

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



January 2014

N.Y.M.S. (973) 470-8733

Volume 8 (28) Number 1

NYMS Winter-Spring Lecture Series

Adult Stem Cells: An Example from Drosophila Speaker: Dr. Angela V. Klaus Date: Sunday, January 26, 2014 at 2 PM Location: NYMS at Clifton, NJ

Adult stem cells exist in many regions within the body. They are maintained within microenvironments called "stem cell niches." These niches produce the conditions that allow for the long term (usually, the life of the organism) support of a self-regenerating population of cells that need constant replacement. In the human body, such niches exist within the intestines, skin, testes, and other regions. In this talk, human adult stem cell biology will be briefly reviewed and a specific example of the visualization of a stem cell niche within the fruit fly (genus Drosophila) testis will be discussed. The Drosophila testis stem cell niche was imaged using confocal laser scanning microscopy.

Dr. Angela V. Klaus is an Associate Professor of Biological Sciences at Seton Hall University. She holds a PhD from Rutgers University-New Brunswick in Cell and Developmental Biology. Her research program focuses on spermatogenesis in flies from the genus Drosophila. She uses confocal imaging, transmission electron microscopy, and scanning electron microscopy extensively in her research.

Refreshments will be available, doors open at 1 PM

In case of inclement weather, please call Mel Pollinger Saturday and Sunday at

Home: (201) 791-9826, Cell: (201) 314-1354, or email: pollingmel@optonline.net



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Save a Tree: Get The Extended Newsletter: By Email Only

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Dues and Addresses Please remember to mail in your Dues to: Mary McCann, Membership Chair McCann Imaging 161 Claflin Street Belmont, MA 02478 Junior (under age 18) \$10 Annually

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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

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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 by visiting the NYMS website, or emailing: pollingmel@optonline.net

Please remember to pay your dues

Buy and Read a Good Book on Microscopy.



Snowflake 2mm in diameter

Hand-held Olympus DSLR with macro lens. Caught outside at 20°F on a piece of black material. Image by Jeff Glover *******

In Memorium

Stacy O'Leary, 80, died December 16, 2013 at home in Newport Richey, FL, with her devoted husband and best friend, Don, at her side.

She was born in New York City and was a longtime resident of Fair Lawn and Saddle

Brook, NJ. She was a graduate of Fordham University, a dedicated member of the Third Order of St. Francis of Assisi, and was an employee and volunteer of Maple Glen Center in Fair Lawn. Stacy devoted her life to caring for children, the sick and elderly, as well as countless neighbors and friends in need. She will be dearly missed by her loving sisters Eileen and Teeny. Her legacy continues with her nine children and their spouses Mary and Kathy Perry-Paulson, Ann and Paule Barford, Bob and Carrie, June, Bill and Christine, Jim and Kate, Mike and Marissa, Chris, Brian and Laura O'Leary. She treasured her 14 grandchildren Diane, Kate, Tim, Thomas, James, William, Danny, Megan, Kevin, Christopher, Ryan, Julian, Grace and Colin.

Stacy lived her life guided by her strong faith in God and her love, support and tireless

energy will be missed by all. Beloved wife, mother, sister and Nana, be at peace with the angels. We love you.

Mass was held at 9:30 AM, Saturday, January 4 at St Anne's Church, 15-05 St. Anne St., Fair Lawn, NJ.

In lieu of flowers, prayers and/or donations to Catholic Charities or HPH Hospice Caregivers, 12107 Majestic Boulevard, Hudson FL 34667 hphhospice.org.

A Note From Jean Portell

Today, while going through a carton of papers I'd forgotten I still had, I found a bunch of old NYMS Newsletters and related correspondence & notes. The best item in the lot is a quote I noticed in 1998 on the website of a former NYMS member, Mike Huben (known among us as "Mighty Mike" for his love of viewing and studying mites). I emailed him that year, asking if he knew the source of the quote attributed to Rudolf Arnheim that I saw on his website. Mike emailed back, "Not offhand. It's one of my few good biology quotes."

Since nobody is likely to remember that it was published in NYMS News 15 years ago (if it was), I send you this Arnheim quote for possible inclusion in a 21st century NYMS Newsletter:

"Nothing is more humbling than to look with a strong magnifying glass at an insect so tiny that the naked eye sees only the barest speck and to discover that nevertheless it is sculpted and articulated and striped with the same care and imagination as a zebra. Apparently it does not occur to nature whether or not a creature is within our range of vision, and the suspicion arises that even the zebra was not designed for our benefit."

Rudolf Arnheim

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

McCrone Research Institute in Chicago

 Inter/Micro 2014Call for Papers, June 2-6.

2014 Microscopy courses.

The deadline to submit titles and abstracts is March 1. 2014.

For more information, visit our website at: www.mcri.org. Contact us at (312) 842-7100 or by email at: intermicro@mcri.org

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.

From The Editor... if you have email: Getting the newsletter by email means you can receive an <u>extended pdf version</u> 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.

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 Curator/Educational Chairman and available directly from NYMS 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).



Front page image: Cymbella, a diatom

Taken by Eric Gravé in 1981 using Differential Interference Contrast. Magnification 320x.

"...Impossible! Most Dutchmen said. This Anton's crazy in the head! We ought to ship him off to Spain! He says he's seen a housefly's brain! He says the water that we drink

He says the water that we drink Is full of bugs! He's mad, we think!..."

> From "The Microscope" by Maxine Kumin

Answer to Mystery Photo for Nov-Dec 2013



Water droplet on leaf. Image by Jeff Glover. Did you guess correctly?

Mystery Photo for January 2014



Want to take a guess? Send it to me by email or call me: 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.

