

# A Bausch & Lomb Research Microscope

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A few weeks ago I was in a local thrift shop in search of the elusive Hawaiian shirt (a fruitless endeavor). While walking around I heard this small voice coming from a shelf on one of the aisles – “Hey, buddy – over here.” What was calling me was a dirty Bausch & Lomb microscope in a battered wooden case with a price tag of \$24.95 that knew I would give it a happy home.

The set included two eyepieces, four objectives, mirror and condenser and a mechanical stage and the original stage clips. After a cleanup, degrease and paint job this is the result:



A few notes on its construction.

The foot had a crest inside the casting from Doehler, which was a metal casting foundry in the Rochester area.



Doehler must have been a contractor for Bausch & Lomb for some of their larger metal components.

The drag between the foot and the limb was set by a tapered shaft and the torque could be set by tightening down the nuts on both sides of the flange on top of the foot.



The tube was marked with the designation "VD8893" which appears to be a Bausch & Lomb part or catalogue number.

The turret is a three position assembly with three RMS mounts. There is no tube lens in the tube and none of the objectives are marked as to tube length or cover slip thickness.



As I have found with other Bausch & Lomb microscopes in my collection, B&L had its own system for magnifications and focal lengths.



The markings on this set of objectives (besides the usual Bausch & Lomb Opt. Co. Rochester, N.Y. U.S.A) are (from left to right):



**32mm 0.10**  
**DIVISIBLE 16mm 0.25 10X (MD 7105)**  
**4 mm 0.65 43X VD2421 U.S. PAT 1,889,784**  
**OIL 1.8mm 1.25 97X (MB9773) U.S. PAT 1,889,794**

The set came with three objective cases, one of which held a rolled up booklet on the usage of oil immersion objectives.



**OIL IMMERSION OBJECTIVES**

**DIRECTIONS FOR USE**

Bausch & Lomb Optical Company  
 Rochester 2, N. Y., U. S. A.

**DIRECTIONS**

This objective is guaranteed to be in perfect optical and mechanical adjustment. For optimum performance, use only OIL of CEDAR such as that which accompanies this lens. Apply a drop of the cedar oil

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to the slide and carefully focus the objective on the object. Use a rather full drop of oil to insure contact with the objective, and to avoid bubbles in the oil. If the field of view appears foggy, withdraw the eyepiece from your microscope and you

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will probably see an air bubble in the oil. Rack the microscope up and down gently and the bubble may disappear. If not, wipe off both the objective and slide and repeat.

After using your oil immersion objective,

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wipe off the oil with a soft linen cloth or a piece of lens paper. If the oil is not cleaned off the lens before it is put away, it will dry on and become hard. To remove dried oil, moisten a piece of cloth with xylol and gently wipe the

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objective tip until the hardened oil has been dissolved. Then wipe with a clean dry cloth. Do not dip in solvents or pour solvents over the lens to dissolve hardened cedar oil. Do not use sharp, pointed, or hard instruments of any kind to scrape off

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hardened oil, for the front lens of the objective will probably be loosened from its mounting by such treatment.

In order to avoid waste due to large drops adhering to the applicator, fill the oil bottle only half full.

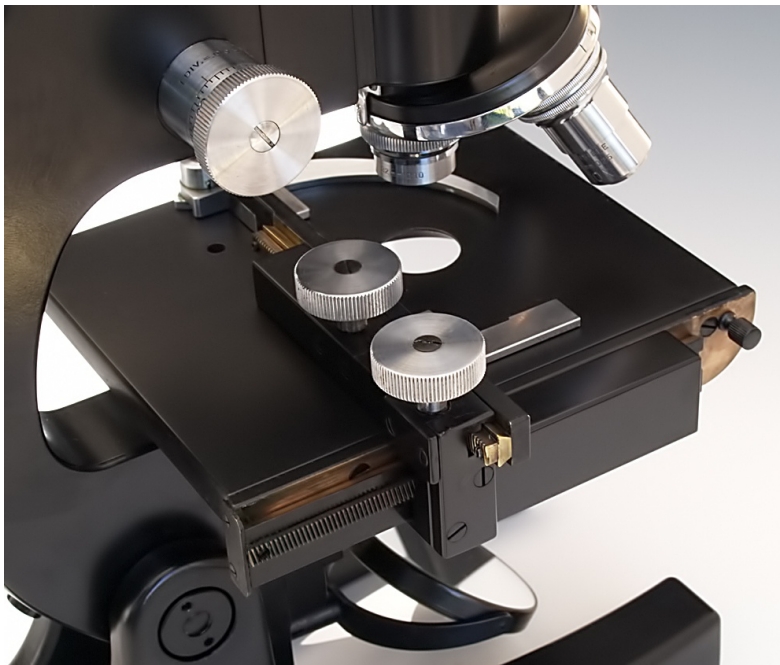
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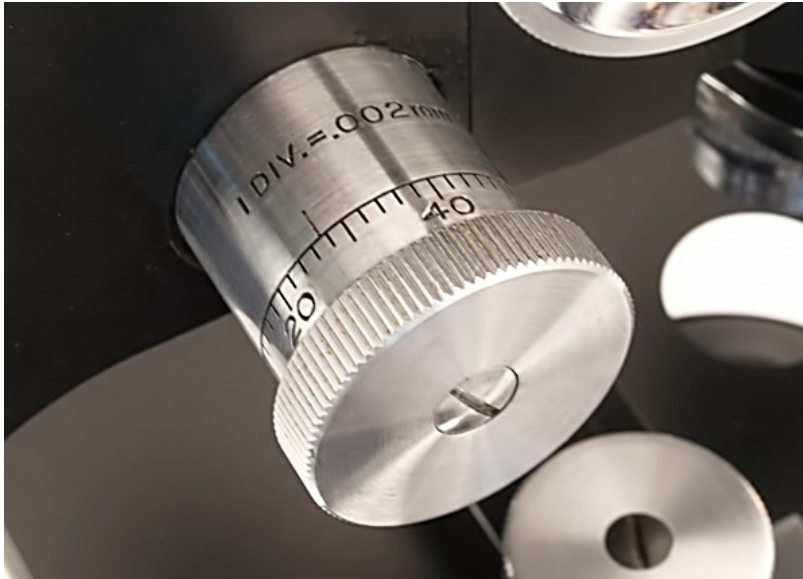
The last page of the booklet had this seemingly foreboding graphic:



The scope came with a mechanical stage and also included the stage clips.



