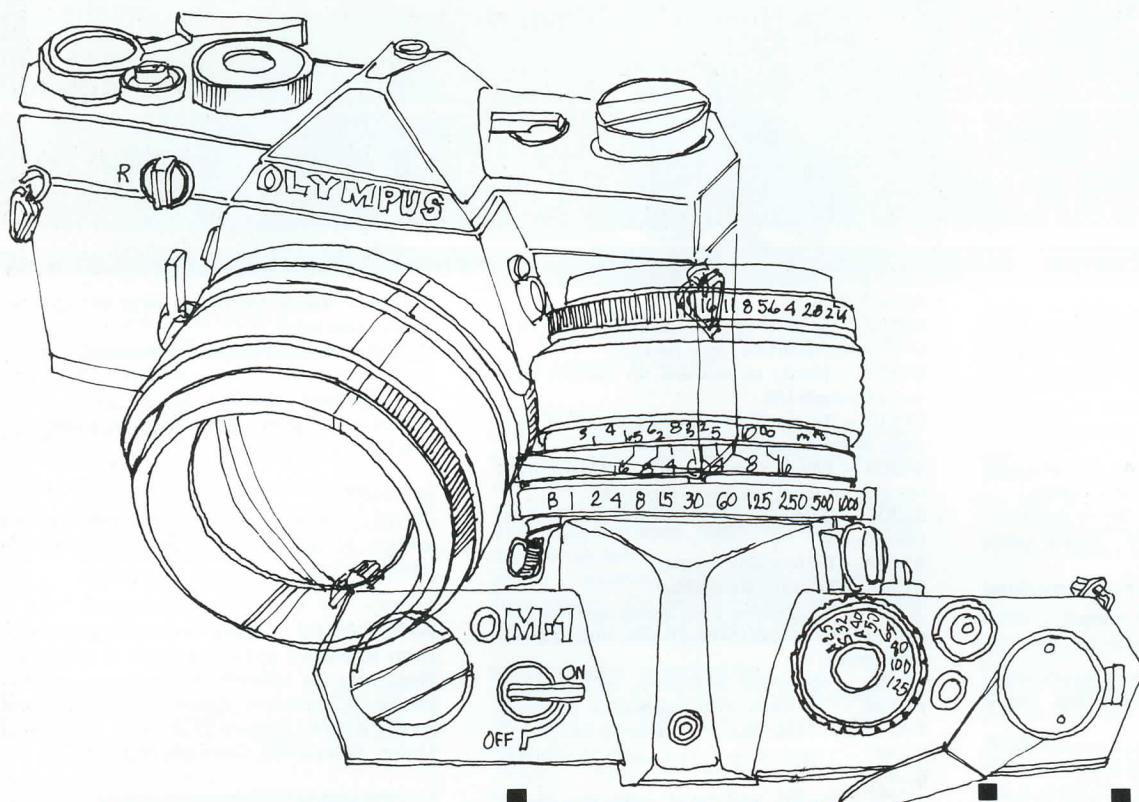


## Vol. 24 No.2

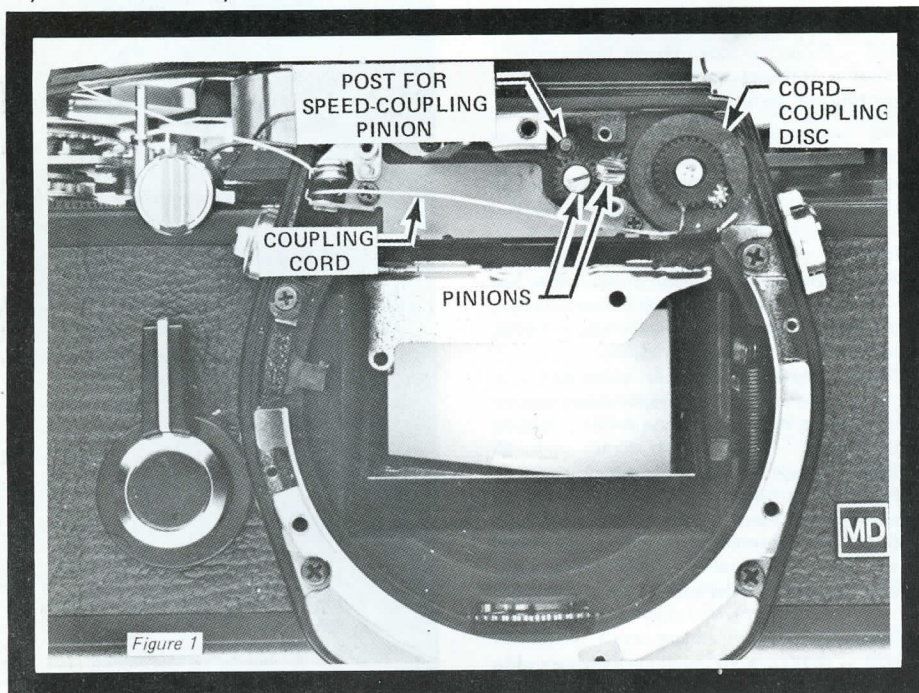






# changes in the OLYMPUS OM-1

by Lawrence C. Lyells



Front of the OM-1 "MD" after removing the speed-sensing and aperture-sensing rings. "MD" stands for "motor drive." A set of contacts at the bottom of the camera, next to the FP-sync contacts, signals the motor-drive accessory.

## CHANGES IN THE CORD-COUPLING SYSTEM

The Olympus OM-1 launched the design revolution toward smaller, more compact SLR's. We reviewed an early model of the OM-1 in the May-June and July-August issues of *The Camera Craftsman*. Since then, the tiny SLR has had its share of success. Like everything else, it keeps undergoing modifications.

You'll find most of the changes in the exposure-meter system. Olympus continues to improve the cord-coupling mechanism, the system of rings and levers behind the lens-mounting ring.

In the early models, a cam action relates the diaphragm setting to the galvanometer. A cam, formed on the aperture-sensing ring, operates a cam follower — the cam follower turns the cord-coupling disc. One end of the coupling cord hooks to the speed-sensing ring, the ring that turns as you set the shutter speed.

The model shown in Fig. 1 senses the diaphragm and shutter-speed settings through a planetary-gear arrangement. A geared section on the aperture-sensing



ring engages the pinion on top of the cord-coupling disc. Turning the pinion rotates the cord-coupling disc through the planetary gears.

The speed-sensing ring also gears to the cord-coupling disc. A two-piece speed-coupling pinion sits over the post pointed out in Fig. 1. The upper portion of the speed-coupling pinion engages the geared section of the speed-sensing ring. And the lower section gears to the cord-coupling disc through the two pinions at the front of the lens standard.