Got something you want to sell, trade or publish in the Newsletter and/or on the website? Write, call or send an email message to: 201-791-9826 or pollingmel@optonline.net (images ok) or Mel Pollinger, Editor NYMS Newsletter 18-04 Hillery Street Fair Lawn, NJ 07410





Supporting Member

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<u>NYMS Newsletter Extended</u> <u>Section, January 2014</u>

Directions to NYMS Headquarters

One Prospect Village Plaza (66F Mount Prospect Avenue) Clifton, NJ 07013

GPS: Intersection of Colfax & Mt. Prospect: Latitude 40.8656 N, Longitude 74.1531W, GPS: Our building: Latitude 40.8648 N, Longitude 74.1540 W From George Washington Bridge:

In This Section: •Slide rule Microscopy •Antique NYMS Bulletin •Olympus Advertisement from old NYMS Yearbook •NYMS News of January 2007 •Inter-Micro 2014 •NYMS Items for Sale •Membership Application •Last page images

Take Interstate Route 80 west to Exit 57A, Route 19 South. Take Route 19 to Broad Street and continue two lights to Van Houten Avenue. Turn Left. Go to second light, Mount Prospect Avenue and turn left. Building 66F is on the left side , one and a half blocks from Van Houton.

From Lincoln Tunnel:

Follow exit road to NJ route three west. Continue to Bloomfield Avenue exit. Turn right to Circle and go three quarters to Allwood Road West. Mount Prospect Avenue is a few blocks on the right (a small street) Turn right and go to first light (Van Houton) continue. Building 66F is on the left side , one and a half blocks from Van Houton.

From North:

Take Garden state Parkway South to Route 46 Clifton Exit. On 46 Make second exit to Van Houton Ave. Continue to third light Mount Prospect Avenue and turn left. Building 66F is on the left side , one and a half blocks from Van Houten.

From Route 46 coming from west:

Take Broad Street Exit in Clifton and follow Directions above from GW Bridge.

<u>From route 46 coming from East:</u> Take Paulson Avenue Exit in Clifton and follow to Second light, Clifton Ave turn right. Go to next light, Colfax, turn left, go three blocks and turn right on Mount Prospect Ave.. Building 66F is half block on right.

Public transportation from NY:

Take NJ Transit train from Penn Station to Secaucus Transfer Station. Change trains to Bergen Line to Clifton (call NJ Transit for schedules). From Clifton Station cross under tracks to first street and go left one block to Mount

Prospect Street, turn right and Building 66F is one half block on Right.

If you plan to come by bus or train, please copy the links below into your browser:

http://www.njtransit.com/sf/sf_servlet.srv?hdnPageAction=TripPlannerItineraryTo http://www.njtransit.com/sf/sf_servlet.srv?hdnPageAction=BusSchedulesP2PTo http://www.njtransit.com/sf/sf_servlet.srv?hdnPageAction=TrainTo

Some Typical Slide Rules Under the Low Power Microscope

David Walker, UK (E-mail - micscape@ntlworld.com)

An online version of an article published in the UKSRC 'Slide Rule Gazette', Issue 14, Autumn 2013 pp. 28-39.

(The UKSRC is the United Kingdom Slide Rule Circle, website <u>www.uksrc.org.uk</u> where membership benefits and other resources are described.)

Introduction

A latent fascination with slide rules was revitalised two years ago when I dusted down my trusty Hemmi P280 which was used at high school in the mid 70s just before I could afford my first calculator. I also enjoy exploring the macro / microscopic world both natural and manmade, an interest which dates back to my early teens. Although amateur microscopy isn't as well known as amateur astronomy, it has a long history and continues to thrive with a range of clubs, publications and online resources.

My own collection of slide rules to date is very modest, currently sixteen models, and have only acquired some typical representatives of the major types and makers (mainly from after 1950). There are early signs of a collecting addiction though! Combining the two interests, I was curious as to whether the low power microscope at mags ca. 20X and possibly higher revealed any additional insights into the rules owned beyond that which a typical low power loupe up to ca. 10X could offer. In particular, construction details and do features at the microscopic level such as fineness of scales, quality of inking etc reflect on the subjective visual 'look' of each rule?

From literature searches to date, I'm unclear whether a stereo microscope or higher power loupes and pocket microscopes have an established role for slide rule study and would welcome comments. Otto van Poelje in his fascinating article 'Which Dividers to use on Gunter rules' (1), quantified the geometry of the needle points on different styles of dividers and remarked on how a stereo microscope can show the potential damage that different point styles may have on rules and their scales. A review of 29 'student' slide rules by 'Which?' in 1961 (8) included scale length and alignment measurements to 0.01 mm before and after rigorous tests which suggests they were using a microscope. A summary of my own tentative explorations with a stereo are presented below with some comments on what features of a low power microscope, lighting and image capture methods were found useful. Observations made are for my own examples of each model (a mix of new and used) and may not be representative.

Flatbed scanner or low power microscope for recording fine detail?

The CCD design of flatbed scanners have sufficient depth of field (d.o.f.) to be widely used for excellent imaging of the whole or major parts of slide rules. My own Canon 5600F (CCD) has a d.o.f. of at least 10 mm compared with a Canon LiDE 60 (a typical example of the alternative CIS design) with a d.o.f. of barely 1 mm (ref. 2). The highest optical scan setting of a consumer flatbed paper scanner is typically 1200 dpi, this corresponds to a theoretical resolution of 0.021 mm (21 μ m). This may be insufficient for recording fine detail on slide rules and potentially compounded by soft images if scans viewed at 1:1 because of the limitations of the scanner optics; the rule design and/or scanner size also often does not permit close contact with the scanner platen. In comparison, the optical resolution of a typical quality stereo microscope as used for the imagery below was ca. 7 μ m (at 20X) and increasing to ca. 3 μ m at the highest optical mag of 80X.



The slider detail of a Hemmi P280 shown above was scanned on a Canon 5600F at its maximum optical

1200 dpi, image crop at 1:1. This is a best case example for this scanner model because the slider was removed and it touches the platen, this will not always be possible. The image is soft and flat showing no fine detail cf the images below taken using a stereo at typical mag of 20X.

