Re: How can I build a simple Microscope

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- *From*: Louis Boyd <boyd@xxxxxxxxxxxxxxxxxxx>

- *Date*: Mon, 22 Aug 2005 10:15:35 −0700

Johannes Swartling wrote:

> "Michael" <mbush@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx> wrote in
> message news:e8kOe.7604$PM3.3941@xxxxxxxxxxxxxxxxxxxxxx
>
>> well, have fun then.
>> one word of a caution−− saying "I have the
>> objective, what do I need to do to make a
>> microscope?" is conceptually similar to saying "I
>> have the transmission, what do I need to do to make
>> a car?"
>
> I disagree. An objective and a webcam is all that is needed to
> get a working microscope. Just look through the objective with
> the webcam. Optical quality may not be the best but may still
> be adequate depending on the application.

You'll get higher magnification and better image quality if you remove the existing lens from the webcam an just let the microscope objective form an image on the webcam's detector. You don't need an eyepiece folled by the camera's objective. That just adds more distortion and light scatter and may increase or decrease the magnification depending on the focal lenghts of the extra lenses. The only work is making a tube to hold the camera and objective lens square and centered and keeping out stray light. The spacing of the microscope lens to the dececter surface isn't critical. Longer gives more mangnifications. 3 to 5 inches is practical. The magnification will be the ratio of the (size of the image on your monitor divided by the equivalent dimensions of the webcam detector) multiplied by (the ratio of the distance from the objective lens to the ccd divided by the distance from the lens to the object being observed). The only other optics besides the microscope lens you might want is a condensing lens to focus light onto the object being observered. That doesn't need to be a high quality lens.

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