Once you disassemble the mechanism as far as shown in Fig. 1, you lose the timing of the planetary gears. However, you can note or scribe the timing during disassembly.

Set the shutter-speed setting ring to 1/1000 second. Then, remove the lens-mounting ring by taking out its four screws. As you lift off the shutter-speed setting ring, be careful to avoid disturbing the speed-sensing ring, Fig. 2. Also, watch for the loose detent ball.

A slot in the shutter-speed setting ring keys over the tab on the speed-sensing ring (just as in the earlier designs). But there's no cord attached to the speed-sensing ring — rather, the speed-sensing ring engages the upper section of the speed-coupling pinion, Fig. 2. As yet, you can't see the timed position of the cord-coupling disc. And removing the speed-sensing ring loses the timing.

So, *before removing the speed-sensing ring*, take out the four screws holding the decorator plate, Fig. 2. Lift off the decorator plate to uncover the cord-coupling disc, Fig. 3.

You can now see the cord-hooking slot in the cord-coupling disc, Fig. 3. For reassembly reference, scribe the position of the cord-hooking slot. Then, lift off the speed-sensing ring.

Removing the speed-sensing ring allows the cord-coupling disc to turn clockwise. Before replacing the speed-sensing ring, just turn the cord-coupling disc in a counterclockwise direction — until the cord-hooking slot aligns with your scribe. Hold the cord-coupling disc in place as you seat the speed-sensing ring at the 1/1000-second position, Fig. 3.

