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アサヒカメラ

一九五九年 四月号
掲載記事の翻訳別刷

新製品をバラバラに
してのレポ（21）

ライカ M2

New-Camera Examination Column

(A Column appearing monthly in Asahi Camera)

Report on a brand new camera taken into pieces. In this column, we are reporting on our test of a new camera which is the topic of general attention. A brand new camera is purchased from a random camera shop and all-side investigations are made by authorities in this field. We selected for this purpose four gentlemen, Prof. Dr. Z. Koana, Dr. Y. Ukita, Mr. I. Kimura and Mr. T. Nukui. Your suggestions are welcome which cameras are wanted for such test.

No. 21. EXAMINATION OF LEICA M2

Until this issue, we have examined 20 cameras of Japanese make including cheaper products for the public as well as the highest class ones. In the meantime the criterion of our staffs has been established and we have reached such stage where any type of camera can be examined and judged quite impartially.

We therefore decided to take up this time a foreign product and selected LEICA, world-famous camera of Leitz, Germany. We took the newest type, Leica M2.

Several sets of this new camera were just imported by Schmidt Ltd., Tokyo and we were happy enough to purchase and examine one of these cameras.

The M2 examined by us is

Camera .....No. 935925
Objective.....No. 1543774

For the readers not so well acquainted with the Leica we speak here first about the development of LEICA.

Since 1914, when the trial product of Mr. Oscar Barnack was made, the maker, Ernst Leitz, Germany has for 40 years almost maintained the "Leica Type", a style of rather feminine air. In 1954, the Leitz company has presented to the PHOTOKINA of that year Leica M3, which was quite different from the previous models and whose various excellent functions have, we could say, quite astonished the camera industry all over the world. Since that time, the bright-frame finder with parallax self-compensating system, the lever type film winder, the coupled exposure meter, etc. are taken into modern cameras throughout the world as necessary basic requirements. After that, in 1957, again a revised model MP with built-in Leicavit was produced mainly for professional photographers. And, in the Photokina in the last year's fall, the Leica M2 was demonstrated, which is now being examined.

M2 is said to be a model produced by Leitz through their experiences of manufacturing M3 and MP and also on the basis of the users' experiences of such cameras. They also say that this camera was produced as a popular model but that its performance is in some respects superior to the previous model M3. We start the examination in the usual way meanwhile, taking M3 and MP as reference. We report to our readers that there are also Leica III g, which was developed from the old style Leica III f, and Leica I g, the simplified type of III g, which does not have the coupled range finder.

Test Report of Leica M2

LIGHT REFLECTION INSIDE OF THE BODY

With our usual test equipment with fluorescent lamp we made a rather severe test to examine the inner reflection which causes undesired fogging of the film. We could confirm that the inner reflection was pretty low. But, one thing we want to point out is that the reflection from cylinder-shaped covers (marked in photo 1) of right and left drums to hold shutter curtains of the focal plane shutter, should be further controlled by some means, for instance by making some grooves on their surfaces. Reflection from such cylindrical surfaces is not so distinct and local as reflection at the edges of the film-gate, but it can affect even such part of the film which is pretty far from the edge of the film. Such high class cameras are often used for quantitative scientific photography, and therefore, we think, some more attention should be paid to prevent the inner reflection of the camera body.

ACCURACY OF THE COUPLED RANGE FINDER

We took the picture of a 3-dimensional chart by focusing through the coupled range finder to test the coupling error. Such error for infinity, 3 meters, 1.5

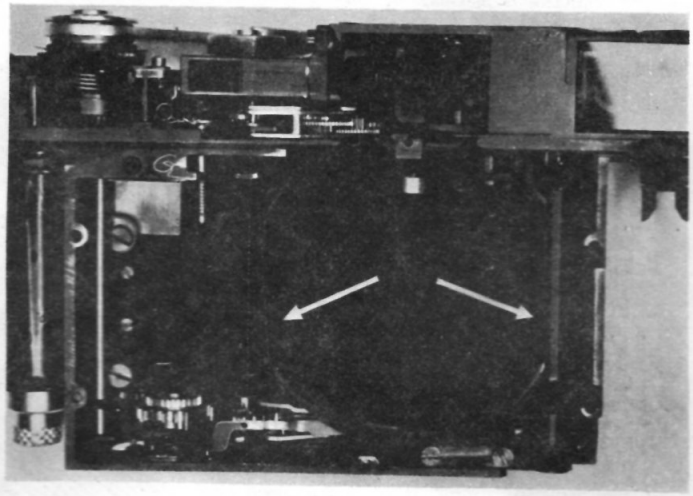


PHOTO 1

meter and 1 meter was found to be very small. It was namely 0.02 mm at the maximum when reduced to the film-plane. And, it means that with this camera an objective of even F/1.4 can be used quite safely. The exact focus was found to be always at a farther point from the lens, which is presumed to be due to the differences of thickness and hardness of films of German and Japanese make.

