing in contained area as focal-length increases. Consequently the field of the M5 through-the-lens meter seen in the viewfinder also decreases as the bright-line frames contain a smaller area in the viewfinder.

The guide-lines suggested by Leitz for the measuring field with different lenses are as follows: With a 28mm lens, the measuring field can be regarded as contained approximately by the 90mm lens bright-line frame—this frame is automatically switched in when a 28mm lens is inserted in an M2, M4 or M5. A supplementary finder is required to show the field of a 28mm lens with the Leica, although with the M2, 4 and now 5, it is possible with experience to angle the eye round the viewfinder eyepiece to bring in the field outside the 35mm frame and gain a fair idea of what the 28mm lens will see.

With a 35mm lens, the suggested guide is the 135mm lens bright-line frame which also is automatically switched in when a 35mm lens is attached to an M2, 4 or 5.

The four bright-line arcs surrounding the rangefinder spot are joined into a circle to show the measuring field of the meter with a 50mm lens.

On an M5 with a 90mm lens the measuring field is defined by the curved sides of the rangefinder spot.

With a 135mm lens, the measuring field indication is taken as the rangefinder yellow spot itself.

This way of applying the M5 meter —remembering to observe a field within a field differing with each focal-length lens—does rather complicate matters at first and detract from rapid use of the camera; but, after a reasonably short time, use becomes instinctive and the user is not worried by the fact that, with the exception of the

Total picture control center in viewfinder.

50mm and 90mm lenses, circular meter fields are indicated by rectangles. It is the degree of deflection of the meter needle as areas of the subject are brought to the center of the frame that is observed and intuitively acted upon.

The 28mm f/2.8 lens referred to in these tests is the new retro-focus version of this lens, which has now been on the market for a year or so in anticipation of the M5, in which the presence of the meter element arm restricts the degree of recess possible. Fuller details of lens compatibility will be given later in this review. A retro-focus 21mm, presumably related to that for the Leicaflex, is in preparation for the M5, but it will naturally utilize a supplementary viewfinder to be placed in the accessory shoe of the camera.

Optical Compatibility

The Telyt long lenses cannot be used on the Leica other than with the Visoflex. In addition a 65mm f/3.5 Elmar is available to bring the range of application with the Visoflex close to that of the standard 50mm focal-length lens. Users might have expected the M5 through-the-lens meter to have leaped into its own with the Visoflex housings, but alas, this cannot be so. A moment's thought indicates that, when the Visoflex mirror is down and the subject can be seen, then the mirror masks the light from the meter element. When the mirror is raised out of the way, a reading can be taken but there is no means—at least with a hand-held camera—of seeing what one is reading from. With the M5 fixed to a tripod, readings become possible since the subject can be framed and the center circle on the Visoflex screen will, SLR fashion, show the meter measuring field irrespective of focal-length of lens fitted. The area from which it is desired to make the reading is centered over this part of the screen and the user then raises the mirror, blacking-out the Visoflex finder, and looks through the normal range-viewfinder eyepiece on the camera body to take a meter reading. The presence of the Visoflex will black out both the range-finder spot and the direct vision viewfinder, but sufficient light will enter the meter readout window, lapped into the top plate on the camera front, to enable the meter reading to be taken and shutter speed or aperture adjusted to match the needle. This sequence of operations is obviously quite impractical with the camera hand-held, but at least the meter remains applicable in many applied techniques which use a support.

Bayonet fitting Visoflex I and Visoflex III units can be used without fitting difficulties on the M5, the model III having been constructed with possible M5 dimensions in mind. The Visoflex II, however, is not recommended for the M5 by Leitz. In fact, the 4X magnifier can be mounted. The magnifier version of the Visoflex III (16499) and the vertical magnifier (16461) are suitable. The Visoflex shutter release lever cannot be used as the release button is in a different location on the M5.

