

## Curious how the world looks at five times lifesize? Canon's MP-E 65mm f/2.8 super macro is a great way to find out!

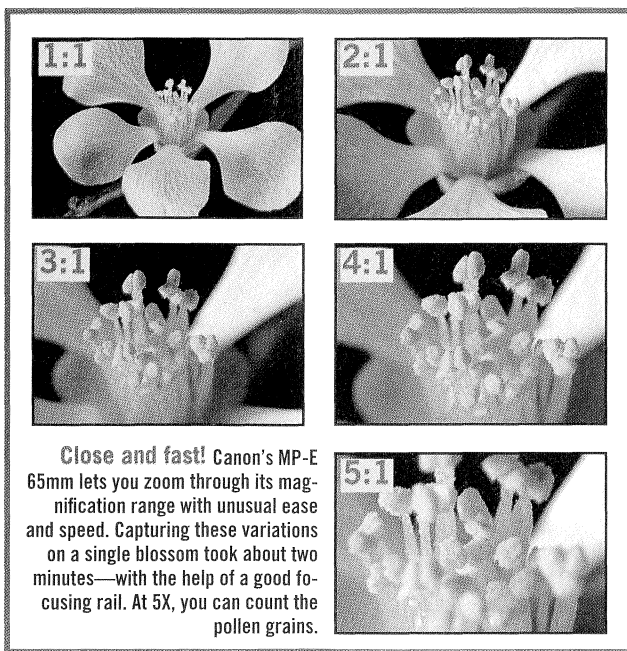
We've all seen scads of so-called macro lenses that get you down to 1:4 or 1:2. True macro lenses start at 1:1, however, and they're relatively few and far between. Now, Canon has dramatically expanded the "macro lens" envelope with its unique MP-E 65mm f/2.8 1X-5X Macro lens, an optic that delivers the greatest magnification this side of a microscope.

**That's a stretch:** Racked out to its maximum magnification of 5X, Canon's MP-E 65mm f/2.8 1-5X Macro extends to nine inches, over twice its contracted length. As you might expect, such a long lens barrel magnifies camera shake. We recommend a tripod when shooting by available light. Note lens's standard tripod collar that lets you easily pivot a tripod-mounted EOS SLR for verticals. The unusual barrel markings include working distances (W.D., circled), white for millimeters and green for inches, as well as magnification powers in bright, easy-reading yellow numerals.



nification levels, 1X through 5X, in large, yellow silk-screened numerals. White and green numbers indicate working distances ("W.D.") in millimeters and inches, respectively. Working distances range from 4 inches at 1:1 to a very tight 1.6 inches at 5:1. (No, the lens cannot be used in a regular focusing range to infinity.) A supplied, 5-ounce aluminum tripod collar slides easily on and off the lens barrel, and balances a tripod-mounted rig nicely throughout the unusually wide extension range (see photo, above). The lens's outer ring is threaded to accept 58mm filters, and is sized to accommodate Canon's Macro ringlights, either the ML-3 or MR-14.

What makes the MP-E 65mm special is that it continuously focuses through the image magnifications from 1X to 5X with a fixed focusing distance for each magnification level. The focusing helical is unusually long, extending the lens almost a full inch as you go from 1:1 to 2:1, for example. In its 1:1 contracted position, the 1 lb 10 oz MP-E 65mm is 4 inches long; at 5:1, it more than doubles in

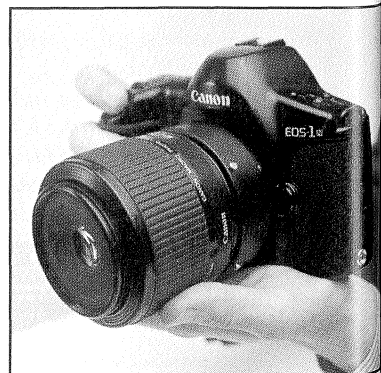


**Close and fast!** Canon's MP-E 65mm lets you zoom through its magnification range with unusual ease and speed. Capturing these variations on a single blossom took about two minutes—with the help of a good focusing rail. At 5X, you can count the pollen grains.