In case of Leica M2, the base length of the range finder is 68.5 mm, same as in case of M3. But, the finder magnification is 0.75 x, whereas such magnification of M3 finder is 0.91, and therefore the effective base length is 51.4 mm, while such length is 62.3 mm in case of M3. The reason for this lower magnification of the finder is that by this means the bright frame for 35 mm wide angle lens, which was first equipped in this new model, can be seen easier. (In case this magnification is near to 1 x a photographer should turn round his eye in order to see the frame for the wide angle objective.) However, this base length of 51.4 mm may be good enough up to a 90 mm F/4 lens, but is not enough for using a 135 mm F/4.5 lens. Our Table 1 shows it quantitatively.

TABLE 1

Objective	A	B (M2)	C (M3)
Summicron 35 mm F/2.8	8.5 mm	6.0	7.3
Summicron 50 mm F/2	25.8 mm	2.0	2.4
Elmar 90 mm F/4	39.2 mm	1.3	1.6
Summicron 90 mm F/2	78.5 mm	0.65	0.8
Hektor 135 mm F/4.5	78.5 mm	0.65	0.8

NOTE: A.....Minimum effective base length, necessary for using respective lens at full aperture

B.....Safety factor of range finder system for M2 (effective base length : 51.4 mm)

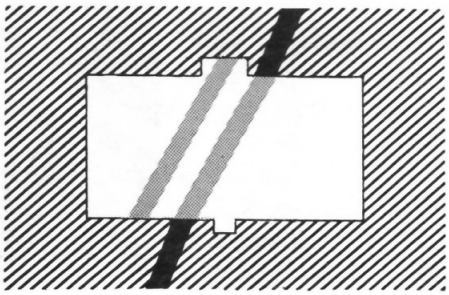
C.....Safety factor of range finder system for M3 (effective base length : 62.3 mm)

The safety factor of the range finder system will be obtained when the effective base length of the range finder will be divided by the figure in the above column A. If this factor is 1, it means that the range finder has a minimum capacity for being used with that lens at full aperture. In case this rate is less than 1, it shows that there is a fear of out-focusing if the lens will *not* be used at smaller stop. It is desirable that the safety factor will be more than 2.

In this model M2 the finder is equipped for 35 mm, 50 mm and 90 mm lenses, while the finder of M3 is arranged for objectives 50 mm, 90 mm and 135 mm. These facts seem to mean that M2 has given up the use of the 135 mm lens with the coupled range finder system.

The double-image field of the finder is not a simple rectangle as in case of M3. It is, as shown in fig. 1, equipped with marks on the upper and lower edges, in order that the depth of sharp field can be caught in the finder. Any object out of focus is seen doubled in this field as usually, but it is within the depth of sharp field so long as the separation of the double image does not exceed the

FIG. 1



width of the marks. The width of the lower mark corresponds to the depth of the standard 50 mm lens stopped at F/5.6, and the upper mark at F/16. This system, newly taken into the M2, is the first of its kind and may be very useful for press photographers who have to care much for the depth of sharp field. We appreciate Leitz's attitude that they write of this system simply in their instruction booklet instead of making extra-propaganda for it.

FINDER

The finder has bright frame and automatic parallax compensation system. As already reported, the finder is equipped with three frames for the lenses of 35 mm, 50 mm and 90 mm focal length, one frame of which appears in the finder automatically according to the selected objective. It is very neat that only one required frame appears and all others do not appear in the field. (In case of M3 the frame for the 50 mm standard lens remains in the field always.) The frames consist of rather fine lines and have no corner parts, whereas in case of M3 finder the lines are rather thick and have round corner parts. (Fig. 2)

Like the recent M3 there is a small lever on the right side of the body front. (marked in photo 2). By pushing this lever to the right or to the left a required frame appears in the finder, regardless what objective is fixed on the camera, which is very convenient when selecting another objective to use.

Then we compared the field within the respective frame and the actual picture taken on the film, using the standard 50 mm lens. The Table 2 shows these relations.

TABLE 2

Distance	Vertical	Horizontal
1 m	101%	99%
3 m	93%	92%
∞	92%	91%

In the nearest distance it was 100%, which means that the field of the frame was taken in the picture exactly, not more, not less. Among 21 cameras we have tested this was the first one which could show such result. Even among the single-lens reflex cameras there was not one which could give such good result. When the picture was taken with the

