



# Newsletter

Of the

## New York Microscopical Society

1 Prospect Village Plaza  
(66F Mt. Prospect Avenue)  
Clifton, New Jersey 07013-1918  
GPS: Latitude 40.8648N, Longitude 74.1540W



October 2015

Editor: (201) 791-9826

Volume 9 (29) Number 8

## Meeting Notice – Sunday, October 25, 2015

**Speaker: Yuri Yanchyshyn**

**Speaker program begins at 2PM**

### PRESENTATION TITLE:

**What Wood is That? - A Furniture Conservator's Approach to Wood Identification**

### PRESENTATION NOTES:

Identifying woods with certainty is a part of everyday life in a furniture or wooden objects conservator's studio. This presentation will introduce the audience to various techniques used for identifying wood, ranging from the simplest to the very precise. Various contexts for wood identification will also be mentioned, such as replacement, authentication or determining whether a wood is of a species listed as endangered.

**Lastly**, some of the newest scientific approaches will also be mentioned.

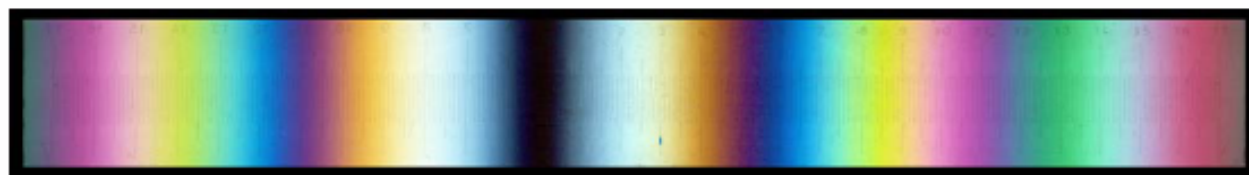
**BIO:** Yuri Yanchyshyn is Senior Conservator and Principal of Period Furniture Conservation, a New York City firm dedicated to furniture and wooden objects conservation. Prior to founding Period Furniture Conservation, Yuri worked as a consulting conservator at the Metropolitan Museum of Art. He has worked with wooden objects for over 30 years, and received conservation training from the Amsterdam Academy for Restoration and the Smithsonian Center for Materials Research and Education. His firm's clients include museums, historical societies, auction houses, collectors, fine arts advisors, dealers, designers, architects, and other conservators.

**Doors will be open at Noon. Refreshments will be available. For additional information, please contact Mel Pollinger ([pollingmel@optonline.net](mailto:pollingmel@optonline.net)), or call (201)791-9826, or by cell: (201) 314-1354 (meeting day only)**

### Interference Colors

Photograph by Philip C. Robinson

Edited by McCann Imaging



-2 orders

-1 order

0 order

1 order

2 orders

3 orders

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For additional information contact the Editor: Mel Pollinger at (201) 791-9826, or [pollingmel@optonline.net](mailto:pollingmel@optonline.net)

### Dues and Addresses

Please remember to mail in your Dues to:

**Mel Pollinger**  
**Treasurer, NYMS**  
**18-04 Hillery St.**  
**Fair Lawn, NJ 07410-5207**

Junior (under age 18) \$10  
Annually  
Regular \$30  
Student (age 18 or above) \$20  
Annually  
Supporting \$60 Annually  
Corporate (includes one advertisement in NYMS News)  
\$175 Annually  
Life \$300 (payable within the year)  
To avoid missing notices:  
Notify Mel Pollinger if you have changed your address, phone or email.

### Awards Given by the New York Microscopical Society

**The New York** microscopical Society takes great pleasure in recognizing and rewarding individuals who have contributed to either the activities of the society or to furthering microscopy. These awards are described in our website and in a pdf file for our email newsletter recipients. All members are eligible to nominate individuals for these various awards, and are encouraged to do so.  
John A. Reffner, Awards Committee Chairperson

### Awards Committee

Chair: John A. Reffner

### Members

Jan Hinsch  
Peter Diaczuk  
Angela Klaus  
John R. Reffner



Mel Pollinger, Editor  
18-04 Hillery St.  
Fair Lawn, NJ 07410-5207

### To Order Your NYMS Lapel Pins

Send a check in the amount of \$12.00 per pin to:  
New York Microscopical Society  
c/o Mel Pollinger, 18-04 Hillery Street, Fair Lawn, NJ 07410. To avoid shipping & handling charges, pins may be purchased directly at any NYMS meeting for \$10.00.



### The Mission of the New York

**Microscopical Society** is the promotion of theoretical and applied microscopy and the promotion of education and interest in all phases of microscopy.

### Alternate Meeting Notifications

Please note that due to time constraints in publishing, some meeting notices may be available by calling Mel Pollinger at 201-791-9826, or emailing: [pollingmel@optonline.net](mailto:pollingmel@optonline.net)

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**Please remember to pay your dues**

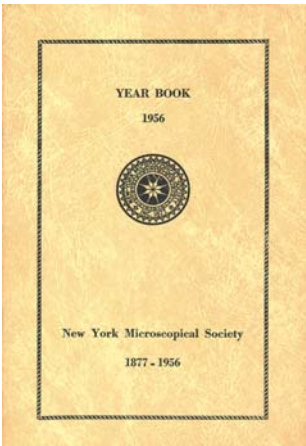
*Buy and Read a Good Book on Microscopy.*

**From the Library:**

The NYMS Library contains over 3,700 cataloged volumes, among these is a full set of McCrone's Particle Atlas and copies of Microbe Hunter Magazine.

**Come on down and read!**

Contact: Mel Pollinger (201) 791-9826, or email Mel at [pollingmel@optonline.net](mailto:pollingmel@optonline.net)



NYMS Yearbook 1877-1956

**Be A Volunteer – There's Always Something to do and see at NYMS.**

*If you wish to contribute some of your time to NYMS, please contact me at (201) 791-9826 or by email at [pollingmel@optonline.net](mailto:pollingmel@optonline.net)*

**Coming Up in 2015**

**EAS Live Webinars for 2015:**

Please search on the below indicated web address and review the EAS Website below for information regarding the upcoming Live Webinars in 2015.

[http://easinc.org/wordpress/?page\\_id=2974](http://easinc.org/wordpress/?page_id=2974)

\*\*\*\*\*

**McCrone Courses**

Call or write for course information:  
McCrone Research Institute: 2820 S. Michigan Avenue, Chicago IL 60616-3230  
Phone: 312-842-7100

\*\*\*\*\*

**Eastern Analytical Symposium**

**November 16-18, 2015**

**Somerset, New Jersey.**

**For more information:**

**Contact the Exposition Director,  
Sheree R. Gold: [easinfo@aol.com](mailto:easinfo@aol.com)  
610-742-4981 (cell)**

**Recent Donations by NYMS Members:**

We wish to thank Martin Youngberg for donation of a variety of microscopes, and a Mettler analytical balance. The items donated were from the personal collection of the late Margaret Walsh.