As with the earlier style, the speed-sensing ring engages the speed-setting gear, Fig. 4. Turning the speed-setting gear changes the shutter speeds. A hole in the speed-setting gear identifies the 1/1000-second setting. The timing hole in the speed-setting gear should face the front of the camera as you seat the speed-sensing ring.

There's one thing we especially like about the newer design — it allows a con-

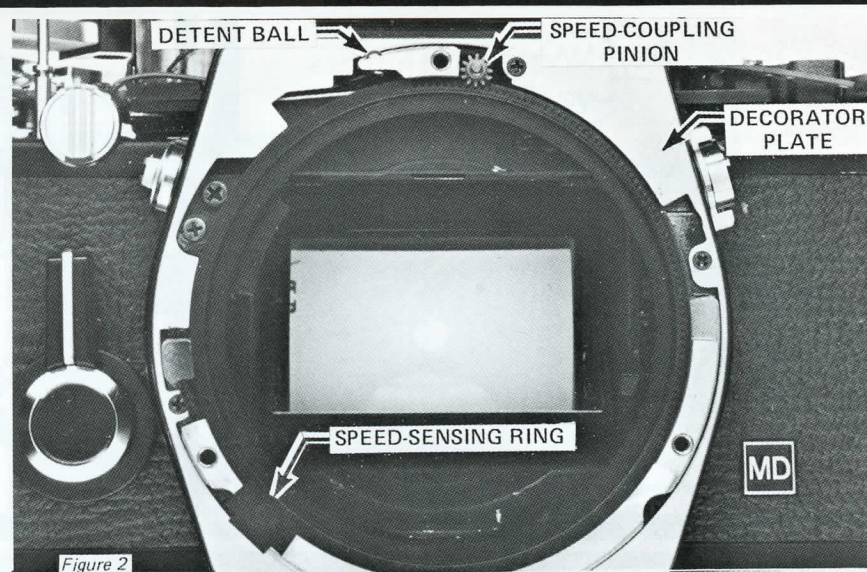


Figure 2

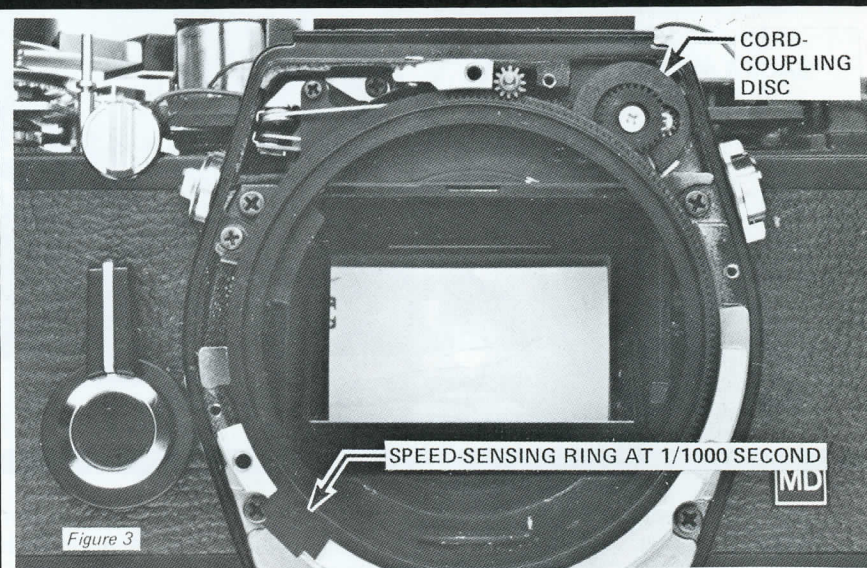


Figure 3

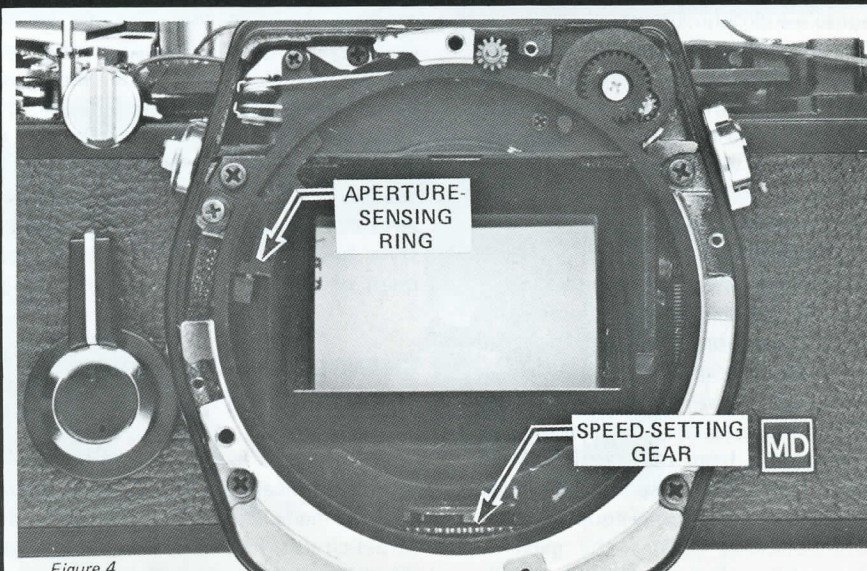


Figure 4



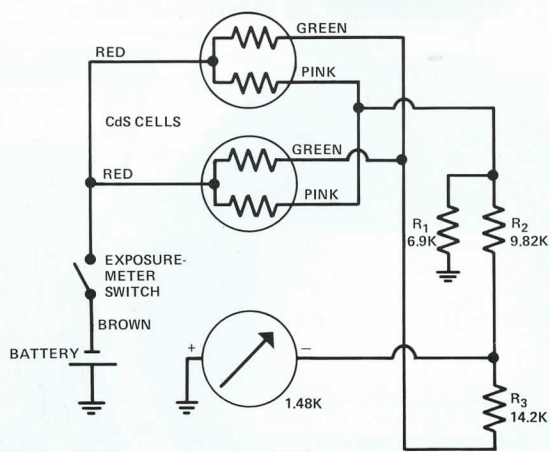


Figure 5 Values indicated were measured from a representative camera.