Low power microscope setup

My own stereo microscope is shown right which is used for more demanding biological subjects. A much simpler and cheaper set-up is likely to be equally suited for examining rules. Although a stereo provides comfortable binocular views and is particularly suited for 3D subjects, they can be more awkward than monocular optics for photographing flat subjects. Most stereo models with a third photo port use one of the eyepiece optical trains for photography which is typically at 6° to optical axis and therefore not ideal to give an in-focus photograph across the field of view of a flat subject. Presenting a flat subject at ca. 6° to photo port axis can correct for this (as shown right). A low power monocular could serve well without the need for such a correction for photo work. The commonest has a fixed mag of 20X, the mag I found most



useful on my variable zoom stereo for rule studies. See Appendix for an example of a good value quality monocular microscope (typically £50 in UK).

Equipment

Leica S8 1-8X continuous zoom stereo microscope (mag changer labelled 'M', focus 'F'), with 10X eyepieces, to give a total optical mag range of 10X to 80X.

This example has the flat base option, some bases are more raised, especially if a light source in base. I preferred to lay rules on the desk as shown, by rotating the optics around on the stand and counter balancing at rear. Lighting, two types were used (light beams in red):

1) 144 LED ringlight (labelled 'R') clamped to base of stereo optics with intensity control and each quadrant switchable for modelling. (Control box labelled 'C').

2) 30W fixed intensity halogen focussed through a flexible light guide (labelled 'L'). (Dual light guide models are available.) The power supply sits at rear.

Camera: Sony NEX-5N body. White balance preset using custom control. 'Front Curtain Shutter' option set for vibration free imaging.

Measurements

To explore whether measurements of scale features provided any insight into the different models, I measured the width of an inked scale mark at same point on each rule (the '1' of '10' on the A scale) and the height of the scale number '1' at that point. A method I preferred for rule study was to lay a microscope eyepiece reticule directly on the rule and read values with the aid of the stereo set at 20X. A useful reticule is the common 10 mm linear scale divided into 0.1 mm divisions (typically a thin 19 – 25 mm glass disc) which allowed repeatable and reliable measurements to ca. 0.02 mm (shown right on a Hemmi P280). The scale touches the rule and thus no parallax error. This method is independent of the mag setting of a continuous zoom model. This allowed a visual assessment of the typical width of a scale mark across its full length which was of



value for slightly tapered marks or those with ill-defined edges; more accurate point to point measurements

typically used in microscopy didn't seem justified for this study.

The widths of inked cursor lines were also measured. Their fineness (some <0.1 mm) and the well defined edges of most, justified a more accurate method than for the scales. A reticule (100 divisions) in the eyepiece was calibrated with a 0.01 mm microscope calibration slide at the stereo's highest 8x magnification. The cursor lines subtended 5 – 13 divisions in the eyepiece field of view.

Given that a mix of new old stock and used slides from near mint to some wear were being measured, any wear in the markings could be a factor affecting measurements. After careful examination, the only rule where felt that wear (or cleaning) was masking original sizing was the oldest, the Faber 367 (see below).

Lighting methods

A benefit of a microscope over a scanner or handheld loupe is that the large working distances allow modelling of the light for revealing any fine surface texture. The typical modern stereo ringlight used with individual lighting quadrants can give some useful modelling but the lights are still close to the stereo's optical axis. A flexible light guide can give more pronounced off-axis lighting by experimenting with the angle and height of the guide with respect to the rules. Much simpler and cheaper lighting approaches can also be used for directional lighting, e.g. a small torch on a stand (see Appendix).

As an example, of the rules owned, the Aristo 0903 Scholar (new) is noted for its 'raised' scales both in look and to the touch (3). Experimenting with different lighting methods with a stereo can reveal the nature of such surface features as illustrated below.



Aristo 0903 Scholar (new). '10' on A/B scale, 20X optical mag.

Left: LED ring lighting using top and bottom quadrants only. This was the flatter lighting used to measure scale widths but isn't ideal for modelling any surface detail.

Middle: LED ring lighting using one quadrant only from the right. This shows the raised ridges around scale marks better.

Right: Light guide placed to right and just above the rule. This stronger off-axis lighting shows the ridges best but at the penalty of more uneven lighting.

A Selection of Images

An optical mag 20X was used for all the images below unless stated, but are not necessarily shown to the same scale depending on the features being shown. An LED ringlight was used unless stated. For clarity, scale bars aren't included as the features serve as their own scaling for these familiar rules.

Left below: Hemmi 257 'Chemical' rule. Plastic on bamboo. Scale width 0.10 mm. Low angled lighting with light guide shows no ridging of scale marks. Although the surface shows abrasion, this rule seems to have normal wear without damage to the scales. Compare with Faber 367 right.

Right below: Faber 367 showing how the scale marks at the numbered scale positions extend beyond the inked area (as they also do for the Hemmi 257 left). To the eye the inked scales on this rule have a 'thinned' look (scale width in current condition ca. 0.07 mm, studies of the few unworn areas suggest originally 0.10 mm). The microscope shows deformation of the plastic stock face into the scale marks. Is this normal wear, or does this together with the visually heavily abraded surface, suggest too heavy abrasive cleaning?



Left above: Hemmi P280, plastic. Scale width 0.13 mm. The scale marks were densely inked and have rather irregular edges but they are not obvious visually and has contrasty scales to the eye.

Right above: British Thornton AD150 Advanced, plastic. Scale width 0.13 mm. Well defined and densely inked scales, coupled with the largest fonts of the linear rules owned, contribute to a crisp easy to read 'look' to the scales. The 'l' numbering is rather stylised cf other rules owned. A microscope (or loupe) also draws attention to the range of font styles used by makers.



Left above: Pickett N902-ES ('new in box'). Scale width 0.13 mm. I only own this one example of a Pickett, so uncertain whether either the brown ink and/or the 'mottled' inking are characteristic, either new or after ageing.

Right above: Blundell Harling 802 Log-Log. Scale width 0.15 mm (not shown). The annotated scales to the eye looked somewhat over inked, seen here on two of the scale indexes. It was most evident with the black inking. Of the linear rules owned, this model had the widest measured scale markings.