We also received, from Mary McMeeken, a donation of various early microscopes, books and an antique balance.



On the morning of 06June2010, I pulled some aquatic moss from Ramapo Lake in Oakland, New Jersey. Upon getting home with the container, I set it under my stereo microscope and found a member of the bryozoa. The sample was also teeming with crustacea, ciliates and insect larva. The next evening, I was able to isolate one of the bryozoa onto a microscope slide. I photographed it with a 10x objective using Rheinberg simulated dark-field. The camera used was a Nikon D5000 set at Manual atop an Olympus BHT/BH2 microscope.

Ramapo lake is located about 0.6miles up a rocky trail from near the intersection of route 287 and Skyline Drive in Oakland New Jersey. The area is part of the Ramapo Forest Reservation. *Mel Pollinger*

Marine Biology Link to check out.  
<http://research.mblwhoilibary.org/works>



## Visitors Always Welcome to NYMS

Although most of our lecture meetings, workshops and classes are held in the NYMS Clifton facility on the last Sunday of the month, the building may be opened for special purposes at other times, by appointment only. For such an appointment, please contact Mel Pollinger by phone at (201) 791-9826, M-F noon to 9:30pm, or by email at [pollingmel@optonline.net](mailto:pollingmel@optonline.net).

### From The Editor...

**if you have an email address:** Getting the newsletter by email means you can receive an **extended pdf version** that cannot be sent by "snail mail." Even if you only continue your USPS delivery of the newsletter, NYMS needs your email address for reporting priority events and special news. Being able to contact you quickly by email means better communication between you & NYMS■ Mel

### Need to use a Microscope?

The various microscopes that are presently set up on the main floor of the New York Microscopical Society building in Clifton, N.J. are there for the use of its members.

From Gary Mayer: In need of parts for older Olympus Microscopes? Contact J.C. Ricky in Ohio at (740) 862-9252

### Microscope Cleaning Kit

A complete set of tools and accessories to keep your microscope in optimum operating condition. The kit is put together by our previous Curator/Educational Chairman, Don O'Leary, and available directly from NYMS, while they last, for only \$35.00 plus shipping & handling, or may be purchased at a meeting. Call or email Mel Pollinger for details (see page two for contact numbers).

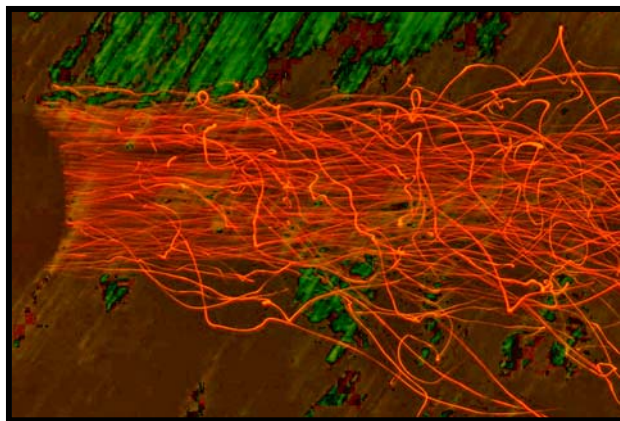
## NYMS Meeting Dates

**Most meetings of NYMS are usually held in Clifton on the last Sunday of the months of Jan., Feb., Mar., Apr., May, Sep., Oct. Exceptions will be noted in the Newsletter.**

NYMS microscope slide collections are available for study at meetings and by appointment.

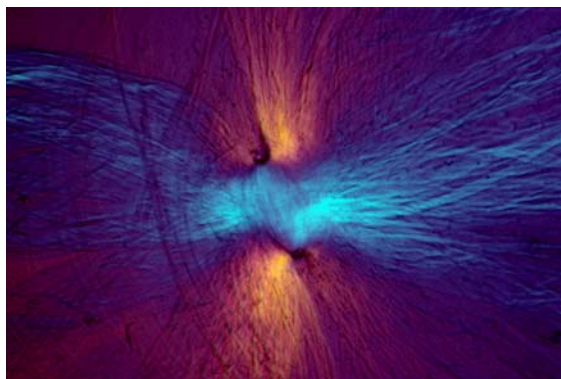
**Please note that our website is undergoing some repairs.**

## Answer to Mystery Photo for September 2015



Campfire smokestack. Imaged by Mel Pollinger. Did you guess correctly? Sorry if the flipped image fooled you.

## Mystery Photo for October 2015



Want to take a guess? Send it to me by email or call me: [pollingmel@optonline.net](mailto:pollingmel@optonline.net), (201) 791-9826

### **Additional Historical NYMS Supplements**

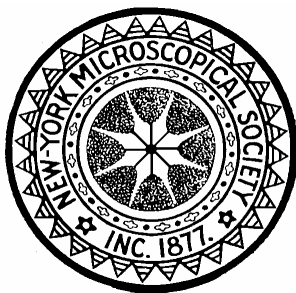
Email Newsletter recipients will also be getting copies of NYMS Newsletter pdf back-Issues from 2007. Copies of older newsletters will be sent as I convert them.

## **Attention NYMS Members**

**Got something to sell? Article to publish? Pictures for the newsletter? Looking to buy something? Want to use the library? Want to use a NYMS microscope? For any of the above, contact the Editor, Mel Pollinger.**



**Supporting Member**



## New York Microscopical Society 2015 Annual Banquet

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**What:** Enjoy a wonderful Buffet Luncheon, including soft beverages (cash bar available) and desserts, with your fellow-members, an exciting speaker presentation to be announced. An overall jolly time at one of the oldest restaurants in mid-town Manhattan; The Landmark Tavern.

**When:** Sunday December 06, 2015, from noon until 3:30pm.

**Where:** Landmark Tavern, 626 11th Ave., at W. 46th St New York City, NY  
Tel: 212-247-2562.

**Cost:** \$35.00 per person.

**How:** Reserve your place now\* by filling in the Reservation Request form below and mailing it along with your check to the Treasurer (see address below).