On the surface, there's little to suggest how unusual the 65mm f/2.8 Macro is. It has an attractive black, crinkle and satin finish barrel made of aluminum alloy, with a large 2 1/4-inch zoom ring, of which 1 1/4 inches is clad in a ribbed, rubber-like material.

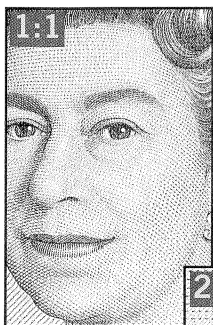
Well-damped and smooth, the focusing doesn't require undue effort, but is stiff enough to assure that it stays where you set it with no creep. Barrel markings show the five mag-

**Look, Ma, no extension tubes!** Among the easiest ways we know of to get super close, the MP-E 65mm f/2.8 balances nicely in the hands and focuses easily. The coarse focusing helical brings you from 1X to 5X with 1.3 revolutions of the focusing ring. As you focus out to 5X, though, the viewfinder dims appreciably. Try to have an auxiliary light on hand to aid focus, unless you're shooting in direct sun. Lens shown here in contracted 1:1 position.





**Flat field:** Like all true macro lenses, the Canon MP-E 65mm f/2.8 Macro is a flat field lens, showing virtually no field curvature. As a result, you can photograph flat objects, even at maximum aperture, and the subject will be rendered sharply at center and edge. The macro shots of Queen Elizabeth II at left were made with a ringlight rig similar to the one shown below, and were made with near point-and-shoot ease.



length to 9 inches. The helical is also relatively coarse-threaded, which means that the lens moves forward substantially with a relatively small turn of the focusing collar.

A closer look reveals a number of common EOS lens features that the MP-E 65mm does without. You won't find Canon's signature lens-barrel auto/manual focus switch, for example. Like Canon's tilt/shift lenses, the MP-E 65mm is a rare bird: a manual-focus optic for the EOS system. Because the lens focuses no further than

ancing easily on the camera even when fully extended.

With strong continuous light to focus and expose by, extreme closeups can be taken with almost point-and-shoot ease. In fact, the MP-E 65 is the most convenient tool we've ever em-

ployed to get such high-magnification images. The lens works well with

Canon's ML-3 TTL ringlight flash; \$300, street price.

(The new MR-14 ringlight wasn't available for our tests.) We found that even when ambient light is strong, you still often need a ringlight. With working distances as tight as 1.6 inches, the lens itself often blocks the ambient light, or will throw an unfortunate shadow across the subject. A ringlight solves

the stated 4 inches, there's also no conventional subject-distance scale with an infinity mark. It doesn't have a depth-of-field scale, either, because when you're working in this magnification range, even with the lens stopped down to minimum aperture (f/16), depth-of-field is minuscule.

We tested the lens on a Canon EOS-1 and -1N. In the field, the lens handled nicely on both, bal-

these problems by providing consistently even light and, as a plus, its modeling lamp aids focusing regardless of whether you're shooting flash or not.

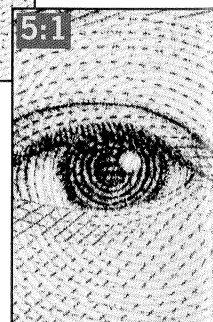
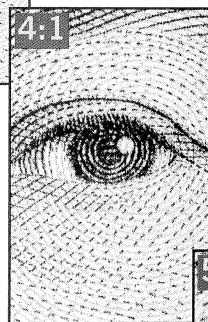
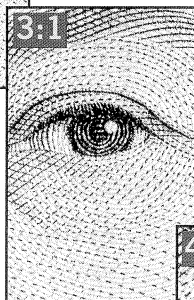
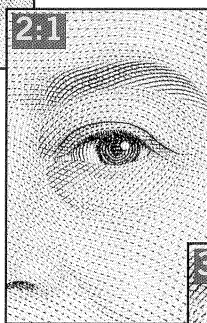
Because of the very narrow depth of field in extreme closeups and the need to hold the camera very steady, we found it helpful to use a tripod, and for more precise work, a focusing rail. As noted, the lens comes standard with a tripod collar that loosens, to let the camera rotate smoothly between horizontal and vertical orientations—a handy convenience.