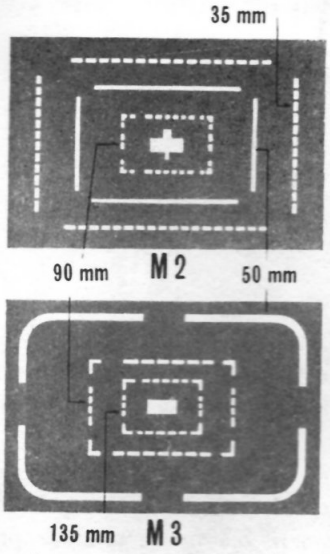


FIG. 2

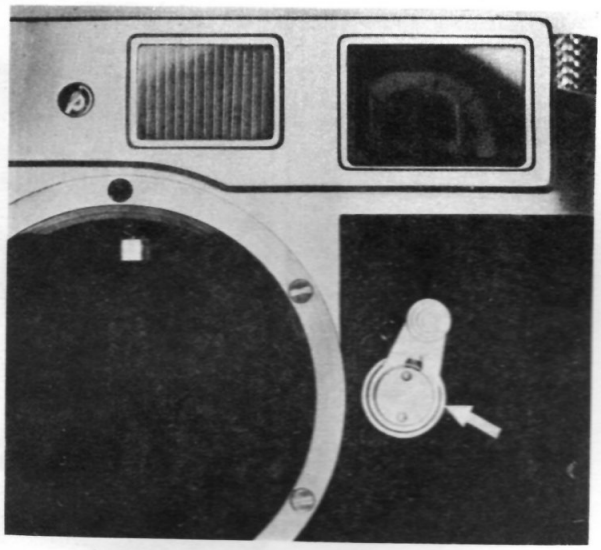


PHOTO 2

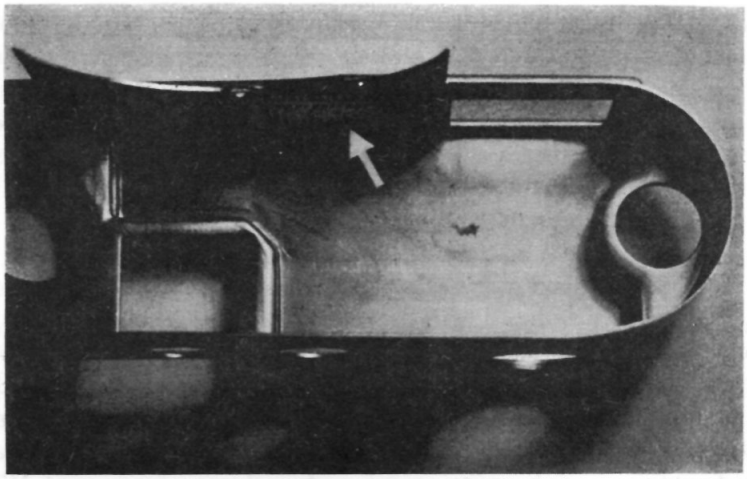


PHOTO 3

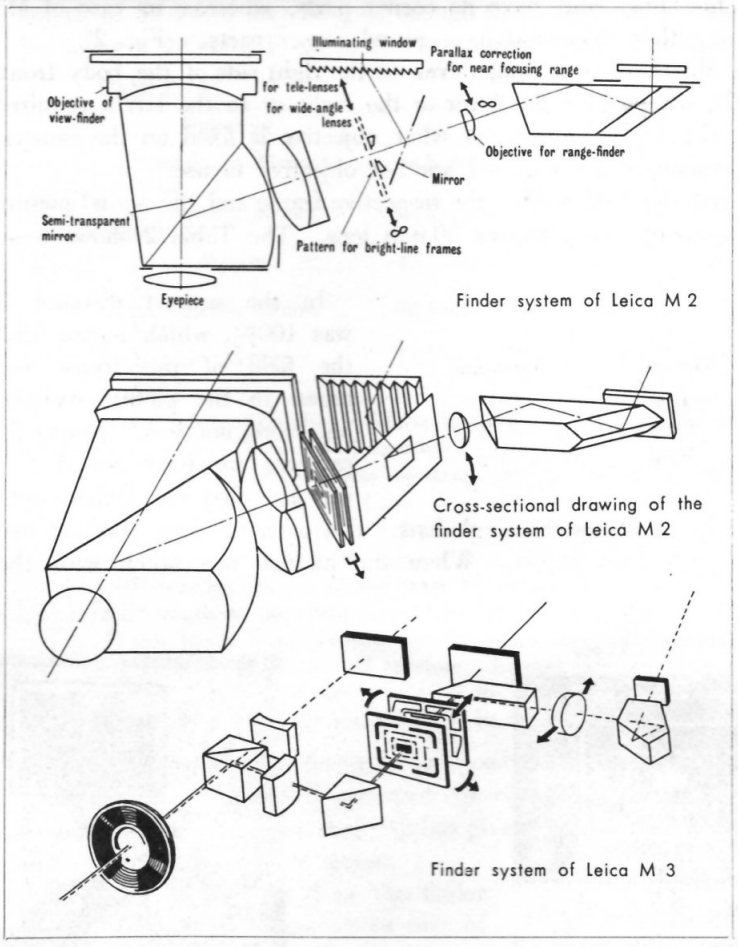


FIG. 3

FIG. 4

camera in horizontal position and with the distance scale set at ∞, left hand side objects were photographed a little more than seen in the bright line frame. But, this addition was only a little and it doesn't become a problem in practical uses.