**\*Reservation requests must be received on or before November 15, 2015**

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Number attending \_\_\_\_\_ @ \$35/each = (write check amount) \_\_\_\_\_

Member name \_\_\_\_\_

Address \_\_\_\_\_

Phone \_\_\_\_\_ eMail \_\_\_\_\_

\_\_\_\_\_  
Send this form and payment to:

NYMS Banquet 2015  
c/o Mel Pollinger, Treasurer  
18-04 Hillery Street  
Fair Lawn, NJ 07410-5207

For additional information contact Mel Pollinger  
(201) 791-9826 or email: [pollingmel@optonline.net](mailto:pollingmel@optonline.net)

**Space is limited, so rush your reservation request in to reserve your place asap.**



# **N.Y.M.S. NEWS SUPPLEMENT**

October 2015

## **In This Section:**

- ◆ Yuri Yanchyshyn, speaker information
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*"When you work with Yuri, you're getting much more than you think."*

— Cynthia Volk, *Director*, Berwald Gallery

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Yuri Yanchyshyn

#### **Studio Head**

Furniture conservator **Yuri Yanchyshyn** has worked with wooden objects and their owners for over 25 years in a variety of settings, from a cabinet-maker's shop to the laboratories of The Metropolitan Museum of Art. He regularly works on rare, valuable and handmade objects dating from the 14th through the 21st century, stabilizing their structures, restoring their historic integrity and minimizing the chances of future deterioration. Private collectors, museums, architects, decorative arts historians, fine arts advisors and designers have all entrusted treasured items to Yuri's care, and institutions such as Christie's invite him to lecture. Yuri is currently proprietor and Head of Studio at Period Furniture Conservation, LLC, a New York City-based firm.

Yuri was born in Philadelphia of Ukrainian parents and grew up in the Detroit metropolitan area. He and his wife Deborah have lived in New York City for over 25 years, and they have two sons. In his free time, Yuri enjoys reading and travelling. He is also an active volunteer for community non-profit organizations, including schools, museums and libraries.

Yuri holds degrees from the University of Michigan and the California Institute of the Arts. He received advanced training in conservation from the Amsterdam Academy for Restoration and the Smithsonian Center for Materials Research and Education, and frequently participates in ongoing continuing education courses.

**[To download a PDF of Yuri's C.V. please click here.](#)**

#### **Publications, Articles, Catalogs and Presentations by Yuri Yanchyshyn**

Please visit the [resources](#) page to read more about our work and find out about us speaking to your organization.

PERIOD  
FURNITURE  
CONSERVATION

Period Furniture Conservation, LLC, 37-18 Northern Boulevard, Suite 407, Long Island City, NY 11101   P. 212.255.7426   F. 212.208.4520





*"Period Furniture Conservation really takes the time to get to know my clients' collections."*

— Patrick Cooney, *President*, Connoisseur's Advisory Group

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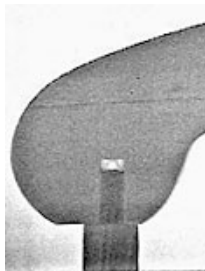
[Clients: Testimonials](#)



*a microscopic cross section of a coating surface*



*microscopic wood identification —  
Juglans nigra (black walnut)*



*an x-radiograph, highlighting the  
mortise and tenon construction of a  
chair's post and crest rail construction*

**Period Furniture Conservation** can help you keep the furniture and wooden objects in your care stable, historically faithful and esthetically presentable, whether you own them or have curatorial responsibility for them. There are several things we can do. Here's a sampling by service category:

### **Preventive Conservation and Collection Management**

#### **Assessment, Valuation and Testing**

Before you buy — or sell — your furniture or wooden object, you want to be certain that it is exactly what is advertised. While we do not "authenticate" objects, we frequently provide thorough technical examinations, detailing the materials and methods that were used in their creation as well as their present condition. We also provide scientific testing of coating surfaces, such as solvent solubility, cross-section analysis, microscopic wood identification analysis, x-ray fluorescence of furniture mounts, and ultraviolet light surface surveys. Our reports are always confidential to our clients.

#### **Finishes**

#### **Gilding**

#### **Woodcraft**

#### **Frames**

#### **Environmental Design**

#### **Insurance Claims, Emergency Response and Disaster Recovery**

Call us for a consultation at **212.255.7426**.





*a ultraviolet-induced visible  
fluorescent surface scan, revealing  
previous restoration not visible to the  
naked eye*

## PERIOD FURNITURE CONSERVATION

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Period Furniture Conservation, LLC, 37-18 Northern Boulevard, Suite 407, Long Island City, NY 11101 P. 212.255.7426 F. 212.208.4520

## ***Wild Stereomicroscopes-Part 1***

***R. Jordan Kreindler (USA)***

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This two Part paper is adapted and expanded from an earlier paper on stereomicroscopes (Kreindler, September 2013).

### ***Wild Heerbrugg, Switzerland***

The Wild company was formed when Heinrich Wild, originally of Glarus, Switzerland, and formerly head of Zeiss' surveying instruments branch in Jena, Germany returned to Switzerland. In April 1921 he founded the Werkstätte für Feinmechanik und Optik (Workshop for Precision Mechanics and Optics) in Heerbrugg, Switzerland. He started with surveying instruments, in keeping with his experience with Zeiss. In 1923, he formed Verkaufsgesellschaft Heinrich Wild (Henrich Wild Joint Stock Company) to sell Wild instruments. In 1924 the original company became part of the Joint Stock Company.

Wild can be credited with many "firsts" including making the world's first aerial cameras, in 1927. In 1948, he set up its first overseas company, in the US, Henry Wild Surveying Instruments Supply Company of America, Inc.

Arguably, the best stereomicroscopes, optically and mechanically, were made by Wild (author: pronounced: vilt) of Switzerland, and Zeiss of Germany.

A Wild brochure on *Stereomicroscopes*, (Wild Brochure, 1975), explains their important characteristics.

*Wild stereomicroscopes have some great features:*

- *Swiss quality and precision in mechanics and optics*
- *Economically designed for convenient and comfortable use*
- *Value for money, because rugged design guarantees long life*
- *Easy to handle, because of clear basic concepts and logical assembly*
- *Astounding number of combination possibilities for accessories*
- *Good range of ancillary equipment for special applications*

This same brochure explains the key features of stereomicroscopes.

*The main properties of the stereomicroscope are:*

- *Three-dimensional image*
- *Erect, laterally-correct image*
- *Large working distance*
- *Wide field of view*
- *Considerable depth of field*

*Because the image is the right way round and there is plenty of room underneath the objective, the specimen can easily be manipulated.*

*The wide field of view enables the stereomicroscope to be used for examining large, flat objects.*

*Stereomicroscopes have long been well established in all branches of science, and have now become indispensable tools in technology.*

*They are widely used in the production and assembly of small components, and in quality control at intermediate and final stages of manufacture.*

Although Wild made its first microscope in 1947, it was not until over a decade later, i.e, 1958, that it released its first stereomicroscope, the Wild M5 (Figs. 1).

The M5 could be purchased with a variety of bases, e.g., an incident light only, or incident and transmitted light base. Fig. 1 shows a Wild M5 with transmitted light base, mechanical stage, and hand rests for support when dissecting. Wild M5s are still commonly found in use today, and they or the M5A, see below, and are often *the* dissecting microscopes of choice, particularly for entomology and some other areas of biology.