Even when using a tripod, we also recommend that you use an electronic remote release and shoot with the camera's self timer, because the effects of any camera shake are greatly magnified. If your camera has one, using the mirror lockup is a good idea, too.

The lens' coarse focusing helical and shallow depth-of-field, especially at the greater magnifications, make precise barrel focusing difficult. It's easier to set the degree of magnification you want via the focusing ring and to touch up focus by moving the camera and lens along the focusing rail. Canon doesn't make a focusing rail, but you'll find them available from a number of independent manufacturers.

If you've never shot ex-

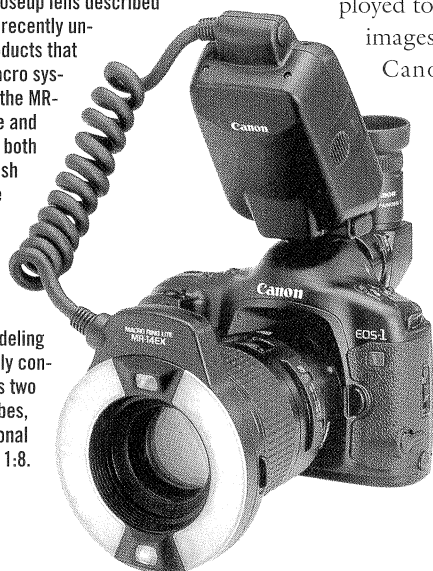
treme macro with a bellows or extension tubes, one surprise



awaits you: a dim viewfinder image, especially as you focus out to the higher magnifications. As a result, focusing can be dif-

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**More macro matter from Canon:** In addition to its new closeup lens described here, Canon has recently unveiled two other products that make for a true macro system. They include the MR-14EX Macro Lite and Angle Finder C, both shown here. The flash offers TTL exposure control in aperture-priority and manual exposure modes with the 65mm macro lens. It has a built-in modeling light, and separately controlled output for its two separate flash tubes, with fully proportional output from 8:1 to 1:8.



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ficult, especially in low light. As stated, the ring flash's modeling light can be a great help. We also recommend having a powerful penlight as a focus-assist light.

Neither modeling lamp nor penlight will help you much when previewing depth-of-field at small apertures, however. At full extension, when using the smaller apertures most suited for macro work, pressing the depth-of-field preview button plunges the viewfinder into near total darkness, even when you're working in moderately bright light.

Because of this dim viewfinder image,

and because the EOS viewfinder focus-confirmation light doesn't illuminate (as it does when focusing a Canon EF lens manually), we recommend bracketing focus. When shooting at 5:1, take a few shots at what appears to be the sharpest point, then move the camera on the focusing rail slightly in either direction, and fire a few more shots to cover yourself. We found this technique especially useful for three-dimensional subjects, which can take on a dramatically different appearance with every nudge of the camera.

What about exposure? Our test slides confirm Canon's claim that the auto-diaphragm 65mm mates well

### Our lab resolution tests Canon MP-E 65mm f/2.8 1-5X

1:1 magnification				
f/	Center (l/mm)	Corner (l/mm)		
2.8	excellent	40	excellent	30
4	excellent	40	excellent	26
5.6	excellent	32	excellent	30
8	excellent	36	excellent	32
11	excellent	40	excellent	32
16	excellent	40	excellent	30

The 1:1 setting showed optimum performance at f/11.

4:1 magnification				
f/	Center (l/mm)	Corner (l/mm)		
2.8	excellent	70	excellent	70
4	excellent	93	excellent	93
5.6	excellent	104	excellent	104
8	excellent	93	excellent	93
11	excellent	83	excellent	83
16	excellent	58	excellent	58

The 4:1 setting came in at 4.1:1 with top performance at f/5.6.