The optical system in the view and rangefinder is as shown in the Figures 3 and 4. And, we can find that a considerable simplification took place when compared with those of M3 finder. The main reason for a lower price of M2

will perhaps be attributed to this fact. We call this a simplification, but all the important features of this finder system - frame which appears according to the selected lens, automatic parallax compensation system, clear cut double image field and so on - are maintained also in this simplified M2 finder. The optical system of the M2 finder could be simplified without sacrificing the features of M3 finder, because of the decrease of the finder magnification. As the characteristic features of the M2 finder system, the followings may be cited.

The light beam which comes from the window for the movable image crosses with the viewing axis of the finder not at right angle but at ca. 70°, and the frame placed perpendicularly to this beam is illuminated by a chromium plated mirror and a saw-shaped light window (Fig. 3 and 4, and marked part in Photo 3).

We might prefer M3 finder image better, compared with M2 finder. But, still there is no error in the co-incidence of double images even in the corner parts of the range finder field, in which point M2 is also much better than any of Japanese cameras.

We can also approve that the outside surfaces of the finder window as well as of the eyelens are not coated, but we would say it is a fault that the inside surface of the window and outside surfaces of the prism block are not coated.

PICTURE SIZE

When using the standard lens Summicron 50 mm F/2 at full aperture the actual picture size was 24.2 × 36.3 mm. And, when the diaphragm is a little closed the actual size is supposed to be exactly 24 × 36 mm.

FILM TRANSPORT AND REWINDING MECHANISM

In Leica M 3 a double-motion winding lever is used and the play angle of the lever is 35°, winding angle for the first motion is 80° and for the second motion 55°. In M 2, however, the play angle is 25° and the winding angle is 115°, and it is a one-motion lever. This increases the photographing speed considerably. And the movement of the lever is as light as the double-motion lever of M 3.

The film transport mechanism of M2 is slightly modified from that of M3, and it has the same durability as M3's, we think.

Due to this change to the one-motion lever system, the Leicavit (a bottom plate with a trigger lever for winding the film and cocking the shutter) can be attached to this camera on the bottom, but the automatic-return film counter as equipped

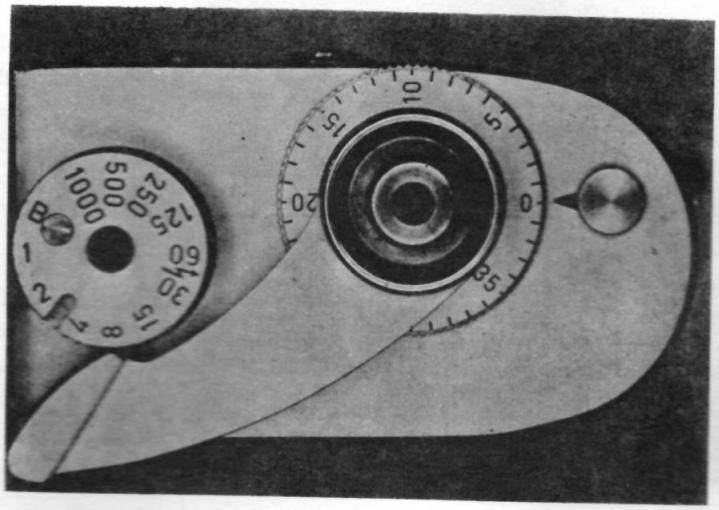


PHOTO 4

in M3 disappeared in the model M2, in which a disc-form film counter, to be set by hand, is built-in. (Photo 4, same with MP) We think, however, most people will prefer an automatic return film counter rather than the possibility of attaching the Leicavit, especially now that the camera is equipped with one-motion lever. It is a handicap of the disc-form counter that the disc is apt to be easily moved when it is touched by hand.

The film rewinding is made by the knob as in previous models and the users who are used to the crank system rewinding would feel somewhat irritated for such slow motion. We know that electric sparks, which would be caused when too quick rewinding is made, would give undesired fogging on the film. But such fact can be mentioned in the instruction booklet as a notice.

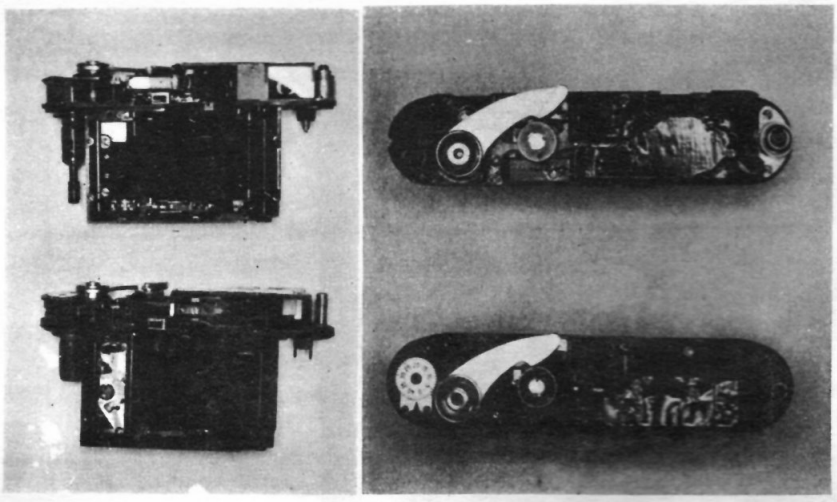
In M3 the R-lever for rewinding the film is on the upper left side of the body and sometimes the hand which holds the camera pushes the lever by chance. In M2 this is changed to a push-button system and its position and shape were nicely selected so that it is easy to push even when we wear gloves. But, it is troublesome that we have to keep the button pushed during the rewinding operation, and we would prefer a self-returning button system, which once pushed remains in that position and returns to the previous position when the film is filled and the winding lever is operated.