Copying Equipment

The Leica M5 cannot be attached to the various focusing slides and cannot be used on the Reprovit. For use with the copying gauges for quarto, octavo and postcard size in the screw thread and first bayonet versions this equipment must be modified by Leitz before the M5 can be attached.

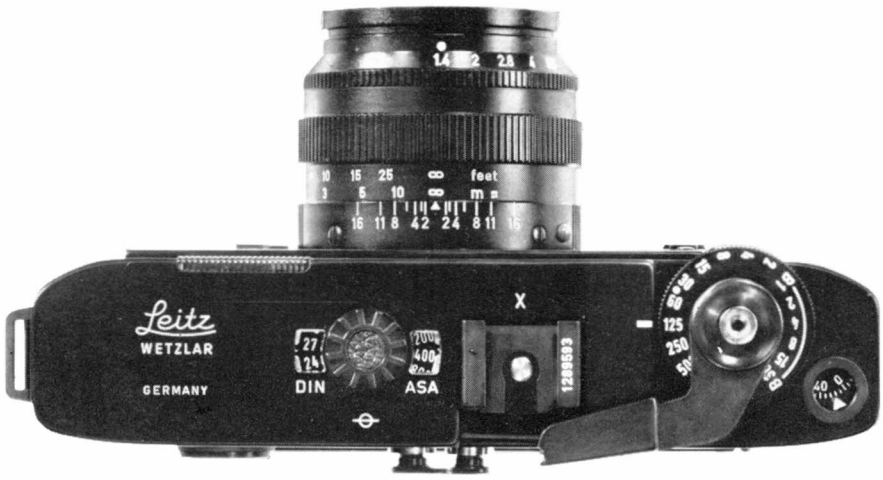
Lenses Requiring Adaptation

To prevent the meter element arm from swinging up and interfering with the rear section of wide-angle lenses, a recess has to be milled into the bayonet with the following lenses. They can then be used but, naturally, meter readings cannot be taken.

- ☐ 21mm f/4 Super-Angulon with screw thread: only the bayonet adapter (Cat. No. 14097) has to be modified.
- ☐ 21mm f/4 Super-Angulon with bayonet mount.
- ☐ 21mm f/3.4 Super-Angulon with bayonet mount.
- ☐ 28mm f/2.8 Elmarit with bayonet mount, after Serial No. 2314920.

Recent production of the 28mm f/2.8 Elmarit has been of a retro-focus design so that after the serial number quoted above no adaptation is required and the lens will read with the meter.

Owing to the increased height of the M5, two lenses—the 35mm f/3.5 Summaron with detachable viewfinder front attachment and the 50mm f/2 close-focusing Summicron—must be modified to prevent mechanical interference with the top of the camera. The 35mm f/3.5 Summaron with detachable optical viewfinder, designed for use with the M3 and which has no 35mm bright-line frame, will after modification have the same effect in the M5 viewfinder as in the M2 and 4 viewfinders, with consequent low magnification, although the meter will read.



Top plate of the Leica M5.

It should be noted that body caps made for earlier M cameras may damage the meter element arm release pin if used on the M5. These can, however, be modified by rounding off the tabs so that they push the pin gently as they are inserted and turned.

Collapsible Lenses

If a collapsible Leica lens is used on the M5 and recessed, it will probably severely damage the meter and the camera. If these lenses are to be used with the M5 it is probably safest to cement them permanently in the extended position for safety's sake.

Other Lenses. Apart from the exceptions listed above, all Leica lenses which can be used on M cameras—with a screw/bayonet adapter where necessary—can also be used on the M5 with full benefit of through-the-lens exposure reading. With early uncoated lenses there will be the advantage of an actual transmission value reading having been taken, although such lenses, excellent in their own time, cannot approach the performance of the latest designs.

Lens Fitting

As will have been appreciated, the lens flange on the M5 is dimensionally identical with that on the earlier M cameras, although independent sources state that the construction has been strengthened. A small difference in appearance is that the red dot, against which the red bead on the lens mount is aligned before insertion, is now central in the bayonet release button. This is a more logical site than on the flange itself.

