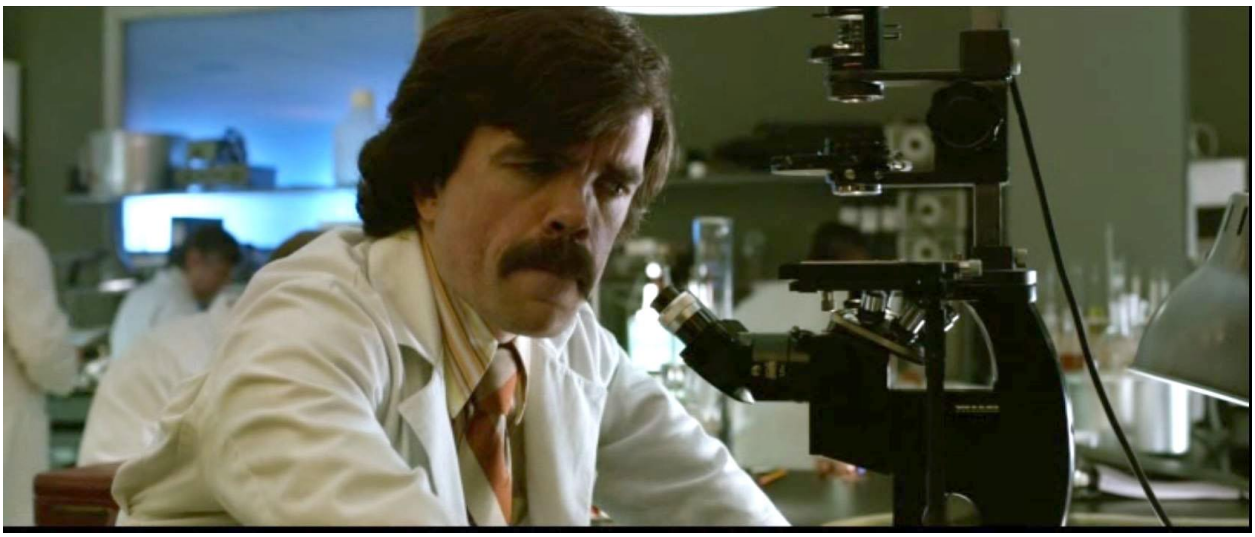
The story behind my Wild microscopes.

A few years ago, after a rather productive year financially, my accountant told me that if I had to buy something related to photography, now was the time; the more I would spend, the less income tax I would have to pay. So I sent an e-mail to one of my suppliers (Alain is his name) asking him if he had a phase contrast microscope that was still serviceable. He replied with the picture of a Wild M12; back then, I did not know the brand, but have learned to appreciate it since then.

Wild Heerbrugg of Switzerland came to existence in 1943 and started production of microscopes in 1947. After decades of production the company eventually started to make microscopes under a different and well-known brand name: Leica.