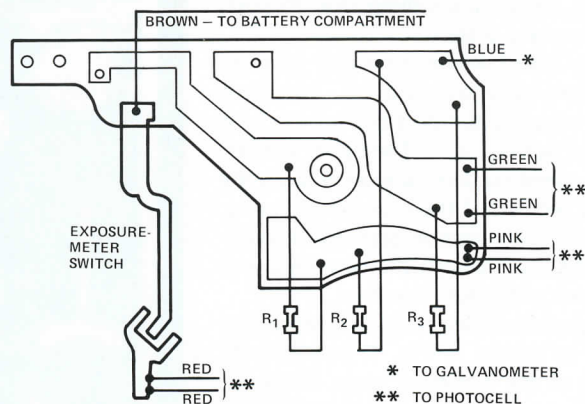


Figure 7

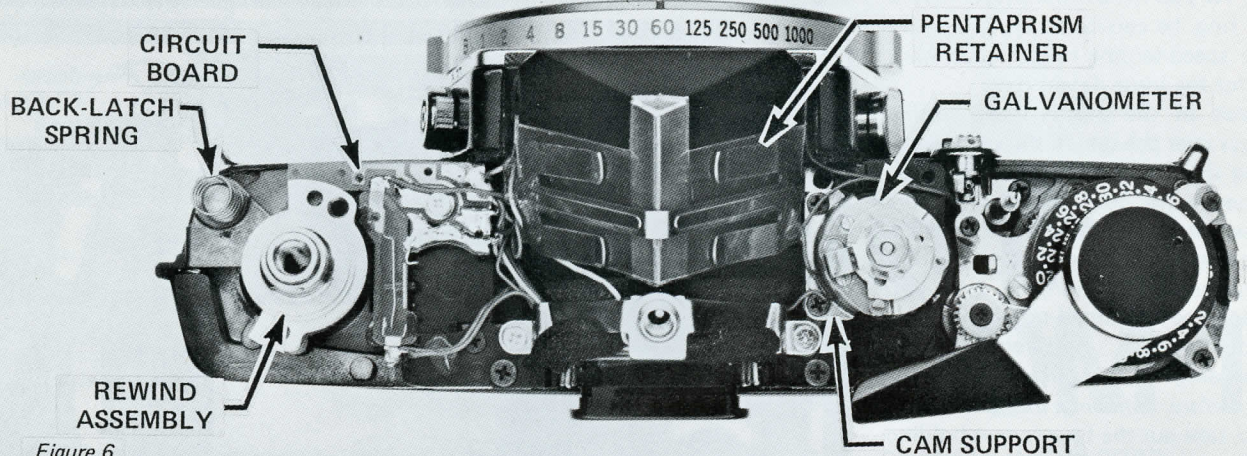


Figure 6

venient mechanical adjustment of the exposure-meter reading. Turning the cord-coupling disc changes the position of the galvanometer. So you can retune the cord-coupling disc to get a total-response meter adjustment.

Consider that the needle indicates the same amount of overexposure or underexposure throughout the light-level range. Here, you can simply change the galvanometer's rotational position. As with the earlier models, there are no variable-resistor adjustments.

For example, let's say the needle indicates one stop underexposure — there's not enough needle deflection for the light conditions. You get the same error under a bright-light condition as you do under a low-light condition.

Lift the speed-sensing ring far enough to disengage it from the speed-coupling pinion. Then, turn the cord-coupling disc counterclockwise rotates the galvanometer further — that moves up the needle to correct the underexposure reading. If

the needle indicates overexposure, turn the cord-coupling disc in a clockwise direction.

Because of the changes in the cord-coupling system, three major parts won't interchange with those in the earlier design — the speed-sensing ring, the aperture-sensing ring, and the lens-mounting ring. In the newer style, the aperture-sensing ring, Fig. 4, connects to the coupling cord (the speed-sensing ring couples to the cord in the earlier design). And the lens-mounting ring in the newer style has a bearing hole for the upper pivot of the speed-coupling pinion, Fig. 2.

#### CHANGES IN THE EXPOSURE-METER CIRCUIT

Despite the major modifications in the mechanical-coupling system, Olympus has made only minor changes in the actual circuit, Fig. 5. One of the changes simplifies the circuit — there's no longer a safety switch controlled by the galvan-

ometer. You'll also note some differences in the color coding of the wires.

Pulling the top cover reveals some other minor variations. As with the earlier designs, watch for the loose back-latch spring and the loose washer over the hot-shoe contact, Fig. 6. There's one other loose part — the entire rewind assembly.

The exposure-meter circuit board, Fig. 6, has a slightly different configuration. Yet the connections are the same as in the model we originally reviewed, Fig. 7. Other than the color coding, there's only one change — the safety-switch resistor on top of the circuit board has been eliminated.

You might also notice the change in the pentaprism retainer, Fig. 6. The pentaprism retainer in the earlier models secures a pair of tension-type springs on each side of the pentaprism. The springs have so much tension that the retainer can be difficult to remove and replace. There's no problem with the one-piece retainer shown in Fig. 6.



## REPLACING THE GALVANOMETER

In our first article covering the OM-1, we didn't describe the procedure for replacing the galvanometer. It turns out you don't have to replace the complete exposure-meter assembly — you can get the galvanometer as a replacement part. And replacing the galvanometer can be a fast repair. You don't have to disconnect any cords or disturb any timing.

How can you spot a defective galvanometer? The needle remains at the bottom of the focusing screen (as seen through the finder). Naturally, you'd first want to check the battery and the exposure-meter switch.

Then, disconnect the galvanometer wire from the circuit board (a blue wire in the later models, a green wire in the earlier models). And measure the resistance between the disconnected wire and ground. You should measure the resistance of the coil — around 1.5K. If you measure an open or a short, you can replace the galvanometer.