Left above: Faber-Castell 1/92 scale detail. Scale width 0.10 mm. Of the limited slide rules owned with so-called 'railroad track' type scales, this was the only example that featured crisply defined tapering of the scale bars as they meet the horizontal lines but not detected by eye.

Right above: British Thornton AD150 Advanced, underside of slider, image field width 5.3 mm. Optical mag 20X. To the eye there is a hint of surface structure. Under the microscope with low angled side lighting from the light guide, this structure is seen more clearly. Possibly the result of a milling operation on the



Left above: Faber-Castell 2/83N. Scale width 0.13 mm. In my new example from the Faber-Castell shop, there is pitting in many of the black and red inked scale marks. There are extensive whitish deposits, some inked, in the scales, especially along edges. Seen as encroaching material (arrowed). Not sure if there's incursion of the plastic of the stock into marks or deposits from the manufacturing process but gives a less contrasty 'look' to the scales cf some other rules owned.

Right above: Faber-Castell 2/83N. As well as pitting, there is what looks like metal particles embedded in places, seen here in the top of the '3' (above the two black dots).

A microscope can focus through glass / plastic faces to allow closer study of features as well as take measurements without dismantling. The paint on my example of the Matsku KL-1 pocket watch shown left below is mottled which may contribute to its attractive matte look to the eye. The flexible light guide was used to give side lighting to emphasise this mottling. Scale width 0.12 mm.

Also shown below is the base and tip of the tapered pointer (0.40 - 0.10 mm wide) of the KL-1 with stereo set at 50X.





base?

From Peter Hopp's extensive studies of pocket watch slide rules (5), my example of the Matsku KL-1 is a '3-screw' and 'thick pointer' variant. Peter shows in his article that some 'Sunshine' branded models have thinner pointers.

The four images below show edge-on views of sliders, to illustrate varieties of scale construction (all with stereo set at an optical mag of 50X).

Right: Pickett N902-ES with 'Eye-Saver' yellow finish (seen as top yellow strip with surface inked scale marks). By calibrating the camera image field of view with a micrometer microscope slide and measuring the pixel depth with Adobe CS2's measuring tool, the even paint film was calculated to be 0.043 mm thick.

Right: Aristo Scholar 0903 showing its scale ridges. The profiles of the Aristo and Faber-Castell 1/92 below are illustrated with typical measurements in Dieter von Jezierski's invaluable book 'Slide rules. A Journey Through Three Centuries' (6).

Right: Faber-Castell 1/92 with the distinct 'V' shaped scale profile. The Faber 367 and Hemmi 357 showed similar features.

Right: British Thornton AD150 Advanced. A more angled view to show slider top and edge (at the expense of depth of field). The rectangular section scale marks are seen also with some incursion of plastic into the scales on slider edge, likely caused by normal use and wear.

The images below show how the relative widths of scale marks to cursor line vary between models possessed (quantified in later bar chart). The Faber 367 (left, with worn scales) and Hemmi 257 (middle), both have glass cursors and the cursor lines are noticeably thinner than their scale widths. For a glass cursor, the 257 cursor line has very well defined edges.











Most rules possessed with plastic cursors had lines of similar width to the scale marks e.g. the Faber-Castell 1/92 (upper right and) and 2/83N (lower left). A marked exception was the Unique Log-Log (lower right), with a cursor line noticeably wider than its scales (and to a lesser extent also seen for the Aristo 0903).

Measurements

1) Scale and font sizes: A bar chart summarising the scale measurements is shown below in decreasing order of scale width. All rules are 10" / 25 cm linear models unless otherwise stated. For clarity, error bars aren't shown but features could be repeatedly measured to ca. +/- 0.01 mm (or visually averaged if uneven or tapered edges) using the reticule and using the stereo at 20X as aid. Although for all measurements presented it was trends and any extremes that were of interest rather than absolute values.

Of the '25 cm' rules owned, the width of the inked scale markings varied within a range of ca. 0.07 mm; from the narrowest at 0.08 mm (Unique Log-Log) to the widest at 0.15 mm (Blundell-Harling 802 Log-Log). Subtle variations within the main group were barely noticeable to the eye, but models compared towards both extremes were more distinct. For example, the Blundell-Harling's thickest markings did give a noticeable over inked and denser 'look' to the rule of those with thinner scales such as the Aristo 0903.

The scale width of the one 12.5 cm rule studied, the Reiss 3212 (0.12 mm) and the Matsku KL-1 watch (0.12 mm) both had values that were comparable to the larger rules. Of all the rules, the 20 cm IWA 0272 had one of the thinnest (0.09 mm) with a very crisp look to the scales. Overly thin or thick markings may affect a rule's use as well as likely limitations in what is practical to make for a given style of rule.

The number height of main scales for the 25 cm rules varied over a wider range, ca. 0.5 mm. The differences were particularly noticeable if the two extremes, the Unique Log-Log (the smallest at 1.30 mm) and British Thornton AD150 (the tallest at 1.80 mm) were viewed side by side. Of all rule types, the tall, thin (and to my eye, elegant) numbering on the Matsku KL-1 watch was distinctive. The number height of the Reiss 3212 12.5 cm rule was the lowest at 1.23 mm, presumably for clarity on a pocket rule.



2) Scale alignment: The rigorous review of 29 'student' slide rules in the May 1961 issue of the consumer products review magazine 'Which?' included full scale length and end of scale misalignment measurements accurate to 0.01 mm and noted that any misalignment greater than 0.02 mm was visible to the unaided eye (8, 10). This finely tuned ability of the eye to align marks is known as hyperacuity or vernier acuity as it is exploited in the use of verniers and is typically cited as over 5X better than its limit of visual acuity i.e. the ability to *resolve* finely spaced detail (7, 9). The 'Which?' review found examples of rules that had scale differences from less than 0.02 mm through to 0.1 mm; misalignment of 0.04+ mm becomes increasingly obvious to the unaided eye (see image of vernier at ref. 8 and Blundell-Harling below).