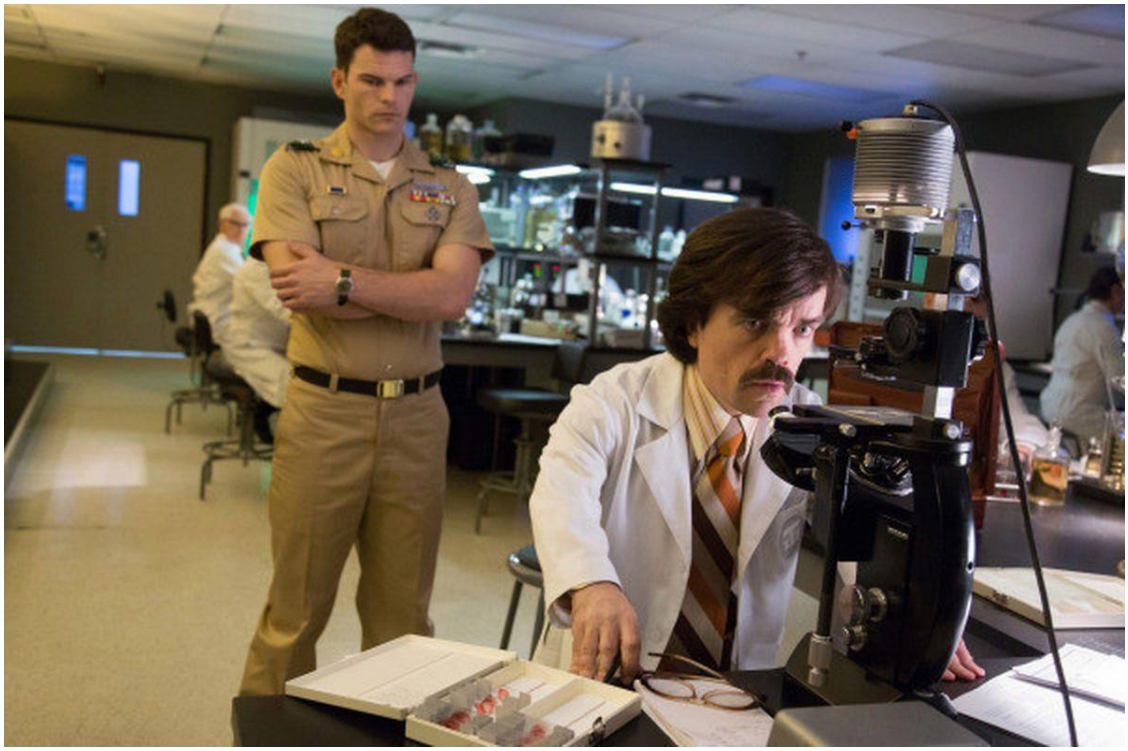
The old M12 looks a lot like the M20 that came in production in 1954; as far as I can tell, the M12 was produced in the early 1950's. Despite its age, the one that was offered was still in perfect working condition. The price was right, actually well below what I was willing to spend that day. So as I always did when visiting Alain, I went rummaging through his warehouse filled from floor to ceiling with everything needed to start a professional laboratory. He has been buying, selling and repairing lab equipment for years, dealing with schools and labs all over the continent.

As we were passing by shelves piled with rows and rows of microscopes, he pointed one, a monster nearly 60 cm high. "If you're interested, I could throw in this one for cheap. It's an inverted Wild microscope, same brand as the other one. It doesn't have a light, but it's also a phase contrast." The one thing that immediately caught my eye was the tube poking at a right angle to the binocular head: a third tube to receive a camera. Taking a closer look I suspected that it would be easy to take it off and switch it with the head on the M12; a suspicion that proved to be right. It also came with its own oculars and a 6 lens turret. And then Alain added casually: "By the way, this one was in one of the X-Men movies…"



Yep… that's a nice microscope…

You see, Alain not only sells equipment but also rent to TV and movie productions. I'm a big fan of the X-Men series; I own them all on DVD. Some of it was filmed in and around my home town of Montreal. One of the scenes even took place in a restaurant across the street from where I worked at the time. Patrick Stewart was there, although I did not have the chance to meet him. The street was full of movie lights, generators, and trailers where actors could rest between scenes.

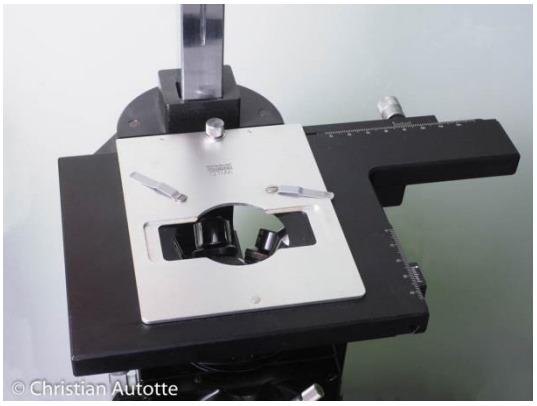


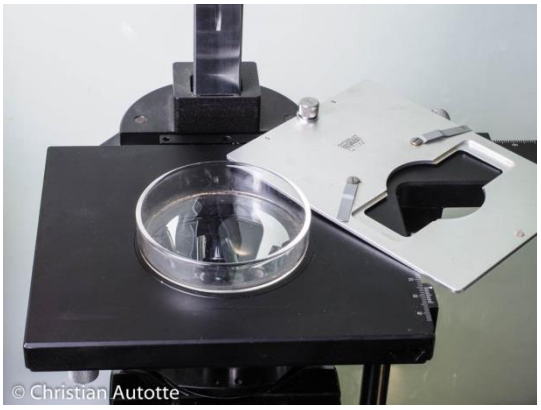
The M40 in action. Note the light on top of the microscope; it was not included in the sale. It was probably added by the prop department.