The M5 has four fixed magnifications, and with 10x eyepieces these magnifications are 6x, 12x, 25x, and 50x. The M5 was sold new from 1958 to 1989. It came with a metal protective dome that could be installed both for protection in the field, or on the research bench, and as a carry case. To assist in photography, the M5 also had phototubes available. Wild phototubes were available to convert the microscope to monocular, or trinocular versions for photography. An example of a monocular phototube is shown in Fig. 2. As configured below, the M5 microscope is rather heavy and weighs approximately 14 pounds, 7.4 ounces.

[Examples of Wild trinocular phototubes can be seen on the M8 and M10, Figs 20 and 28, stereomicroscopes shown toward the end of this paper, below.]



## Stereo Microscopy

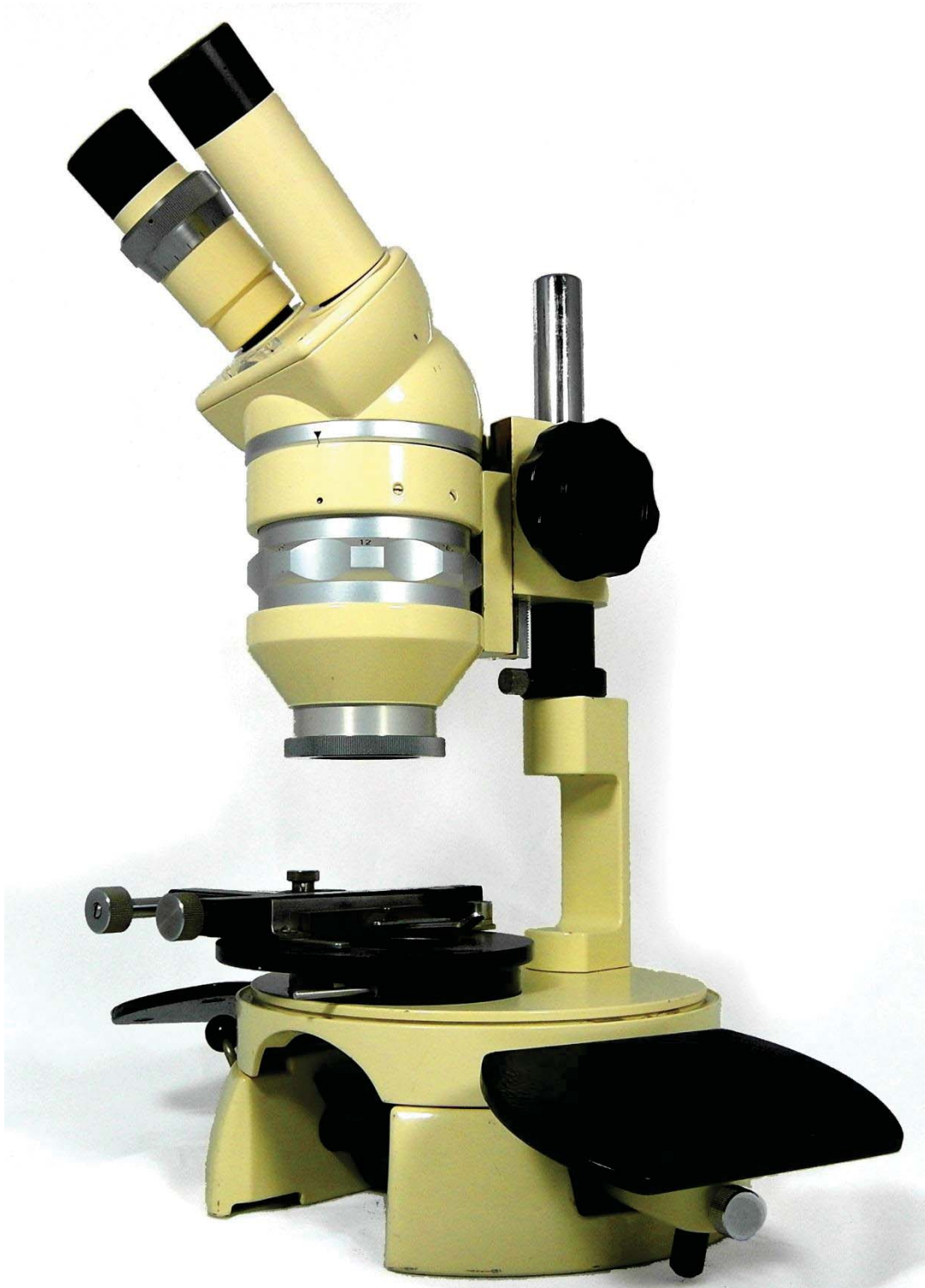


Figure 1. Wild M5 Stereomicroscope on transmitted-light stand

## Stereo Microscopy

The M5 can be used with one or two lamps for incident illumination. If one lamp is used a spacing ring is placed on top of the objective's milled terminal ring, shown in Fig. 1. If a second incident lamp is used the spacing ring can be replaced with the second incident illuminator's ring. If this is done each lamp's lighting position can be adjusted independently from the other. [See Figs. 21 and 23 for more details of incident lighting attachment]

The optical quality of modern computer-designed high-end stereomicroscope systems from the top four makers, Leica, Nikon, Olympus, and Zeiss can, in resolution, magnification, and zoom range, sometimes exceed the original Wild stereomicroscopes. However, the mechanical quality of these newer systems, whose cost may exceed USD \$15,000 when new, is debatably not as good. Their focusing systems often contain plastic components, and have in this author's opinion, a limited lifespan, and planned obsolescence, compared to the original Wild models, many of which are still in use today.

The M5 and its derivatives the M5A and M5D, see below, have optical paths further apart than do those of other Wild stereomicroscopes. Thus, many accessories are specific to the M5 series, e.g., any accessory placed between the body and head of these stereomicroscopes, as well as the binocular heads themselves.



**Figure 2. Wild M5 Monocular**

Although the standard magnification range of the M5, as noted above, is 6x to 50x in designated discrete steps with 10x eyepieces, this can be extended from 1.4x to 200x using various combinations of eyepieces and objectives.

The following magnification diagram is from the *Wild M5 Stereomicroscope: Instructions for Use* brochure, (Wild, 1964), Fig. 3.