Left above: Faber-Castell 2/83N (new) W_2 / W_2' scale. With lefthand end perfectly aligned under the stereo, a misalignment of ca. 0.05 mm at righthand end was visible to the eye.

Middle above: Blundell Harling 802 (new). Scale misalignment was marked, especially the righthand end of A/B scales of ca. 0.08 mm. Perceived misalignment was exarcerbated by the differential inking of scale marks between slider and stock.

Right above: Faber-Castell 1/92, lefthand end of A/B and C/D scales. Age and a slight twisting of wooden stock may be contributing to the lefthand misalignment of C/D scales of ca. 0.06 mm. My oldest rule, the Faber 367 also showed A/B scale misalignment of ca. 0.06 mm.

For the examples shown above, I inspected my own rules by eye and used a loupe to narrow down those models with some visual misalignment at either end of scale. The stereo microscope then allows this alignment to be measured (I aligned the '1' at left of A scale accurately to assess alignment elsewhere. (The full scale length measurements described by 'Which?' would require a travelling microscope.)

3) Cursors: For all rule types owned, the cursor widths varied over a range of ca. 0.11 mm as shown in the chart right (for duplex rules, the width for front face is given). The finest lines were on the two '25 cm' rules owned that had glass cursor plates, i.e. the Faber 367 and Hemmi 257. Unique had models with both one of the widest cursor lines and one of the finest; the Log-Log and Brighton respectively. Again, subtle variations within the main group were barely noticeable to the eye, but models compared towards both extremes were quite distinct.

The chart right also illustrates that of the rules owned, there was no obvious correlation between the widths of the cursor line relative to each rule's scale marks. For many where the difference was slight this wasn't noticeable visually but was evident for the extremes; i.e. the Faber 367 and Unique Brighton where the cursors are thinner than the scale marks and the Unique Log-Log where cursor was thicker than the scale marks as illustrated earlier. Comparison of widths of scale mark and inked cursor line



Of course, without studying multiple examples of a given model for the parameters measured above, variations could to a greater or lesser extent be manufacturing variations within a given model as well as differences between maker / model / vintage.

The stereo microscope at its highest mag also revealed different cutting profiles of the cursor lines, from a 'V' shaped notch, gentle curved depressions to straight sloping sides with flat bottom.

Potential merits of the low power microscope over other optical aids?

There are a variety of quality handheld optical aids available with mags from 5X to 20X and beyond. I own and regularly use a selection as do no doubt many collectors to reveal the finer features of rules. Handheld aids are all considerably cheaper than a good quality stereo microscope and more portable. I'm fortunate to have access to a good stereo as part of my other interests but it's arguable if a stereo could be justified solely for slide rule studies. The benefits I found for the stereo over handheld optical aids were as follows.

1) Hands free and relaxed use of both eyes for extended studies with the much greater working distances than loupes allowing space for modelling the light. The four quadrant ringlight was extremely useful for this sort of work for quickly changing light orientation to bring out subtle surface features. Simpler directional lighting can readily be devised using e.g. small torches on stand etc (see Appendix).

2) Mags beyond 20x and higher are more suited for stereo studies than most handheld optical aids. These include studies of slider edges for nature of scale manufacture and details of cursor lines.

3) Measurements of finer features or scale alignment. Some handheld optical aids do have built in scales but many aren't suited for measurements of features at or below 0.1 mm. The eye has been shown to detect scale misalignment on slide rules of 0.03 + mm(8).

4) Studies of inaccessible features. A stereo can focus through e.g. glass / plastic faces of pocket watch and similar rules without dismantling to study features such as the scales and pointers, as illustrated for the Matsku KL-1 above or lines on cursor plates that don't wish to remove such as screwed duplex designs.

5) If photography of fine features is of interest a monocular or stereo microscope is valuable. A dedicated photo port on the microscope isn't vital as there are a variety of approaches to capture images, such as in-eyepiece microscope cameras or suitable consumer digital camera supported over an eyepiece. Handheld solely digital microscopes are also available that connect to the computer to view the image on the screen; a variety of models are widely available on eBay and elsewhere. Macro lens attachments for mobile phones and adaptors to attach mobile phones to microscopes also allow close-up imagery to be quickly shared.

Concluding remarks

Is there any merit in studying the rules much beyond the capabilities of the unaided eye (7, 8, 9) or low power loupe? Exploratory microscopy studies of my own rules was certainly most enjoyable, informative and gave me an insight as a novice collector into the 'look' of a rule, the nature of their construction and if any flaws. Taking the detailed measurements was an interesting exercise, not as remarked for absolute measurements, but for spotting trends and extremes. The results can only be a 'snapshot' of the limited examples I own so can't comment on whether these type of studies have a wider value in learning about the rules in a collection. Although formal measurements did draw my attention to some features. For example, although the eye readily spots the overinking on my example of the Blundell Harling 802, it was only after completing the measurements that I appreciated that the IWA 0272 had one of the finest and crispest scales or noticed how fine the cursor lines were on the rules with glass plates with respect to scale marks cf the broader lines on more modern examples with plastic cursors.

Such studies also raised queries for me on other aspects of slide rules. For example, does the fineness of the cursor line relative to the scale marks affect reading accuracy of the last significant figure; do the makers decide on a cursor line width relative to mark width and/or does the cursor plate material dictate limitations? A stereo microscope may also have a role in showing how different cleaning protocols are best for minimising rule damage. My example of the Faber 367 may have been cleaned with a too abrasive method as the deformation of the plastic into the inked scales did not look like normal wear of other rules owned.

Of the 'modern' rules I own, my two favourites overall in my modest collection for 'look', handling and use are the British Thornton Advanced AD150 and my original first slide rule, the Hemmi P280. But the Faber 367, the oldest rule I own and the Faber-Castell 1/92 with their beautiful craftsmanship are a delight to handle. For learning how to perform more complex calculations, the Faber-Castell 2/83N enjoys regular use.