OTHER POINTS OF THE BODY

The die-casting of the body is good and black lacquer on the outer part as well as non-lustre paint used inside are of good quality. Artificial leather (Guttapercha) is used on the outside of the body and its surface has pretty rough grains that the hand doesn't slip. The body is first nickel plated and again chromium plated over. The plating is very hard and finished very fine, so that it is almost non-lustrous. The maker seems to prefer such white chromium plating recently.

There are many screws, on the inside of the camera, which are not fixed with lacquer, but they are screwed in so tightly that there will be no fear of these screws becoming loose. It is very good that the tops of all screws of any type are completely buried into respective holes.

Shutter speed dial is, like in recent M3, a single-axis, non-turning system engraved with even interval scales. When checking up the inner mechanism we find that improvements have taken place in the part which prevents the re-bound-



Comparison photographs of the inner mechanism of Leica M2 (upside) and M3 (bottom)

ing of shutter curtains, and also in a metallic brake for both the first and second shutter curtains instead of the bakelite one used previously. The shutter button works lighter than M 3's and the shutter sound is a little smaller.

Shutter speed was found very accurate, the errors being limited within 15% range, except for 1/1000 second which actually worked as 1/1300 second.

The running speed of the shutter curtains is about 12 milli-seconds and is quicker than that of other high class cameras, which run at around 15 milli-seconds. There are two contact sockets for bulb-flash and electronic flash in juxtaposition on the back side of the finder cover. Electronic flash can be used in the range of 1 to 1/50 second. Silver is applied at electric contact points. And, the electric conduction as well as insulation of the synchronization system were found perfect.

It is a special forte of M3 and M2 shutter that intermediate shutter speeds can be used at will in the ranges of 1～8, 15～30 and 60～1000. It will be better, however, if the fact is positively shown in the shutter dial. The index mark for the shutter speed is engraved on the accessory shoe, as in the earliest models, which is a little distant from the dial. We would say this is not so smart.

The film holding is of the channel type, as in case of M3, with a channel depth of 0.2 mm. (That of the earlier Leica as well as III g and I g was of direct-pressure type.) The film pressure plate is made of metal and, we think, is a little inferior in plainness, when compared with the black glass pressure plate of M3 in its earlier stage.

The corners of the camera are rounded, with slighly stronger curvature in the front, and are easy to grip. The eyelets for carrying strap are placed a little further to the fore than in case of M3, and they are better for use.

Under the movable parts, like film counter disc and rewinding knob, there are placed dust-protecting inserts. Such close attention by the maker is lacking to Japanese makers sometimes. We can not fully agree to the fact that in M2 the self-timer is not built-in, though this model is considered as a popular, cheaper type.

Exposure meter of the firm Metrawatt, Nuernberg, is used for this camera. When it is attached to the accessory shoe it is connected with the shutter dial and firmly couples with the shutter. A previous model of this exposure meter, as used with M3 in earlier days, weighed 144 gms. but its recent model is smaller and weighs only 76 gms. Ever-ready case for accommodating the camera with the exposure meter has accordingly become smaller and handy. The exposure meter has two ranges, for bright and less bright objects and further a booster cell can be attached thereon, so that it can work even in a pretty dark place. We only regret that the color of the plating is different from that of the plating of the camera body.

LENS

The standard lens Summicron 50 mm F/2 is a complicated variation of Gauss-type, consisting of 6 groupes of 7 lenses (Fig. 5). The actual test showed its relative aperture of F/2.04, a good result, but the focal length was found to be 52.0 mm which is longer than the officially called 50 mm.