# Stereo Microscopy

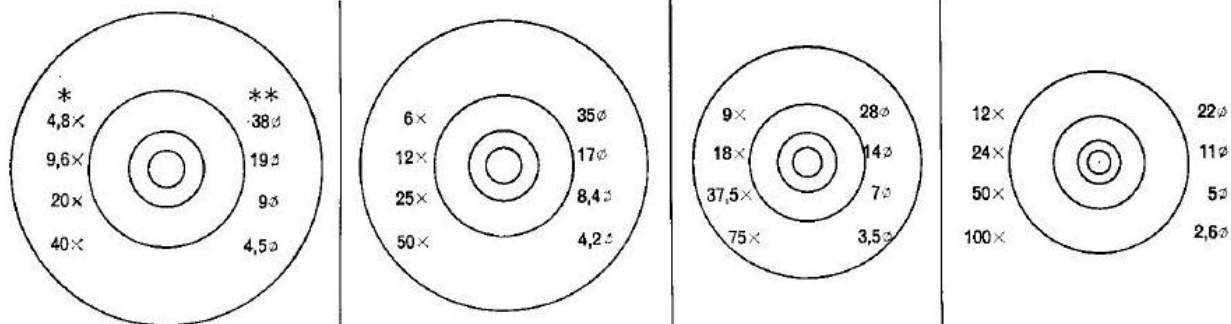
**Eyepiece 8x**

**Eyepiece 10x**

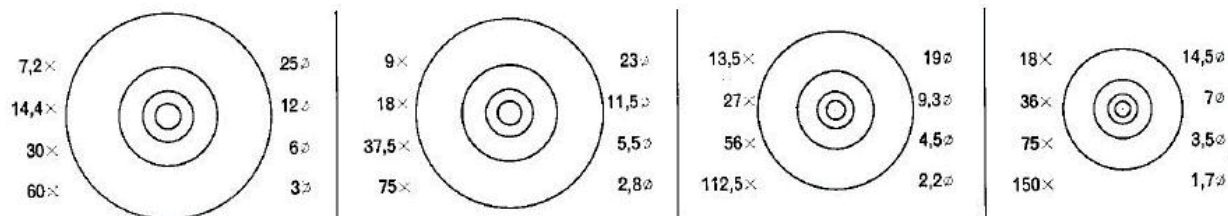
**Eyepiece 15x**

**Eyepiece 20x**

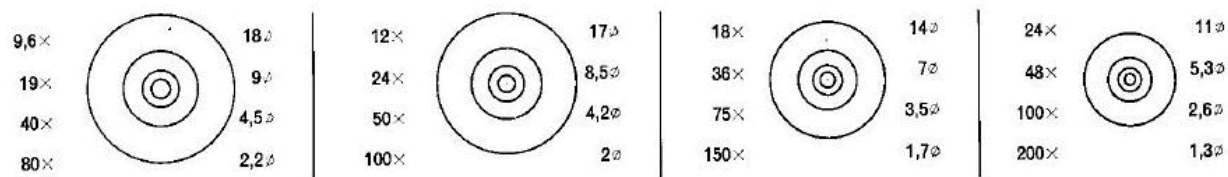
Without additional objective \_\_\_\_\_ Working distance 96 mm (3¾ in.)



With additional objective 1,5x \_\_\_\_\_ Working distance 48 mm (2 in.)



With additional objective 2,0x \_\_\_\_\_ Working distance 33 mm (1¼ in.)



\* Magnification  
\*\* Field diameter (mm)

**Figure 3. Wild M5 magnification diagram from Wild manual**

Note: Single and double asterisks are in the manual's table, but are not applicable here.



## Stereo Microscopy

As will be seen below, Wild for reasons not yet obvious to this author, chose to number its stereomicroscopes without regard to the sequence of their chronological release. Thus, e.g., the M5 was released before the M4, the M4A after the M4C, the M8 after the M7, and the M1 was released in 1973 (see M1 and detail of its stand in Fig. 6), etc. Therefore, model numbers should not be used as relative indicators of Wild stereomicroscope release dates. The M4 was introduced only a year after the release of the M5, i.e., 1959, Fig. 4 and 5.



**Figure 4. Wild M4 stereomicroscope, 1st style**

Figs. 5 show an M4 with magnification changer moved into its left- and rightmost positions, and finally removed. In the leftmost position, according to the Wild manual, with cartridge I in place the microscope's total magnification is 6x (not the 16x shown on the cartridge, see below for magnification with magnification changer removed) and in the rightmost position 40x. The cartridge can also be completely removed as shown in the rightmost picture of Fig. 5. With the cartridge removed the microscope's total magnification is, in accordance with the Wild manual, "Three-dimensional objects in natural relief", 16x.

There is also a magnification changer II. With stated magnifications of 10x and 25x, in left and right positions and 16x removed. With either magnification changer I or II the M4 has three magnification choices, two with the changer in left and right positions, and one with the cartridge removed. These magnification options can be further changed by changing eyepieces. Eyepiece choices include 8x, 10x, 15x, and 20x options.

The M4 was designed primarily as a simple educational microscope. It has a screw on the body that allows it to be raised for taller specimens or when an auxiliary lens with lower magnification is used, i.e., a 0.5x, to increase the working distance. Here the microscope, Fig 4, is shown on its Normal Stand with trapezoidal base plate, designed for stability. There is also a Swing-arm Stand, and a Table Clamp Stand. Its primary weakness is the two plastic "wings" that are placed underneath the magnification changer. These are often completely missing, as they are easy to damage and knock off.

Optional accessories included a variety of interchangeable stage plates, in addition to the metal (white on one side, black on the other) and glass stage plates. Inclined binocular tubes are shown in Fig. 4, but the M4 was also available with straight binocular tubes.

## Stereo Microscopy

The M4C was introduced in 1965 and the M4A in 1967. Both were made until about 1970. Later versions of the M4, e.g., the M4A, had built-in circular magnification changers, somewhat similar to the original M5, rather than the sliding cartridge magnification changers available on the earlier M4s. Later models, including later models of the M4, were made in a lighter color, although the magnification changers were still made in black. The M4, Fig. 4, weighs approximately 8 pounds, 5.2 ounces, and is approximately 14 inches tall, in the position shown.