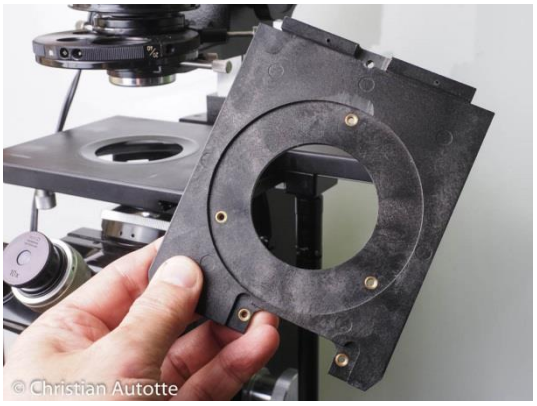
It took me some time to find it; at first I thought that maybe it was a tiny something, barely visible as part of the background. But then… In X-Men: Days of future past, at 1:20, we see Dr. Bolivar Trask (actor Peter Dinklage) working with an impressive and unmistakable microscope. A few seconds later, more Wild microscopes are seen, recognizable by their binocular heads. That row of microscopes may include my Wild M-12; while there was only one M40 to rent, there was several M12 or M20 included in the lot, so there is no way of knowing if mine was part of the show.

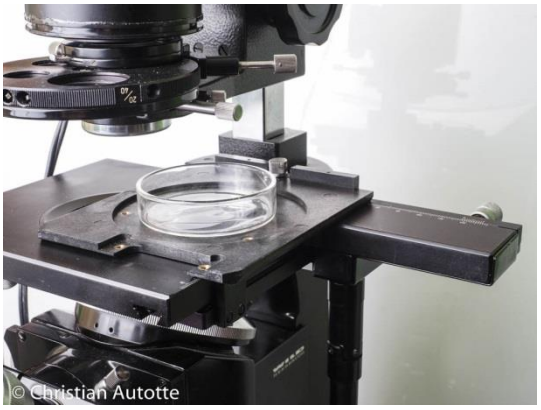
To the left are a few more Wild microscopes. My M12 may have been one of them.

Back in the warehouse, the decision was made in seconds: for the price I was willing to spend on a single microscope I walked out with two, along with a spare pair of 10x oculars and a Nikon 20x objective!









One of the main advantages of inverted microscopes is the possibility of going over a collected sample kept in a petri dish. The M40 comes with a plate that can hold a standard microscope slide. With that plate taken out a petri dish can fit over the round opening on the stage. Unfortunately, the stage then moves only forward and back, not left to right, which greatly limit the ability to quickly scan the content of the petri dish. Being the handy man, I made a new adapter with a recuperated lens holder from an old commercial photo printer. Its round opening fits most of the petri dishes that I use; once screwed in place it allows the petri dish to move in both axes.

Another advantage of the M40 is its built-in analyzing polarizer; above the condenser sits a filter holder on which can be placed the first polarizer needed to photograph subjects in polarized light. The analyzer can slide in and out of position and rotate at will. A few days after I started using the microscope, I realized that the analyzer was greatly delaminated, to the point of being rendered useless. Being in the optical path, directly behind the oculars, it could not be replaced by some cheap plastic or flexible polarizer film, so a glass polarizer was the only viable option. I tried to find something of that size on the Web, to no avail. There were some unused glass polarizers in my drawers. I also had a small rotary tool with round diamond coated disks that could cut through metal or Plexiglas. I had some doubts but went to work anyway, first cutting a small square, which was then rounded up with the flat surface of the disk. To my surprise, it took me only a few minutes to grind a polarizer of the right size. It was much thicker than the original, so I could not screw the metal ring that held it in place, but my replacement was ground to fit so tightly that nothing else was needed to keep it there.