M5—General Conclusions

With this camera Leitz has put an exposure meter reading through-the-lens into a coupled-rangefinder camera. They have done so in a manner which enables most Leica lenses made in the last 40 years, with four wide-angle exceptions, to use the meter. The difficulty of using this with the Visoflex housings is disappointing, but could not have been avoided whatever through-the-lens system had been used, since the mirror in the housings is inevitably in the way. Nevertheless, with a new Visoflex, these difficulties could be overcome and the Leica user presented with a remarkable new facility with long focal-length lenses, narrowing the advantages of the single-lens-reflex camera.

Without this facility with long focal-length lenses and, taking into account the apparent rather than actual problems of meter measuring field delineation, the M5 may be taken by some to have proved the case for the overall practicality of the single-lens-reflex. In fact the M5 occupies a rather curious crossroads position. Imagining that the Leicaflex had not already appeared, then many photographers, after using the M5, would regard the next logical step by Leitz to be the introduction of an actual single-lens-reflex camera with through-the-lens metering. However, the Leicaflex has already been with us for six years and the problem is where the coupled-rangefinder camera can move next. The question whether it is possible to combine reflex viewing and coupled-rangefinder in one camera must be left open. There may indeed be other alternatives. For example, man is a two-eyed animal who, when using a camera, becomes one-eyed. By making use of new viewing and focusing systems employing both eyes, a considerable new range of possibilities can be imagined, although this might mean designing cameras in which the viewing/focusing (bi-) oculars were along the base of the camera, with the camera back pressed against the forehead to prevent one's nose getting in the way. Barnack himself envisaged a camera held in this way to gain the rigid support of the forehead along the camera back. These speculations are somewhat removed from the subject in hand, but with the M5 Leitz seems to have broken out of the goldfish bowl in which the M design had remained for a number of years—however satisfactory an end concept the M4 has been—and this naturally leads to theorizing as to future possibilities.

Fundamentally then, the M5 is a true Leica camera and will be immediately recognized as such by every Leica habitue. Professionally speaking, the Leica is mainly used with the range of lenses which the M5 meter does accept, and in applied work the accuracy and greatly increased facility for exposure reading will outweigh any slowness in its use. It is a pity that the size has increased towards that of an SLR camera, but the actual operational ease of the Leica has been considerably enhanced by the much improved layout of operational controls. With this camera Leitz has set coupled-rangefinder design and manufacture on a higher rung.

12,000 AMERICANS will buy this "twice-as-expensive" camera

True, many of them are pros who can't afford a less expensive camera. To them, a camera means precision, dependability, versatility and the ability to give the kind of day-in, day-out performance that would make any other shutter shudder.

This kind of camera can only be built slowly, carefully. Before assembly, every minute part must be tested and retested. The slightest optical or mechanical imperfection means immediate rejection.

The most sophisticated equipment, including laser techniques, are used to measure tolerances—tolerances far beyond those set by the industry.

To build this kind of camera takes time, takes special skills, takes special people...Leitz people who for generations have been designing and building microscopes that have helped scientists revolutionize medicine.

Yes, we could cut a corner here and there, a minor concession on "this" part and on "that" feature, and "this little nick will never be noticed." Yes, we could do that and perhaps still have a fine camera at a price competitive with others, but then it wouldn't be a Leica and we would lose 12,000 demanding customers who believe and depend on the Leitz® tradition of non-compromising excellence, and we're not about to do that. So let your Franchised Leica Dealer show you the M5 and describe its features. He will show why this is a pro's camera that his nine-year-old daughter can operate. He will also show you why the Leica is a bargain even at twice the price of other "expensive" 35mm cameras.

Who knows, you may even walk out as number 12,001.

Leitz® Leica® E. Leitz, Inc., Rockleigh, N.J. 07647 124071