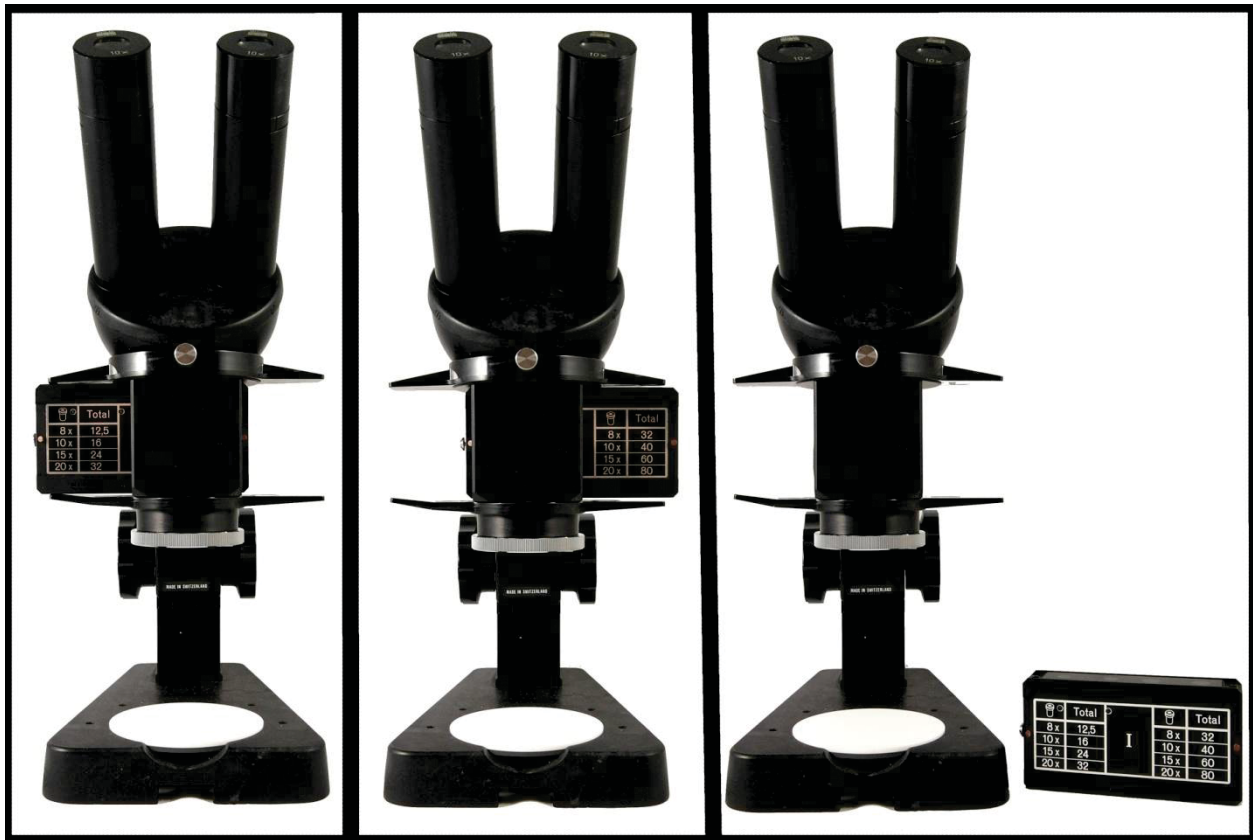


Figure 5. Wild M4 stereomicroscope, 1st style, showing three magnifications options



## Stereo Microscopy

Fig. 6 shows a Wild M1A series stereomicroscope. The earlier M1, as noted above was released in 1973. This M1 provides the capability to use interchangeable CMOs. Some versions of the M1 series, e.g., the M1A, had the unusual, for Wild, additional extruding support with rectangular, cross-section on the pole stand for locking orientation and added strength. The M1 was available with both incident- only or transmitted- and incident-light stands, as well as a swinging-arm stand. This M1 series was a successor to Wild's M4 series, presented above. It was designed for education, as was the M4, which explains the decision, in some versions, to "fix" the orientation of the microscope's body over the object to be examined. This series was sold through the mid-1980s.



**Figure 6. Wild M1A series stereomicroscope**

Using various combinations of eyepieces and objectives, the magnification range of the M1 can be extended from 1.25x to 40x.

Wild introduced the M5A, Fig 7, and the M5D, c. 1971, before the M1. These were available to c. 1989. An optional apochromatic objective was available for these at additional cost. The M5A is shown with a transmitted light base on a 25mm diameter column (25mm was the standard pole diameter for the M5A). The M5A is also available with a reflected light only base, Fig. 8. With 10x eyepieces, it provides magnifications of 6x, 12x, 25x, and 50x. These twist-to-select magnifications are marked on the M5's rotating turret ring. As with other Wild stereomicroscopes in the M-series, it can be equipped either with one or two lamps, mounted around the objective. When only one lamp is used, an additional spacer may be required.

The M5A was also available in an M5APO version. An E. Leitz/Wild advertisement in Volume 54, Number 4, of Analytic Chemistry (Wild, 1982) notes,

**M5APO Stereomicroscope.** Special glasses and coatings were developed for total correction of chromatic aberration. For applications requiring the highest accuracy and detail in the areas of sharpness, contrast, resolution and color fidelity. The M5APO (apochromatic) has the same basic well-tested modular M5A design (the long time standard for dissecting-microscopes). All conventional M5A accessories can be used with the APO.

The Wild modular design allows rapid conversion to photomicrographic use.

## Stereo Microscopy



Figure 7. Wild M5A on transmitted-light stand



Wild introduced other models in the M-series. In 1972 it marketed the M3, Fig. 8 shows this model with a standard base. In this configuration, it weighs approximately 9 pounds, 6.4 ounces. As shown, it is approximately 16 inches tall.

The M3 was also sold with a bright field / dark field base. The dark field option can be invoked by sliding a lever, with a black sphere at the end, into the dark field position. This moves the default stage plate out of position to switch to dark field, Fig. 9.

The M3 shown in Fig. 9, as expected is somewhat heavier than the M3 shown in Fig. 8. It weighs about 11 pound, 6.2 ounces and is approximately 18" tall. Both Wild M3's have an achromatic CMO (Common Main Objective) of 1x. Their drum changers have three marked magnifications of 6.4x, 16x, and 40X. These apply if used with Wild's standard 10x / 21mm eyepieces. As with Wild's M4, in the 16x position, there is no additional lens present in the Galilean drum changer, optical path. Thus, the brightest images are obtained at 16x. The range of the M3, as with other Wild stereomicroscopes, can be extended with combinations of eyepieces and objectives. For the M3 this extended range is from 1.5x to 160x. Although shown here with inclined binocular tubes, the M3 was also available with a 'straight' non- angled binocular tube.

Wild also introduced at later stages models M3B, M3C, and M3Z, Fig. 15. The series was sold until 1994. All M3s like the M5s are considered excellent, and they are relatively easy to repair by maintenance professionals, as opposed to many models by competitors. All Wild models have a variety of optional accessories; some are discussed in this paper, and so they can be used in a myriad of applications.

The M3B provided greater field "flatness", compared to the somewhat "dome" shaped images of the M3. The M3B offered three clickstop magnifications, 6.4x, 16x, and 40x, with 10x eyepieces. The M3C added two additional magnifications for a total of five clickstop choices, with 10x eyepieces these are 6.4x, 10x, 16x, 25x and 40x.

The M3Z was unique in the M3 series, in that it offers a continuous zoom from 6.4x to 40x. It is available with achromatic or planapo objectives. The M3Z provides exceptional field flatness with its plan objectives. M3 objectives are interchangeable with the M5 series.



**Figure 8. Wild M3 on incident-light stand**

## Stereo Microscopy



Figure 9. Wild M3 with bright / dark field base

## Stereo Microscopy



**Figure 10. The Wild M3, results of using the rear lever to switch between bright field and dark field**



# Stereo Microscopy

The following table, Fig. 11, is given in the Wild manual (Wild, Unstated-1), *Wild M3: Instructions for use*. It shows the working distances and magnifications for various combinations of objectives and auxiliary lenses.