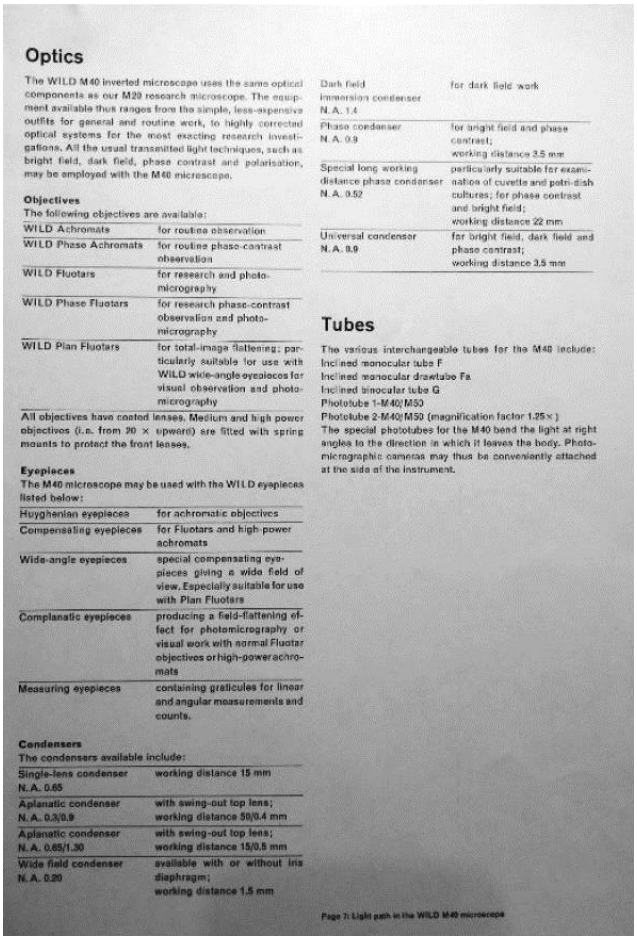
An easier fix was to find a replacement for the missing light source. The M12 has its original tungsten light. It's serviceable, bright enough (I guess…), but after a few minutes of use the heat drain can get so hot that you can burn yourself when touching it. Whenever I have to replace a light source in my microscopes I prefer to work with LED; the right ones produce a lot of light with little or no heat. The one seen here is a 5 watt that gives 520 lumens of pure white light.

At the end of the vertical column on which slide the condenser there is the holder for the light, which was in place when I bought the microscope. As it turned out, its opening was just the right size to slip in a lamp socket, equipped with its on/off switch. Since the light does not produce any heat there was no concern as to the material to be used for light shade; it was made of a piece of black plastic tubing. A flat piece pierced with a hole just big enough to let pass the narrow base of the light is glued on top. The bottom part was an old photography lens shade. On the inside is glued a layer of crumpled aluminum foil, which reflects more light down, where it is needed. The end result may not look like the original, but it's efficient and provides light in both quantity and quality.

The other microscope in the deal, the M12, is seen here with the photo tube. Some modifications were made to adapt my modern digital cameras. First, an M42 mount that I had in my box of odds and ends was grounded and glued in place over the existing ring. On that can be screwed a T-ring either for Canon or Olympus, the two brands of cameras that I use. The adapter is then slipped on the trinocular tube, with an ocular, and locked in place. The only unfortunate side effect of all these adaptations is the fact that parfocal cannot be realized: what can be seen as a sharp image in the binocular needs to be refocused to get a sharp picture in the camera. That's a small price to pay to own such a fine microscope.

The photo tube and binocular easily come apart, the twist of a screw allows the camera to swing to the left or the right of the microscope; it can even swing to place the camera in the forefront, useful when working with cameras that lack articulated LCD screens. Another screw, on the microscope itself, allows the whole trinocular assembly to be taken off and switched over to the M40 in less time than in took to read this sentence…

While it came with the original Wild oculars, I prefer working with wide-field oculars like those seen here.



Optics

The WILD M40 inverted microscope uses the same optical components as our M20 research microscope. The equipment available thus ranges from the simple, less-expensive outfits for general and routine work, to highly corrected optical systems for the most exacting research investigations. All the usual transmitted light techniques, such as bright field, dark field, phase contrast and polarisation, may be employed with the M40 microscope.

Objectives
The following objectives are available:

WILD Achromats	for routine observation
WILD Phase Achromats	for routine phase-contrast observation
WILD Fluotars	for research and photomicrography
WILD Phase Fluotars	for research phase-contrast observation and photomicrography
WILD Plan Fluotars	for total-image flattening; particularly suitable for use with WILD wide-angle eyepieces for visual observation and photomicrography

All objectives have coated lenses. Medium and high power objectives (i.e. from 20 × upward) are fitted with spring mounts to protect the front lenses.