Remove the pentaprism by taking out the two screws holding the pentaprism retainer, Fig. 6. Then, take out the two screws holding the hot-shoe contact. The white wire from the hot-shoe contact has a splice covered by a piece of spaghetti. You might find matters easier if you unsolder the wire at the splice. That way, you don't have a dangling hot-shoe contact.

Now, remove the four screws holding the exposure-meter assembly (the two long screws also secure the back of the mirror cage). And turn the exposure-meter assembly upside down, Fig. 8. Notice that we've set the shutter speed to 1/1000 second; at this setting, it's fairly easy to reroute the coupling cord.

You don't have to disconnect the coupling cord from the pulley/gear assembly, Fig. 8. Just remove the two screws shown in Fig. 8. Also, remove the screw holding the coupling arm to the film-speed-cam assembly, Fig. 9. Then, lift off the entire pulley/gear assembly.

You can now see the bottom of the galvanometer, Fig. 10. A pinion on the pulley/gear assembly engages the second slot between the teeth of the galvanometer gear segment.

Spring tension turns the galvanometer housing in a clockwise direction. As yet, you can't see the galvanometer spring — it sits on top of the galvanometer housing. But the spring may be loose as you lift the galvanometer from the cam support.

Take out the two screws that hold

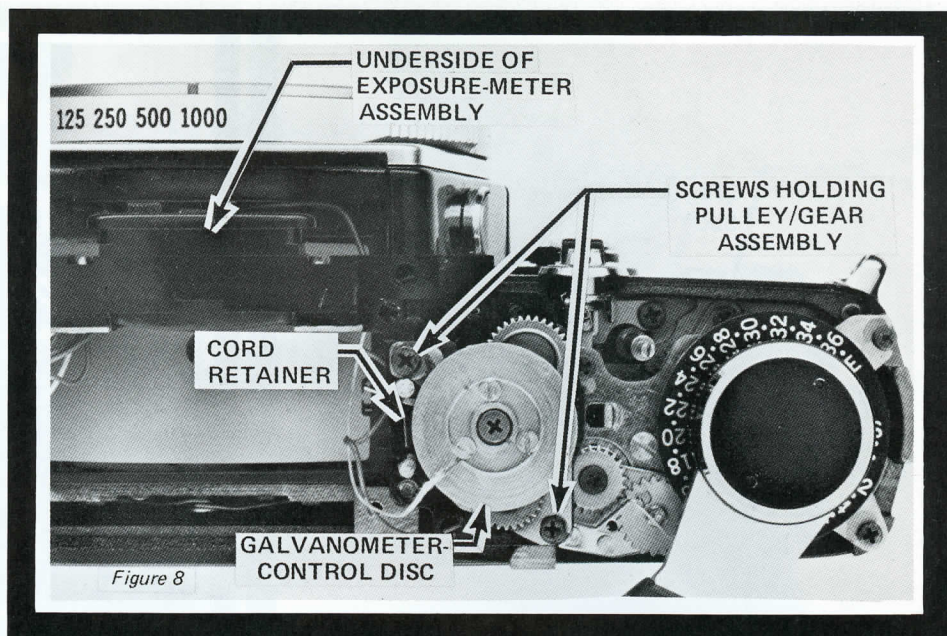


Figure 8

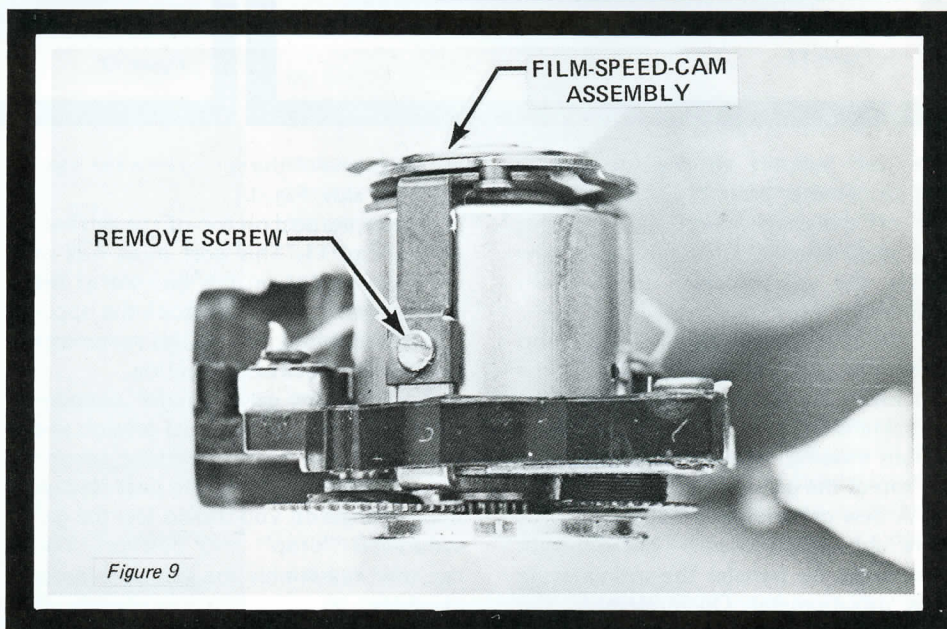


Figure 9

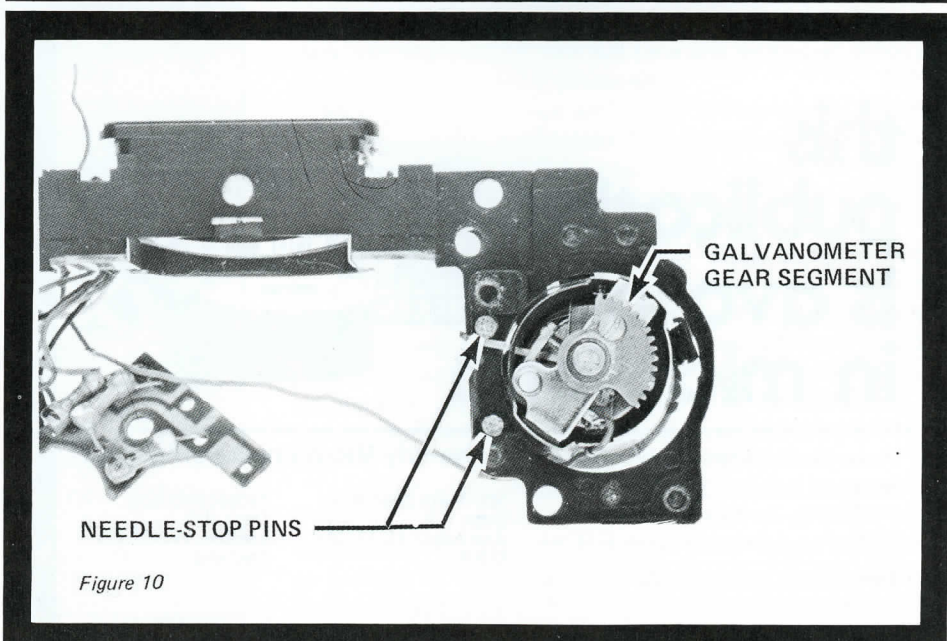


Figure 10



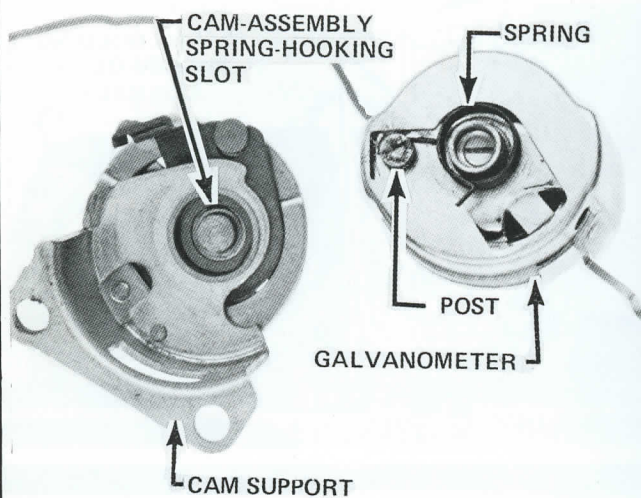


Figure 11

the cam support to the top of the exposure-meter assembly, Fig. 6. Then, lift off the cam support together with the galvanometer. Only the spring now holds the galvanometer to the cam assembly.