Since old time the firm Leitz preferred, possibly by an accidental reason, the focal length of the standard objective as "ca. 51.6 mm" and the range finder mechanism was also manufactured according to this standard (Nikkor and Canon lenses of Japan are also following the same figure). However the Summicron lens has a focal length of 52.0 mm, the reason for this change being unknown to us,

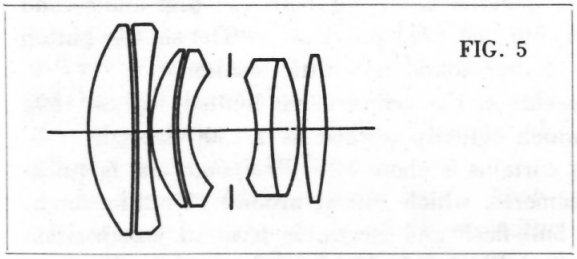


FIG. 5

and in order that the lens can couple with the range finder system of the usual standard camera body, the bottom part of the lens mount, which comes to contact with the rangefinder system, is finished as a slight cam. We presume it may be more natural if the focal length would be changed to the officially called 50.0 mm, isn't it? We shall be pleased if we could hear an opinion of Leitz in this respect.

The shift of the focal plane due to the change of the diaphragm remains, at the center of the image, 0.0 mm when the lens is stopped to F/5.6, which means that the spherical aberration of this lens is very small.

The distortion of the image at the corner of the picture is −0.5% (barrel-form), and it makes no problem at all except for such cases when making scientific photographs which require the image scale be very accurate.

The "aperture efficiency", which specifies the vignetting effect, is, at 90% point on the diagonal of the picture, and at F/2, 47% which is a quite good high figure for a lens of F/2 class. The value increases when the lens is used at smaller stops, of course.

TABLE 3 RESOLVING POWER OF SUMMICRON 50 F/2, NO. 1543774

F/2 (full aperture)		Distance from the center of the picture (mm)						Average
		0	3.9	7.8	11.7	15.6	19.5	
at plane A	Rr	280+	212	170	144	139	129	151
	Rt		241	145	101	107	162	
at plane B	Rr	224	181	202	198	168	153	181
	Rt		216	237	140	116	201	

Rr means the resolving power observed for parallel lines running from the centre in the radial direction.
Rt means the resolving power for parallel lines running at right angle to the above said lines (Rr).
The plane A was so selected that the best image was obtained in the center of the picture.
The plane B was so selected that the best average image was obtained throughout the whole picture.
The plane B was nearer to the lens by 0.03 mm than the plane A.

F/5.6		Distance from the center of the picture (mm)						Average
		0	3.9	7.8	11.7	15.6	19.5	
at plane A′	Rr	250	221	144	74	56	54	111
	Rt		237	98	47	42	106	
at plane B′	Rr	220	224	215	178	134	127	180
	Rt		247	247	135	98	215	

The planes A′ and B′ correspond respectively to planes A and B in the former case, at full aperture of the same lens.
The plane B′ was nearer to the lens by 0.12 mm than the plane A′.
The plane A′ was farther from the lens by 0.07 mm than the plane A.
The maximum resolving power could be measured by our test chart is 280 lines per mm, and the higher resolving power of a lens under test cannot be measured. We therefore mention 280+ in case the finest lines of the chart are clearly resolved and the actual power is supposed to be higher than 280.

The resolving power of the lens, which was tested with a specially prepared extra fine-grain plate, is as shown in the Table 3. Our test chart was changed recently, and this result can not be compared directly with those of the past examinations. But this test figure showed the highest power among our tests. (Note: The highest resolution for F/5.6 shows 250 lines, which however does not mean that the resolving power was decreased because of the stopping. On the contrary we presume, the plane showing the best resolving power could be found somewhere else, between the two adjacent image planes at which our tests were made.)

Some quantity of halo (often called as flare) was observed at full aperture, but it is very slight and disappears in the center of the picture before the lens will be stopped to F/4. When the picture was taken actually a very clear and sharp negative was obtained.

Formerly, the Summicron lens had a collapsible mount, but recently this lens has a rigid mount, both for M 3 and M 2, and the figures for the diaphragm are scaled at even intervals, and is therefore more convenient for the users. The change of curvatures of each lens element can also be easily observed by comparing the reflection images of the old and the new Summicrons. In this way the lens is improved constantly. This maker maintains always the relative aperture of F/2 and does not think of announcing a lens of F/1.9 or 1.8, which incomplete step-up, we think, is not worth making. (We can easily suppose that advices for such step-ups for commercial purposes were given to this maker especially by such people like Americans, for instance.) We appreciate such attitude of this maker.

The Leitz's principle would be to make their product better and to promote the practical value instead of trying to raise the commercial value by slightly increasing the brightness of the lens, etc. The lens mount is made of brass as before and is pretty heavy. It may be safe to use such material to maintain the durability for long years, but if we think of the convenience for the users and also of the actual life of the lens, we can not say which is better, such one or the light metal mount used in the Japanese lenses. (From the progress of the modern lens technique we can say that a still better lens of new design will be put out within 10 years from the day of purchase of the latest one today.) Summicron for M2 has a bigger red mark and the ring around the bayonet lock button was now omitted from the camera body, which both make it easier to remove and to insert the lens.

CONCLUSION

The Leica M 2 is, as they say, a really splendid camera. There might be something left to be mentioned in minute details, but after all we could not find any markable point which should absolutely be improved.