Eyepieces
The M40 microscope may be used with the WILD eyepieces listed below:

Huyghenian eyepieces	for achromatic objectives
Compensating eyepieces	for Fluotars and high-power achromats
Wide-angle eyepieces	special compensating eyepieces giving a wide field of view. Especially suitable for use with Plan Fluotars
Complanatic eyepieces	producing a field-flattening effect for photomicrography or visual work with normal Fluotar objectives or high-power achromats
Measuring eyepieces	containing graticules for linear and angular measurements and counts.

Condensers
The condensers available include:

Single-lens condenser N. A. 0.65	working distance 15 mm
Aplanatic condenser N. A. 0.3/0.9	with swing-out top lens; working distance 58/0.4 mm
Aplanatic condenser N. A. 0.65/1.30	with swing-out top lens; working distance 15/0.5 mm
Wide field condenser N. A. 0.20	available with or without iris diaphragm; working distance 1.5 mm
Dark field immersion condenser N. A. 1.4	for dark field work
Phase condenser N. A. 0.9	for bright field and phase contrast; working distance 3.5 mm
Special long working distance phase condenser N. A. 0.52	particularly suitable for examination of cuvette and petri-dish cultures; for phase contrast and bright field; working distance 22 mm
Universal condenser N. A. 0.9	for bright field, dark field and phase contrast; working distance 3.5 mm

Tubes

The various interchangeable tubes for the M40 include:
Inclined monocular tube F
Inclined monocular drawtube Fa
Inclined binocular tube G
Phototube 1-M40/M50
Phototube 2-M40/M50 (magnification factor 1.25×)
The special phototubes for the M40 bend the light at right angles to the direction in which it leaves the body. Photomicrographic cameras may thus be conveniently attached at the side of the instrument.

Page 7: Light path in the WILD M40 microscope

One of the pages from the manual, mostly a list of available accessories.

Whenever I buy something technological, whether a camera, a drone, or a microscope, I make a point of reading its manual. But as is often the case with used equipment, the M40 came by itself. I search for a while on the Web, but could find no PDF copy.

Eventually, I found some text by fellow Micscape writer Richard Howey (Hi Richard!), suggesting that he might have some clue as to where I could find a copy of that elusive manual. He did put me in contact with someone who eventually sent me digital pictures from a photocopy of the manual. The pictures were not always clear, but good enough for my need.

Unfortunately, microscope manuals tend to be rather (how should I put it?)… limited in their usefulness… This one was no exception. Its 16 pages consist mostly in a list of available accessories that can be purchased and gives no information on the proper setting of the microscope itself. So, as usual, one is forced to learn by trials and horror…

At left, the column is raised by focusing; left on its own, gravity will eventually bring it down. That's what the small stop screw seen at the bottom is for: once focused properly, the column will rest on it, preventing accidental focus shift.

When I first started to use the microscope and tried to take some pictures, I was disappointed to see that the focus did not remain sharp; the moment I would let go of the control the focus would shift. Trying to figure out why, I started looking at the microscope from all angles while playing with the focus. I quickly realized that the whole back side of the M40 moves up and down while focusing; that includes the vertical column that holds the condenser and the light source, as well as the stage holding the specimen. With the focusing mechanism being very smooth, the sheer weight of that assembly is enough to drag it down. And then I noticed an unobtrusive knob at the base of that same column. It's a simple locking mechanism, a stop screw on which the column can rest, preventing it from going down. Now, when using the microscope I play with the coarse focusing knob and fine tune the focus directly with that locking screw.

I like to think that my Wild are "celebrity microscopes". At the very least, they make up a pair of very competent units that I expect to use for many years to come. They may be old, but they still have enough life left in them for the likes of me…

Footnote: Film stills are used under the guidelines of "Fair Use" from the film "X-Men: Days of Future Past", 2014.
Production companies: Marvel Entertainment, TSG Entertainment, Bad Hat Harry Productions, The Donners' Company. Distributed by 20th Century Fox.

Comments to the author Christian Autotte welcomed, email:

cautotte.9001 AT videotron DOT ca

Published in the December 2020 issue of Micscape magazine.

www.micscape.org