2:1 magnification				
f/	Center (l/mm)	Corner (l/mm)		
2.8	excellent	35	excellent	33
4	excellent	40	excellent	40
5.6	excellent	40	excellent	40
8	excellent	43	excellent	43
11	excellent	44	excellent	44
16	excellent	35	excellent	35

When set to 2:1, the actual measured magnification ratio was 1.97:1, and best performance was at f/11.

5:1 magnification				
f/	Center (l/mm)	Corner (l/mm)		
2.8	excellent	41	excellent	41
4	excellent	41	excellent	41
5.6	excellent	65	excellent	65
8	excellent	101	excellent	101
11	excellent	92	excellent	92
16	excellent	73	excellent	73

At the 5:1 setting, the actual maximum magnification ratio measured an unexpected 5.7:1. Optimum performance was at f/8.

3:1 magnification				
f/	Center (l/mm)	Corner (l/mm)		
2.8	excellent	35	excellent	35
4	excellent	63	excellent	63
5.6	excellent	80	excellent	80
8	excellent	80	excellent	80
11	excellent	71	excellent	71
16	excellent	57	excellent	57

At 3:1 the measured magnification ratio was 2.97:1, with optimum performance delivered at f/8.

A darn-near perfect lens: We were unable to run our normal SQF tests on this lens due to its special nature. But our lines-per-millimeter tests showed uniformly excellent results at all magnifications and apertures, at both center and edge—a remarkable performance.

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with the AE systems in the EOS-1 and -1N, in both manual and aperture-priority, whether the lighting is TTL flash or ambient. With other EOS cameras, some exposure compensation may be required. Canon recommends thoroughly testing the exposure characteristics of your rig before your first serious shoot.

If your experiments extend beyond TTL exposure control, you've got bellows factors to deal with. (Although the MP-E 65mm takes the place of a bellows, you're not finished with bellows factors.) When shooting non-TTL flash or using a handheld meter, you must increase exposure by (roughly) one stop for every 1X increase in subject magnification, starting with 1:1. If you're shooting at 1X with the lens aperture set at f/2.8 and are using a handheld meter (flash or ambient), you must set the meter in aperture priority to f/4. At 2X, set f/5.6; 3X, f/8, etc. In our test slides, we found the 1X bellows factor to be accurate, but, we still recommend that you b.l.h. (bracket like hell).

### Field results

In the field, the photos we made at magnifications from 1:1 to 4:1 were uniformly tack sharp edge to edge, with great color saturation and contrast. The top magnification of 5:1 produced a few slightly soft slides, due probably to our own low-light eyesight limitations, but when we bracketed focus, as described above, the results at 5:1 were outstanding.

For typical subjects like coins, stamps, jewelry, insects, or flowers, Canon's new 65mm delivers the magic of high-magnification macro with no need to rely on macro accoutrements like bellows, extension tubes, or closeup lenses. Under most conditions, using it is quite easy and eminently satisfying. With a street price of just over \$1,000, we feel it's well worth the money. Even if you've never been interested in lifesize and greater on-film magnifications, this lens is sure to pique your curiosity.

—Peter Kolonia

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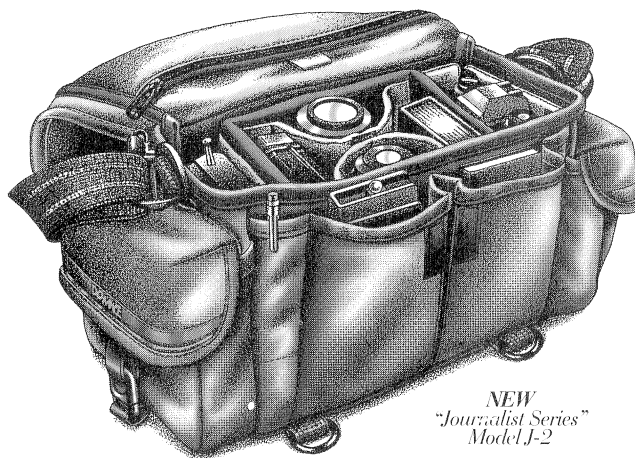
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