## Technical data for M3 – Données techniques, M3 – Technische Daten M3 – Características técnicas del M3

Total magnification, working distances, field of view and viewing angle  
Grossissement total, distances de travail, champ visuel et angle d'observation  
Totalvergrößerung, Arbeitsabstände, Gesichtsfelddurchmesser und Betrachtungswinkel  
Aumentos totales, distancia de trabajo,  $\varnothing$  del campo de visión y ángulo de observación

Eyepiece Oculaire Okular Ocular	Additional objective Objectif additionnel Vorsatzobjektiv Objetivo adicional	Working distance Distance de travail Arbeitsabstand Distancia de trabajo	Total magnification/Field of view at position: Grossissement total/Champ visuel pour position: Totalvergrößerung/Gesichtsfelddurchmesser auf Stufe: Aumentos totales/ $\varnothing$ del campo de visión en la posición:			½ viewing angle Demi-angle d'observation Halber Betrachtungswinkel Semiángulo de observación
			6.4	16	40	
8×	—	91 mm	5.0×/ 35.0 mm	12.5×/13.0 mm	32.0×/ 5.0 mm	6.90°
10×	—	91 mm	6.4×/ 35.0 mm	16.0×/13.0 mm	40.0×/ 5.0 mm	6.90°
15×	—	91 mm	9.6×/ 28.5 mm	24.0×/10.5 mm	60.0×/ 4.0 mm	6.90°
20×	—	91 mm	12.8×/ 21.5 mm	32.0×/ 8.0 mm	80.0×/ 3.0 mm	6.90°
8×	0.3×	265 mm	1.5×/117.0 mm	3.8×/44.0 mm	9.6×/17.5 mm	2.06°
10×	0.3×	265 mm	1.9×/117.0 mm	4.8×/44.0 mm	12.0×/17.5 mm	2.06°
15×	0.3×	265 mm	2.9×/ 95.0 mm	7.2×/35.0 mm	18.0×/14.0 mm	2.06°
20×	0.3×	265 mm	3.8×/ 72.0 mm	9.6×/27.0 mm	24.0×/11.0 mm	2.06°
8×	0.5×	160 mm	2.5×/ 70.0 mm	6.5×/26.0 mm	16.0×/10.5 mm	3.43°
10×	0.5×	160 mm	3.2×/ 70.0 mm	8.0×/26.0 mm	20.0×/10.5 mm	3.43°
15×	0.5×	160 mm	4.8×/ 56.5 mm	12.0×/21.0 mm	30.0×/ 8.5 mm	3.43°
20×	0.5×	160 mm	6.4×/ 43.5 mm	16.0×/16.0 mm	40.0×/ 6.5 mm	3.43°
8×	1.5×	45 mm	7.0×/ 23.5 mm	19.0×/ 8.5 mm	48.0×/ 3.5 mm	10.33°
10×	1.5×	45 mm	9.6×/ 23.5 mm	24.0×/ 8.5 mm	60.0×/ 3.5 mm	10.33°
15×	1.5×	45 mm	14.4×/ 19.0 mm	36.0×/ 7.0 mm	90.0×/ 3.0 mm	10.33°
20×	1.5×	45 mm	19.2×/ 14.5 mm	48.0×/ 5.5 mm	120.0×/ 2.0 mm	10.33°
8×	2.0×	31 mm	10.0×/ 17.5 mm	25.0×/ 6.5 mm	64.0×/ 2.5 mm	13.88°
10×	2.0×	31 mm	12.8×/ 17.5 mm	32.0×/ 6.5 mm	80.0×/ 2.5 mm	13.88°
15×	2.0×	31 mm	19.2×/ 14.0 mm	48.0×/ 5.5 mm	120.0×/ 2.0 mm	13.88°
20×	2.0×	31 mm	25.6×/ 11.0 mm	64.0×/ 4.0 mm	160.0×/ 1.5 mm	13.88°

Figure 11. Wild M3 Technical data

The 8x, 10x, 15x, and 20x eyepieces listed in Fig. 11 can be seen in Fig. 12.

## Stereo Microscopy



**Figure 12. Some Wild objective lenses: 8x, 10x, 15x, 20x**

The auxiliary lenses presented in the table above can be seen in Fig. 13.



**Figure 13. Some Wild auxiliary lenses: 0.3x, 0.5x, 1.5x, 2.0x**

One of the advantages of the Wild stereomicroscope is the modular nature of the models in its various series. Wild microscopes can be configured with a variety of modules. Leica (Leica AG, Unstated-1) mentions this, and notes that you can choose whatever is needed currently, and be assured that the M3 chosen could be adopted to any future needs.

Accessories and modules include auxiliary lenses, phototubes, pods, eyepieces, polarizing attachments, etc. Fig. 14 shows a Wild M3 with polarizing attachments, and Fig. 15 shows more detail of these polarizing attachments. All Wild stereomicroscopes can be adopted to polarized light work, and a rotating stage.