Such superior product can be manufactured only by such a firm like Leitz which has many years' manufacturing experience. And, we cannot forget that the Leitz company is always hearing to the opinion of the users of all classes, making every effort to investigate such opinions and to take good ideas into their products.

Tests and reports were made by:

Prof. Dr. Sc. Koana, Physical Institute, Scientific Department, Tokyo University
Dr. of Engineering Ukita, Chief of Optical Engineering Department, Governmental Research Institute for Machinery
Mr. Ihei Kimura, Photographer
Mr. Teikichi Nukui, Expert in Camera Repair

Notes of Mr. Buseck on Leica M2 Test done by Asahi Camera Magazine

We appreciate the efforts to understand the technical details of the Leica Camera M2. Since we do not know the twenty previous test reports on other cameras, we only have an incomplete picture of the work this test group is doing. It is understood that one cannot give a complete picture of the basic physics of a camera and of the reasons and intentions of its designer when deciding for the one or other detail. Therefore, we would like to comment only on points which we feel are important to give a clarification of interior details of the camera as they appear in our view.

BODY

The evaluation of the range finder system certainly applies to the most widely used type of camera range finder with superimposed images. However, after we managed to obtain a sharp boundary line between the range finding field and the field of view of the view finder and to eliminate the difference in apparent size of the two images used for range finding, the principle of a split field range finder can be applied, thus increasing the accuracy with a factor of two or three. Therefore, it is possible to reduce base length or magnification slightly and still retain sufficient range finding accuracy. In the M2 camera, magnification was reduced in order to obtain a field of view sufficiently large to accept the bright line finder for a 35 mm lens.

It was found that the outside surfaces of the finder window have not been coated because they are inserted water- and dust-proof by means of a polymer cement and, since superfluous cement has to be removed with mechanical means, scratching the coating would have been inevitable. Similar mechanical reasons made us decide to omit the coating of the outside surfaces of the prism block. Extensive tests in all kinds of different illuminations proved that there is no appreciable difference in range finding accuracy between range finder systems where we had coated the above-mentioned surfaces and those off the production line.

As the test report mentions, we stayed with the slow rewind mechanism because of the possibility of sparking when rewinding too quickly. We believe that a warning in the instruction booklet might be overlooked by quite a number of users.

The testing of shutter speeds certainly has been done with great accuracy. To supplement the statements of the report, we would like to point out that all standards or intended standards for shutter speeds provide tolerances larger than those found on the camera tested.

The material for the electric contact used for electronic flash is not silver, but platinum-iridium. This alloy is unsurpassed in its resistency against corrosion and its circuit-breaking consistency, and therefore, far superior as compared with silver. All other contacts are made from a gold alloy having a pure gold content of 80%. The lifetime of all contacts is practically unlimited when using normal flash equipment.

The suggestion to show the ranges of continuous adjustment of shutter speed on the shutter speed dial is worth serious consideration.

The position of the index mark for shutter speeds we do not consider to be important because in our experience the M2 camera will be used most with the attached light meter.

To decide for a metal pressure plate instead of the previously used glass pressure plate was for the same reason as the slow rewind mechanism. The danger of electric static discharge is much lower when using metal.

As to the focal lengths of our standard lens, we think that the difference between 51.6 mm and the earlier designation of 5 cm is not too important. The deviation is more or less accidental, but, however, offers a small advantage for corner-to-corner correction. Since once this figure was adopted we had to stay with it because of view finders and accessories. Small variations in focal length can only be compensated for in production by accepting subsequent variations of the optical correction. Since our greatest concern is the optical quality, we do not take such measures, but compensate small variations of focal length in the bottom parts of the lens mount.

We know that there is a small distortion present in the Summicron lens; however, there is a very small chance that this distortion could be of any importance in the practical use of the lens. This would only happen in instances when using negatives for topographic purposes. The Summicron 2/50 has a very evenly distributed sharpness from corner to corner when used for reproduction purposes. Therefore, a quality can be obtained greater than present in many lenses especially made for reproduction photography.

We agree with the authors that step-ups in lens aperture deviating from the standardized figures 2.8 - etc. are of little use and should be avoided.

We hope that these notes will supplement the very valuable report in an objective manner.

Foto-Prueffeld
Ernst Leitz G.m.b.H.
Wetzlar, Germany
20. 2. 1959
gez. Buseck

Reply from Ernst Leitz Canada Limited

Through our general agency in Japan, Messrs. Schmidt Limited, Tokyo, we have received a translation of your test report on our LEICA M2 camera equipped with SUMMICRON f/2 50 mm asking us to reply to the various questions raised in your report as well as to give you our general comments. Since you expect an answer already by the end of this week we have taken the liberty of sending you the various comments from the Canadian subsidiary, as we are afraid that you may not receive a reply from Germany in time for publication.