Appendix: A simple low power microscope

The design on the right (shown in use studying a record player stylus with simple directional torch lighting) is a widely available monocular with sturdy metal body and a fixed mag of 20X (2X glass achromatic objective with 10X eyepiece). I no longer have my example but believe should be suited for slide rule studies. As

remarked earlier, a monocular is better suited to photography of plane surfaces with a suitable camera than a stereo. Rotating the optical head around on the support and with a weight on the base would allow rules of any size to be laid on a desk for study. This model is recommended by the Royal Microscopical Society (UK) for first time young microscope users but suitable for any age as 20X is ideal for exploring the world around us without the sample preparation required of a compound microscope; so it could have a dual role in the family. Typically £50 from UK microscope dealers. The versatility of this design for both visual and photographic use is described in ref. 4 below.



The traditional compound microscope typically seen in use in labs and schools may have both the option of lower power objectives

and a module for lighting and studying opaque subjects, but their much smaller working distances and small stages primarily intended for microscope slides make them less suited for regular slide rule studies.

Acknowledgements

Thank you to Peter Hopp for encouraging me to share my microscopy explorations of slide rules and for kindly informing me of reference 10'. Any errors in the article are solely mine.

Thank you to Rod Lovett for his invaluable website <u>http://sliderules.lovett.com/</u> allowing research of the slide rule literature.

References and Notes

1. van Poelje, Otto E., *Which Dividers to use on Gunter rules*, UKSRC Slide Rule Gazette, 2008, Autumn, Issue 9, pp. 65-71.

2. Walker, David, *Comparing the depth of field of two types of flatbed scanner, a CIS and a CCD model*, 'Micscape Magazine', January 2013, <u>http://www.microscopy-uk.org.uk/mag/artjan13/dw-scanner-type.html</u> accessed 22/05/2013.

3. Mosand, John, The Aristo Scholar Series, Journal of the Oughtred Society, 2005, vol. 11, no. 1, pp.63-64.

4. Walker, David, *Getting started with a low power microscope*, 'Micscape Magazine', December 2005, http://www.microscopy-uk.org.uk/mag/artdec05/dwmicro20x.html accessed 22/05/2013.

5. Hopp, Peter M., *It's all in the detail More about Russian pocket-watch slide rules*, UKSRC Slide Rule Gazette, 2012, Autumn, Issue 13, pp.103-107.

6. von Jezierski, Dieter, *Slide Rules. A Journey Though Three Centuries*, Translated Second Edition, 2000, Astragal Press, Fig. 17A, p.31.

7. The visual acuity of the unaided normal human eye is typically cited as just being able to *resolve* black and white lines ca. 0.1 mm apart at a viewing distance of ca. 30cm, e.g. in the article *Visual Acuity of the Human Eye* at the link below, the acuity limit is cited as 0.00349 inches at 12 inches, i.e. (0.09 mm at 30.5 cm.). http://www.ndt-ed.org/EducationResources/CommunityCollege/PenetrantTest/Introduction/visualacuity.htm accessed 05/06/2013.

Visual acuity is likely less relevant to slide rules than what is termed 'hyperacuity', i.e. the eye's ability to align fine black lines or spot their misalignment. See reference 8.

8. *Slide Rules*, Which?, May 1961, pp. 116-119. Published by the Consumers' Association Ltd in the UK. (Republished as part of ref. 10.)

A rigorous review of 29 'student' models from 11 European manufacturers. The tests included 10 000 slider and cursor cycles at 20 cycles a minute (not all rules survived!). They measured the full length of A-D scales to 0.01 mm before and after tests which would likely require a form of travelling microscope. Scale alignment between slider and stock at both ends was also measured which could use either a static or travelling microscope. They noted to what extent a difference in scale alignment was visible to the unaided eye as follows (models fitting within all these groups were found and stated):

0.02 mm or less - 'no visible differences'

0.03 mm - 'just visible'

0.05-0.06 mm - 'visible as slight errors'

0.1 mm - 'distinct errors'

The eye's 'hyperacuity', also called 'vernier acuity', is typically cited at 5-10x greater than its visual acuity to resolve detail (9).

A vernier caliper reading to 0.02 mm is a good demonstration of the alignment categories noted by 'Which?' in their review. A close-up of a Draper Expert caliper with scale mark widths comparable to slide rules is shown right. ('R' - 1.0 mm scale divisions, 'V' - vernier reading to 0.02 mm). From left to right the scale



and vernier marks are offset from 0 to 0.1 mm in 0.02 mm increments. On this magnified view, the 0.02 mm offset is just visible but not to my unaided eye (in isolation to other marks).

This also illustrates the demands placed on the slide rule manufacturer even for their cheapest range. A misalignment of 0.04+ mm on a 25 cm rule is becoming noticeable to the user as it is over third of the width of a typical slide rule mark.

9) Bach, Michael, *Visual Acuity – Hyperacuity*, web page includes an interactive demonstration which allows a user to compare their own visual acuity and hyperacuity. <u>http://www.michaelbach.de/ot/lum_hyperacuity/</u> accessed 15/06/13.

10) Soole, Peter, Troubles at Blundells, UKSRC Slide Rule Gazette, 2003, Autumn, Issue 4, pp. 57-61.

NEW YORK MICROSCOPICAL SOCIETY BULLETIN

Vol. 1 New York, N. Y., February, 1936

No. 1

THE MYCETOZOA

ROBERT HAGELSTEIN

The Mycetozoa, Myxomycetes, or Slime Molds, as they are variously named, are an interesting group of organisms that have both animal and vegetable characteristics, yet are not definitely intermediate. They produce fruiting bodies with spores, which resemble certain fungous growths, and the formative processes of these bodies are similar to those of some of the fungi. The spores when wetted, however, germinate into small amoeboid bodies which develop flagella, move, feed, and multiply by division, and are regarded generally as Protozoa. After some transformations, they fuse in great numbers into a mass of naked protoplasm, with many nuclei, called the plasmodium. The plasmodium moves by extending pseudopodia in the direction of its movement, feeds on bacteria, and increases in size by the division of the nuclei. It may grow to a size of several feet across, functions like a multinuclear amoeba, and is regarded as an animal. The plasmodia vary in color and size in different species, and are sometimes confined to a particular habitat; otherwise, there is no way of differentiating between various plasmodia. This vegetative phase of the Mycetozoa, as it is called, may continue for weeks or months, until the time arrives-depending on several factors-when the plasmodium must go into fruit in order to perpetuate the organism. The plasmodium emerges from its habitat, wood or ground, and by changes which are close to fungous processes produces sporangia which simulate vegetable growths, but which perform no further living functions, and are dead except for the germ of life contained in each individual spore. The process occurs usually at night, and in the morning the area close to the last position of the plasmodium is covered by the sporangia or fruiting bodies, often in great numbers. The life cycle is then repeated through the germination of the spores.