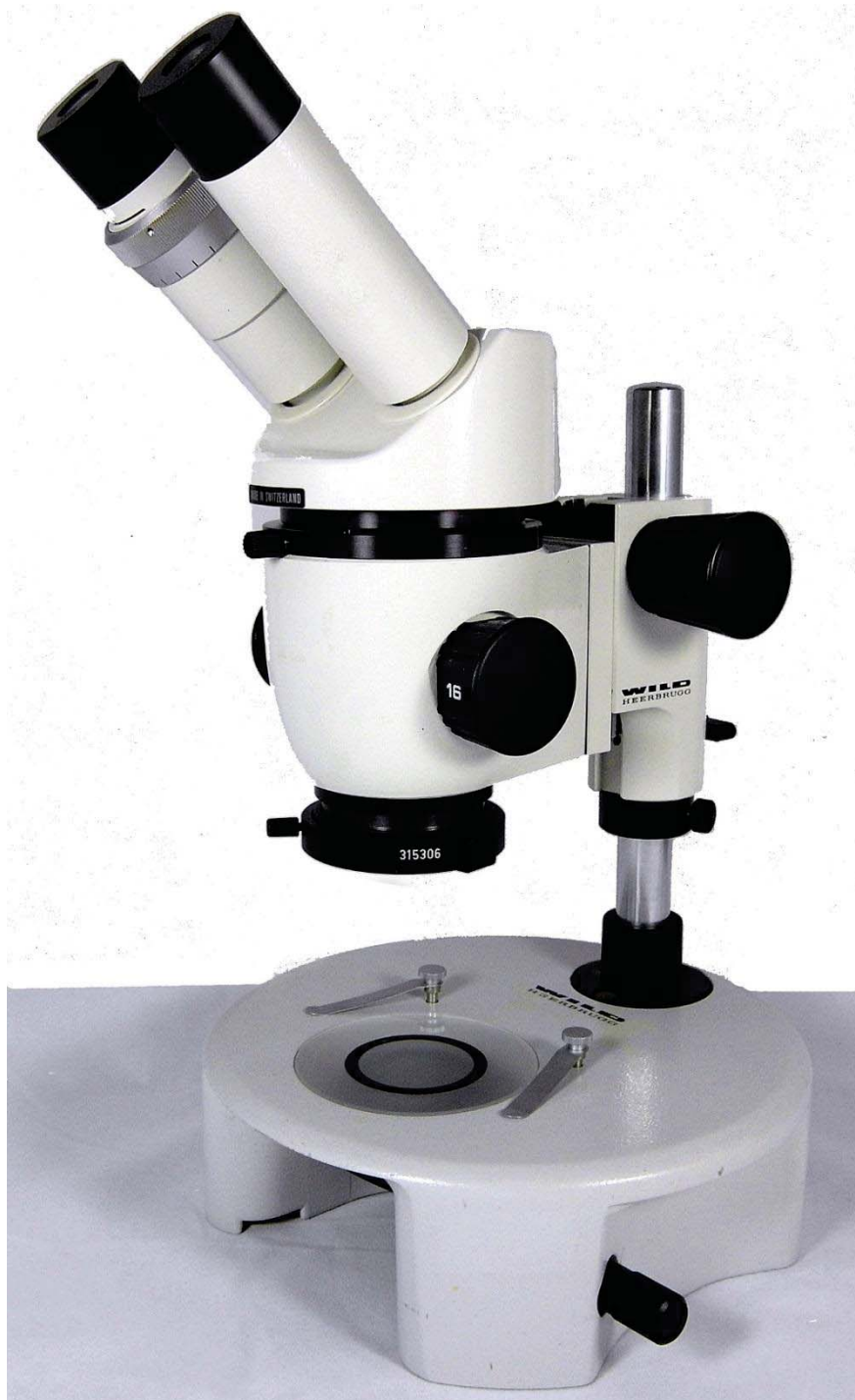
Three Wild M3 series microscopes are mentioned in the Leica pamphlet.

[The] Wild M3 series offers a choice of several versions:

- **Wild M3B** with three-step magnification changer
- **Wild M3C** with five-step magnification changer and either an achromatic or planapochromatic objective (M3C PLANAPO)
- **Wild M3Z** with 1:6 zoom and either an achromatic or planachromatic objective (M3Z PLAN)

*(Leica AG, Unstated-1)*

This pamphlet explains that this series can be used in a variety of areas, including the automobile industry, agronomy, telecommunications industry, semiconductor industry, dental laboratories, electronics industry, chemistry, and biology. It further notes that these stereomicroscopes have received the international quality certificate for ISO 9001. Some instruments in Wild's M3 series are shown below.



**Figure 14. Wild M3 with polarizing accessories on transmitted-light stand**





**Figure 15. Detail of Wild polarizing accessories**

Fig. 16 shows an M3B pod. Leica purchased Wild, along with other microscope competitors including AO, and Bausch and Lomb. The M3B shown in Fig. 16 displays both the Leica and Wild trademarks, as does the M10 in Fig. 28. After a number of iterations of stereomicroscope releases, the Wild trademark was discontinued. Fortunately, Wild is arguably one of the most easily repaired stereomicroscopes, with a vast variety of interchangeable parts seemingly always available, and Wild second-hand stereomicroscopes continue to serve as useful instruments even for today's scientists. They continue to, appropriately in this author's opinion, obtain high prices on the used market.





Figure 16. Wild M3B

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Prepared for the New York Microscopical Society



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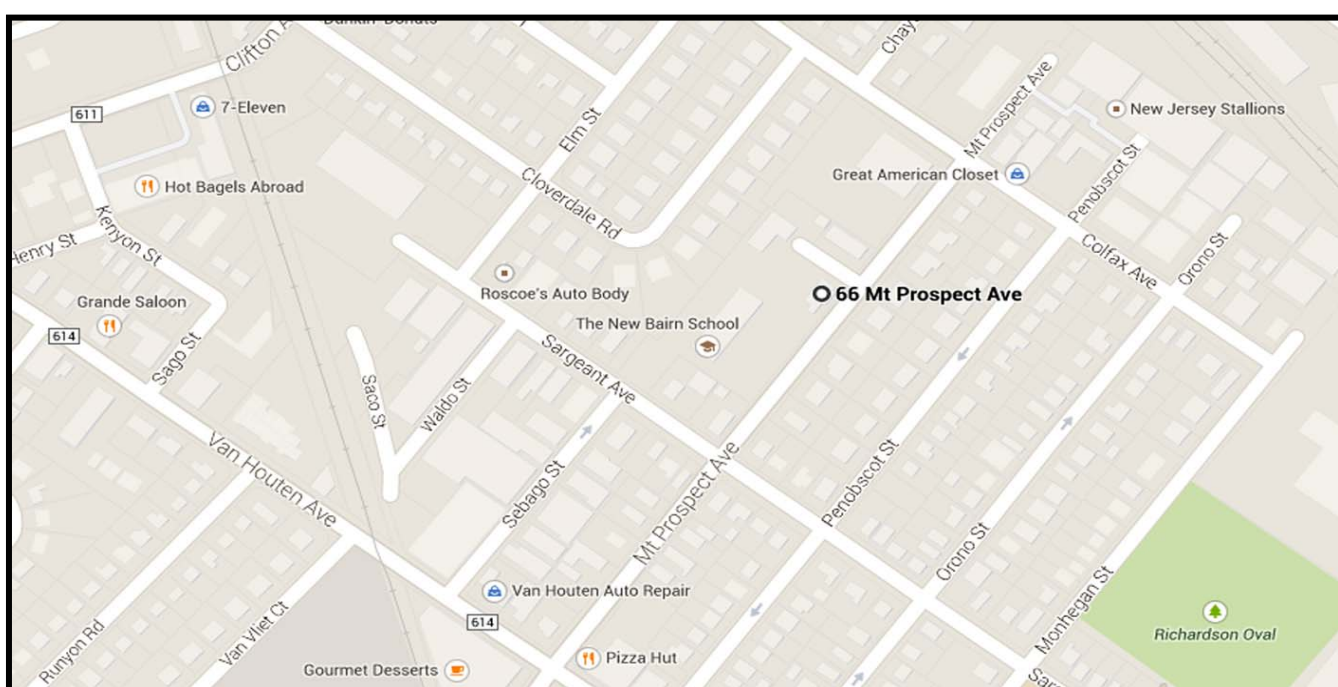


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Dew drop under evergreen bud; by Jeff Glover



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