The fine focus knob is graduated in .002mm increments.



The condenser is an Abbe 1.25 N.A. model. The substage mirror is a two-sided plano and concave and is in remarkable condition for such an old scope.





The underside of the condenser has a slot to accept 32mm glass filters or darkfield stops such as my home made ones.

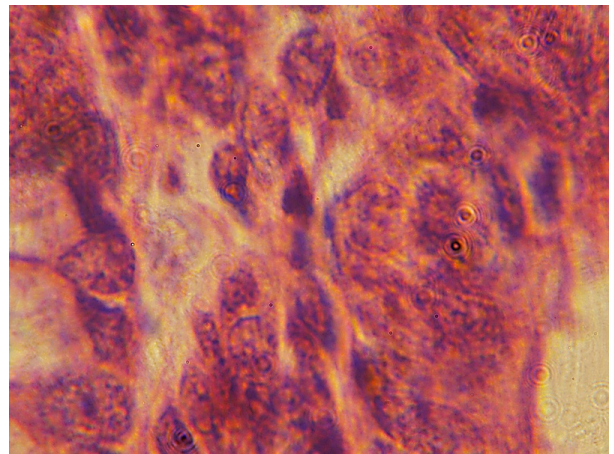
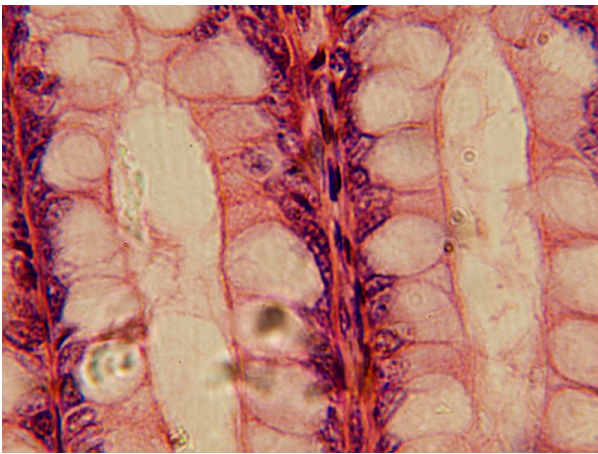
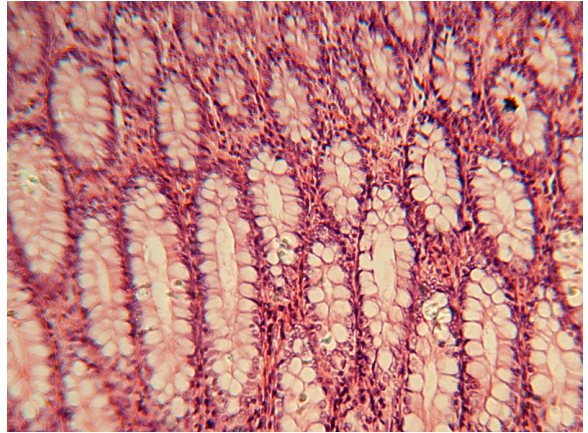
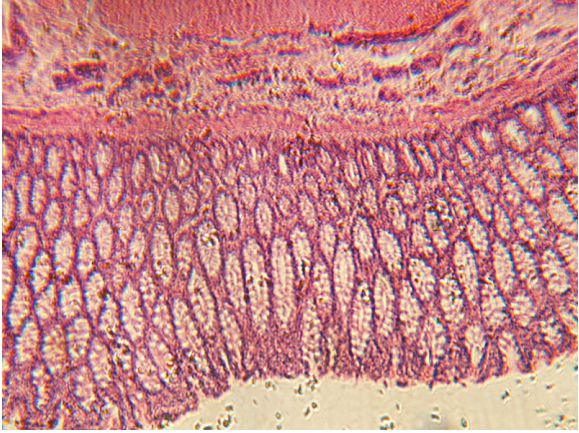


The set included two eyepieces – a 5X and a 10X – which, remarkably, were to be found free of fungus after clean up.



The 5X had some curvature of field, so I did my test shots through the 10X with a computer-controlled Olympus E-510 using a Pentax microscope adapter modified with an MF-1 Four Thirds adapter and captured with Olympus Studio 2.

The test shots are in sequence from the 32mm, 16mm, 4mm, and OIL 1.8mm. This is a section of the Pyloric region of a dogs stomach.



All in all, the optics performed admirably. The 32mm appeared to have some element separation, so the resolution and didn't compare favorably with the other objective.

### **A few notes on photographing this microscope**

It was a beautiful fall day and my wife suggested I should get out into fresh air more often (from what I understand, this fresh air thing isn't a huge part of microscopy). So, I figured, why not? So I set up a tent in the driveway.





Yep – a table, a few light stands, a bed sheet and an adult recreational beverage and you are into some beautifully illuminated photography. Every table top shot in this article was shot in this tent.

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