It is a lot of work, but the results can be impressive. CombineZ and TuFuse. The software can do an excellent job, but additional photo-editing skills are usually needed.

Any optic at other than it’s designed “extension” or magnification, some testing is in order to determine determine record an image exceeding a 26-30mm diameter image circle. This is one reason I try to use these objectives ex-cus objectives will “illuminate” a full frame sensor, but with some the image quality can deteriorate once you were used, it would be wise to carefully check the image quality toward the corners and edges of the frame. Typi-microscope objective were designed to produce a much smaller image “circle” on the Olympus offerings, microscope objective were designed to produce a much smaller image “circle” on the Compared to specialized photomacrography lenses such as the Zeiss Luminars, Leitz Photars, and the Nikon and images seem to show the most vibration problems.)

utilizes an electronic first shutter curtain, and greatly reduces camera induced vibration. It can’t be used with sequence repeated. While this may be a little “vibration reducing over-kill” when using electronic flash, it has shutter induced vibration settles out very quickly), at the end of the one second exposure time the flash will “fire” a stack of images. The exposure sequence goes like this… mirror locked up (pause briefly), shutter is released (any tribute to the exposure. It is rather surprising how bright a room can actually be and still not record any ambient insures that no image at all is being recorded by the ambient room light. You want only the electronic flash to con-trive to the exposure. It is rather surprising how bright a room can actually be and still not record any ambient lights used to focus and set up the shot are then turned off. A quick test shot is taken ther a fiber optic illuminator or the modeling lights of the Lumedyne flash system I use. The camera is set to

Vibrations that were scarcely noticed at 2X became untenable at 20X. Even with the mirror locked up on the DSLR room to place and arrange the best lighting.

necessary to illuminate them from above. While my efforts were rewarded, it was obvious that a compound micro-jective, and recording at 20X when the 10X objective was used.) Many of these subjects were opaque, and it was

In the spring of 2004 I rekindled a childhood interest in microscopy. For a long time prior to that I had been tak-

sideration was the working distance. It needed to be large enough to allow me to illuminate my subjects in a variety of ways. My search had narrowed down to “CF” Nikon objectives that had a working distance of about 10

had produced finite objectives they designated as “CF” (“chromatic-aberration free”). These did not require cor-

workable with my Nikon and Olympus bellows. However the majority were not fully chromatically corrected in the

studying the possibilities. Infinity corrected objectives, such as those offered by Mitutoyo, required an additional

resolution would be extremely shallow DOF, but I already had a fair amount of experience with software designed to

tives with thought of using them on my camera bellows. Objectives are short focal length, large aperture lenses,

tives from a stack of 99 images. The depth-of-field, fine details, and textures in these

It is interesting to note that f-number of this lens, based on it’s NA, would be about

have an effective aperture of f59.  With the sensor sizes of DSLRs, and the subse-

pictures would not be possible in a single exposure by “stopping down” a macro lens,

larged 20X images. This could be due to the fact the the entire camera sensor area

I could not resist trying the Nikon  M-Plan 40/0.50 ELWD (wd=10.1mm) and the

stack).

(48 image stack). The lower image shows part of the eye of a cranefly (99 image

stack).

Microscope Objectives on Camera Bellows

The remarkable “wrap-around “ eye” can be clearly seen.