The unprotected plasmodium is delicate and subject to destruction in dry or cold weather. Under such conditions, the mass may transform itself into a hard, brittle substance, known as sclerotium, which is inactive, but which will revive with warmth and water. In this condition, plasmodia will survive the winter months or other unfavorable periods.

The fruiting bodies, excepting one species which produces sporophores, are of three kinds. True sporangia, produced by the majority of the species, are often in thousands of individuals from a single plasmodium, and are almost symmetrical and uniform in shape and size. Most of them are small, averaging about 1 mm., but in some species they reach a height of from 15-25 mm. They may be sessile or on stalks of varying height, and exhibit great diversity in form, color, and structure, among the different species. Plasmodiocarps, produced habitually by certain species and frequently by others that normally produce true sporangia, are sporangiate in character, particularly in their internal structure, but are not uniform in shape or size. The form may be extended in the linear direction many times the height or breadth, and again curved, serpentine, ring or crescent shaped. The form may be in thinly or thickly effused masses, or there may be a netted structure with numerous meshes or openings. In the latter formations the plasmodiocarps may extend several inches. Plasmodiocarps, usually, are sessile; are frequently produced in considerable numbers by an individual plasmodium; and occur often along with true sporangia in the same fructification. The third form is the aethalium. Here the entire mass of plasmodium forms one or a small number of fruiting bodies. Aethalia are much larger, as a rule, than sporangia or plasmodiocarps, and in some developments a single one may be as much as a foot across. The aethalium consists of confluent sporangia, the intervening walls more or less developed or degenerate, and the whole covered by a firm or fragile cortex or wall.

The Mycetozoa require for their development a habitat of decaying vegetable material, with warmth and moisture and the consequent growth of bacteria as a food supply. The plasmodia thrive in decaying wood,-preferably in the earlier stages of decay-leaves, twigs, refuse and manure piles, and the ground, wherever favorable conditions prevail, and travel through the crevices and cavities in the search for food. The fructifications are produced on the habitat or in close proximity thereto. The time for their most prolific development is in the months from June to October inclusive, although they may often be found in the other months including those of the winter, if weather conditions are propitious. The fruiting bodies are not so common during long periods of wet or dry weather, but in the first week or so of dry weather, after a rainy spell, they may be expected in abundance. They may be sought for in the most unusual places, but more successfully in places well suited for their development and with much habitat material. Such localities are secluded forest areas with large trees of different kinds. There should be many fallen trees and logs in various stages of decay, with undergrowth and bushes to provide shade. The situation should be moist, either by the natural topography of the land and drainage, or by the presence of brooks, lakes, or springs. Localities suitable for mushrooms and other fungi are also fit for the Mycetozoa. It is surprising how many species may

be found in a small unit if repeatedly visited and intensely searched, and it is not unusual to collect fifty or more species in a single day.

Specimens of the fruiting bodies, that are collected in the field, should be transported in old cigar boxes into which a layer of corrugated cardboard has been placed at the bottom. They should be pinned therein with pins having large glass heads. On arrival home, the specimens should be removed, trimmed somewhat of the unnecessary wet material, and placed in porous, cardboard boxes so that they will dry thoroughly. Precautions should be taken against insects and the growth of molds. When dry they should be trimmed to the size desired and glued into small cardboard boxes, where, with the addition of a pinch of ordinary naphthalene flakes, they will keep indefinitely.

The classification of the Mycetozoa is based upon the characters of the fruiting bodies, and, following Lister, the group is regarded as a class and divided into two subclasses, the Exosporeae and the Endosporeae. The former has but a single species, Ceratiomyxa fruticulosa, which develops sporophores with spores on the outside. All other species are in the Endosporeae and develop sporangia or similar bodies with spores on the inside. The Endosporeae are divided into the orders Amaurosporales with spores violet-brown or purplish-gray in color, and the Lamprosporales with spores variously colored, but not violetbrown or purplish-gray. The Amaurosporales have two suborders, the Calcarineae, in which the sporangia are provided with lime, and the Amaurochaetineae, which have no lime. The Lamprosporales have two suborders, the Anemineae, which have no capillitium, and the Calonemineae, in which a capillitium is present. These suborders are again divided into 13 families, 53 genera, and about 400 species. There are some exceptions in the various divisions of the classification, but on the whole it is satisfactory and workable so that the great majority of the common species can be determined without much trouble, if the specimens are fairly typical. All sorts of intermediate forms do occur, and these present problems, and are of great interest from an evolutionary point of view.

In studying the Mycetozoa for the determination of species, certain field conditions should be noted such as the size of the fructification, the habitat, the color of the plasmodium, if seen, and whether the sporangia are closely aggregated or scattered. The microscopical examination, at first, should be as an opaque object, with a few of the sporangia blown out by a small hand blower to free them from spores. After that a few of the blown out sporangia should be picked off, placed on a slide in water under a cover glass, and examined by transmitted light. The water may not permeate sufficiently to drive out the air in which case a mixture of water and alcohol will work better. Badly contracted spores may be swollen rapidly by the admission of a drop of a five per cent solution of potassium hydrate in water, but this has a tendency to alter the color of the spores of certain species. Permanent preparations may be mounted in glycerine, glycerine jelly, or canada balsam,—remembering that glycerine is not suitable for forms with lime—but is only required for certain purposes, and the examination in water is all that is necessary. The main characters recognized in the classification of species are the shape, color, wall or peridium, and the spores; the absence or presence of lime, stalk, columella, and capillitium; and the form, size, color, and markings that may apply to them. There are others, but those must be studied in the two excellent monographs on the group, which the student should acquire.