Lift the galvanometer slightly and allow the spring to turn the housing in a clockwise direction — that lets off the initial tension. Then, lift out the galvanometer housing. The spring should stay on top of the galvanometer, Fig. 11.

A new galvanometer comes with the wire already attached — but not with the spring. So transfer the spring to the new galvanometer. On reassembly, slip

the upper end of the spring into the cam-assembly slot, Fig. 11.

Notice the post on top of the galvanometer, Fig. 11. This post must ride in the limiting slot on the bottom of the cam assembly. Once you hook the upper end of the spring, turn the galvanometer in a counterclockwise direction.

Turning the galvanometer counterclockwise applies the initial tension and simultaneously moves the post toward the limiting slot. When the post reaches the limiting slot, you should feel the galvanometer “drop” into position. You can then reassemble the exposure-meter assembly.

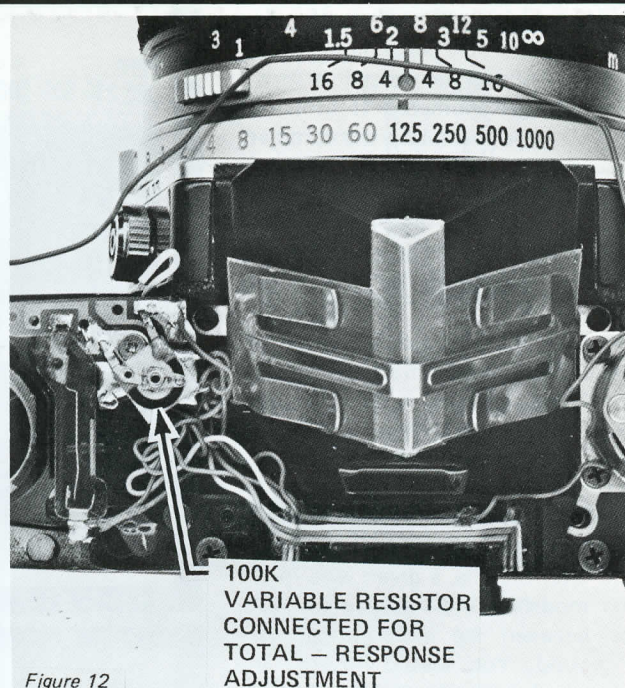


Figure 12

When you're at the stage of reassembly shown in Fig. 8, wrap the cord counterclockwise around the galvanometer-control disc. Make sure the cord passes between the galvanometer-control disc and the cord retainer. Then, reseal the exposure-meter assembly.

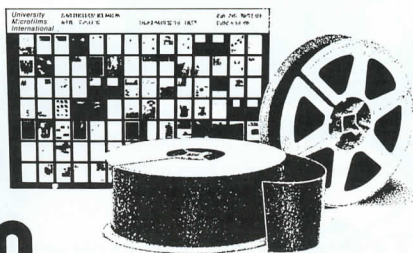
### ACCURACY ADJUSTMENTS ON THE EXPOSURE METER

As mentioned earlier, the OM-1 doesn't provide variable-resistor adjustments for the exposure-meter accuracy. Yet, replacing the galvanometer may require some adjustment.

Adjusting the total response normally isn't a problem. We described one technique — changing the timing of the cord-coupling disc. Another technique you can use is to hook a pot in parallel with the galvanometer — between the galvanometer-wire contact and the ground contact on the circuit board, Fig. 12. If you insulate the underside of the pot, you can leave it installed. There's plenty of room in the camera.

However, nonlinear readings cause problems. The fast-and-easy techniques just provide total-response adjustments. If you find you have an underexposure reading at a low light level and an overexposure reading at a high light level — or vice versa — you may have to change fixed resistance values. As with the earlier models, change R2 to correct the high light levels, change R3 for the low light levels, and change R1 for the middle light levels.

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