First of all we would like to express our thanks for the most fair discussion of our camera. Wherever a criticism is given, it is done in a most friendly way showing the direction in which to look for a possible improvement. We

are always trying to improve our products by taking the advice which is given by competent customers and experts all over the world. Without any disagreement in principle we would like to add to the following statements.

RANGE FINDING ACCURACY

In determining the possible accuracy of a rangefinder system one should not only consider magnification and base length, but also the appearance of the rangefinder image. It is well known in the art that the split field image rangefinder on suitable objects is much superior to the usually applied super-imposed rangefinder. The M2 and M3 do not have a true split field rangefinder, but because of the sharply imaged boundary line of the rangefinder field one may achieve on suitable objects (straight vertical lines, etc.) an accuracy comparable to the split field type rangefinder. Taking this into account the figures given in table No. 1 might easily be subject to modification.

FOCAL LENGTH OF THE STANDARD LENS

The focal length of the standard lens is 51.6 mm, as stated by the authors. However, due to manufacturing tolerances a certain variation is to be expected. In this respect the difference between 51.6 mm and 52 mm is not significant. The very slight cam on the bottom part of the lens mount is not because of the difference in focal length between 51.6 mm and 52 mm. Even a lens with 51.6 mm focal length would require it in order to compensate for small non-linearities in the mechanical linkages of the rangefinder system.

To switch over to exactly 50 mm for standard focal length from our point of view has to be considered very thoroughly, because it would partly eliminate one of the basic principle of our LEICA equipment, namely being able to use most any part of older equipment in combination with later developments on our cameras, i.e. by starting to manufacture lenses with exactly 50 mm focal length a change in the viewfinder frame would also be required to keep up the required coincidence between viewfinder and actual picture frame. Therefore, all older lenses with the focal length of 51.6 mm in this respect would be second class when used on a newer camera body.

LENS

The results obtained in the photographic tests of the SUMMICRON lens are certainly very favourable, one could almost say flattering. They show that these tests have been done under optimum conditions. However, we feel obliged to point out that there is no straight relation between those figures and practical photography. It is very difficult for a customer to come up with the right conclusion by comparing those figures with the practical photographic results he obtains on commercially available films. It, therefore, has been our company's policy not to publish any test results giving resolution in lines per mm. The practical photographic performance of a lens is much too complex to be described in two single figures for one image point.

Regarding the use of light weight alloys for the manufacture of lenses we like to mention that it has been our policy to introduce weight saving materials only if we were sure that this could be done without jeopardizing the constant reliable function of a lens. Great improvements in the mechanical properties of light alloys in recent times have, however, permitted us to make use of such weight saving materials in a greater number of our accessory lenses. Consequently we are not basically against the use of light alloys but are applying

them only where they are of obvious benefit.

Hoping that you may find the foregoing of interest and thanking you again for your very fine report, we remain,

17. 2. 1959

ERNST LEITZ CANADA LIMITED
G. Leitz, President.

On the Comments from Fa. E. Leitz

By four gentlemen who made this test and report on M2

We feel so happy that we could, through good offices of Messrs. Schmidt Limited, Tokyo, representatives in Japan of Fa. Ernst Leitz G.m.b.H., Wetzlar, receive almost at the same time two fine answers from Fa. E. Leitz, Wetzlar as well as from Fa. E. Leitz in Canada.

One thing which both of these answers coincidentally maintain is that the range finder system of M2 and M3 has a double image field of clear-cut boundary lines and therefore has, though not perfectly, characteristics of split field range finder system - a split field range finder system, in which upper and lower fields are divided by clear boundary line, has 2 to 3 times higher accuracy when compared with superimposed range finder system with the same effective base length, as it is known - and, it should have higher safety factor than shown in the Table 1 calculated for a purely superimposed range finder system. This point will be correct if one can select a suitable object and make a focal adjustment with its images bisected by the upper or lower boundary line of the double image field. We should like to recommend users of M2 or M3, when using lenses of longer focal length, to make focusing in such a way and wish at the same time that domestic cameras can also be equipped with such superior range finder system.

It was rather unexpected for us that both answers, though not clearly expressed, admitted that the actual focal length of 52.0 mm of Summicron F/2 lens was not specially aimed at but was only due to manufacturing deviation from their standard focal length 51.6 mm. This deviation is rather large when compared with those of domestic lenses of first class makers. However, the deviation of such amount cannot cause a focusing error, in the case of F/2 lens, exceeding the depth of focus, and the maker may be generous for such deviations to maintain the high production rate in their final tests.

Regarding the measured values of resolving power the answer from Canada gave us a sort of lecture, if we could say, and we presume it is because the actual meaning of the measuring method of JIS - Japan Industrial Standard - is not known to them (It is not aimed at measuring practical resolving power, but it is effected to find out any fault of the lenses).

We should like to point out also that the rewinding button of M2 has already been improved by the maker so that now once the button is pushed it remains in that position and returns automatically to its original position when the film-winding lever is operated, and that Summicron lens, for use with MP camera, of light metal mount appeared already on the market.

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