The British work entitled "A Monograph of the Mycetozoa" is by Arthur Lister and revised by Gulielma Lister. It has about 328 pages, with 112 double plates, more than half of which are in color. It is indispensable, and is published by the British Museum. The American monograph by Macbride and Martin is called "The Myxomycetes" and is published by the Macmillan Company of New York. It has 339 pages with 21 plates of black and white drawings. This work lays particular emphasis upon the American forms, which often differ materially from those found in Europe, and the work is equally important to the American student.

The collection and study of the Mycetozoa presents an almost untrodden field. There have been few students, and there are few today, as compared with the many in other pursuits. There are opportunities for research, not only in the morphology and physiology of the group, but in the taxonomy. The roaming and collecting through the forests is a healthful hobby, with many thrills that come when an interesting form is found. The beauty of the fruiting bodies, with their variety of form and color, and the study of their curious life history provide fascinating subjects for the microscopist.

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January 2007

N.Y.M.S. (973) 744-0043

Volume 1 Number 1

Meeting Announcement: 2007 Winter Lecture Series

"Effects of gravity on cultured bone cells"

Dr. William Landis, Professor, Department of Microbiology, Immunology and Biochemistry and in the Department of Orthopedic Surgery at the Northeastern Ohio Universities College of Medicine

Thursday, January 25th, 2007, 7:30 pm American Museum of Natural History, People Center, New York, NY

Many bones of vertebrates normally adapt to changes in mechanical forces, including the force of gravity. Typically the mass of responsive bones increases or decreases with increasing or decreasing force, respectively. This presentation will describe compositional and structural effects on cultured normal bone cells flown in microgravity during a series of NASA Shuttle spaceflights, retrieved on landing and analyzed by molecular biological techniques and light and electron microscopy. The data will be compared to results from the same cultured bone cells maintained at normal (1G) gravity. The information obtained from the NASA flights provides insight into the means by which bone mass is lost by astronauts in spaceflight and can be extrapolated to the observed bone mass loss in individuals confined to bed for long periods of time or lacking exercise and other forms of physical activity.

William J. Landis, Ph.D., is a professor in the Department of Microbiology, Immunology and Biochemistry and in the Department of Orthopedic Surgery at the Northeastern Ohio Universities College of Medicine (NEOUCOM) in Rootstown, Ohio. He holds joint faculty appointments at Kent State University, the University of Akron, Case Western Reserve University and the University of Pennsylvania. Prior to his relocation to NEOUCOM eight years ago, he was an associate professor of Orthopedic Surgery and Anatomy and Cellular Biology at the Children's Hospital and the Harvard Medical School, Boston. He has research interests in biomineralization, tissue engineering, and the effects of mechanical forces on mineralized tissues, and he has published more than 125 peerreviewed journal articles, book chapters, and reviews in these areas. His long-standing research programs are supported principally by the National Institutes of Health and the National Aeronautics and Space Administration. He has been a Senior Fulbright Scholar at the Weizmann Institute of Science in Rehovot, Israel, and the recipient of several honors and awards for his research studies. He is a member of numerous scientific organizations, including MSA, MAS, the New England Society for Microscopy (NESM), and the Microscopy Society of Northeastern Ohio (MSNO).

NYMS Members and their guests are welcome to join the speaker for dinner (\$25.00 all inclusive) at 5:45 pm at Calle Ocho (http://www.calleochonyc.com/), 446 Columbus Ave., NYC. Please reserve your place(s) with Angela Klaus by noon Jan 23rd. Angela can be contacted by email (avklaus2@yahoo.com) or by phone (201-988-6251).

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The object 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.

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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 by visiting the NYMS website. Buy and Read a Good Book on Microscopy.



Xuan Liu, October 2006

Xuan Liu came to the USA, and specifically to John Jay College, in June as a visiting scholar from China. Xuan is an Associate Professor in Forensic Science at the Yunan Province Police Officer Academy. Her degree is in forensic science, and her research interests include criminalistics, trace evidence and crime scene reconstruction. Xuan will be here until June 2007, when she returns to China with the wealth of knowledge that she will have gained. Xuan Liu attended our Use Of The Microscope course.

Holiday Banquet 2006



Some NYMS members and guests enjoying Happy Hour before the feast.



Mystery Photo – Do you think you know what it is? Email or phone me your answer. Mel



A Thanksgiving card to all the members of NYMS from Fred Smokay in Florida.

Fred: The same and Happy New Year's from the gang at NYMS.

Did you know that NYMS has numerous microscopes and related items for sale? **Did you know** that NYMS now has a small machine shop for use by its members?



Guest speaker Dr. Gary Hunnicutt with a most interesting presentation at our Holiday Banquet. I believe we came away with a fresh understanding of what is occurring during the passage of spermatozoa through the epididymus. I found the images depicting the changes to the anatomy of the spermatozoa, during its passage to the uterus, to be uncomplicated, yet lending a comprehensive understanding of the changes between the male and female fluid dynamics and chemistries comprising these wonderful systems.

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Former President Pauline Leary receives the Ashby Award from President Peter Diazcuk.



Marge Walsh, past president, receives the Ashby Award from President Peter Diazcuk.

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MT-003	Small Microscope or Stereo	\$18.00	\$20.00
MT-004	Lab Microscope or Large Stereo	\$23.00	\$25.00
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MT-009	Large Lab Scope with Camera	\$31.00	\$33.00
MT-010	Universal Scope with Camera	\$36.00	\$40.00
MT-012	X-large Scope	\$45.00	\$50.00

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Arabo-ascorbic acid, 100x (P1210835)a: Mel Pollinger image



Paramecia conjugating, 150x, D.I.C., May84, Eric Gravé image