



MicroNews

San Francisco Microscopical Society

Volume 3, #4 September 2008

WHAT MY MICROSCOPE REVEALED

The most common items can turn out to be quite a revelation when studied at higher magnification. After peeling an orange, I noticed that each segment was filled with pulp that consisted of oblong juice-filled containers. Are these extra large cells or some other plant structure? If you know the answer, please send the info to Micro News.

HS

Please send to: HSchott@aol.com short accounts of what you have observed through your microscope.

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Keeping SFMS Running Smoothly

June Board Meeting Under Acting President Linda Wrxall

Four persons attended the board meeting including Bill Heib. It started right after lunch with a short report from each of the officers. With only three officers in attendance, discussion was held to a minimum and when editor Schott asked for an allocation of three hundred dollars for the publication of Micro News for the period 2008-2009 it was approved unanimously. Micro News is well received and the editor was complimented for its quality.

The board also allocated 70 dollars from the general fund for the publication of the next directory to be issued sometime in February 2009. The cost includes mailing costs.

Training for the first "class" on the proper use of the SFMS Ultraphot microscope was conducted by Helmut Will who had spent considerable time learning the various controls and setting up the microscope and making it opera-

tional. The students included Bill Heib, Peter Barnett, Terry Codrington and Henry Schott. Participation in a training session is required before members may use the microscope which represents a value of several thousands of dollars. After training, arrangements may be made with Peter Barnett for its use. If there is sufficient interest, an effort will be made to attach a digital camera to the microscope.

The board took note of the death of Herbert Daubner, a long-time member. Condolences were sent to his widow.

The Society has a brochure that is used to interest people in the activities of the society. Several years ago, a large number of copies were printed and distributed through libraries and personal contacts. Since then, the dues structure was revised and we adopted the Randall Museum as our sponsoring institution. It is

time to revise and reissue the three-fold brochure. The revision will be presented to the board by H. Schott but distribution will require member volunteers who will take the copies and arrange with local institutions such as colleges and universities to place them where potential members can find them.

Bill Heib suggested that we place a list of equipment owned by the society on our web site so that members would know what was available for use.

He further proposed that the membership be able to request from the board that the society purchase specific items of equipment such as a heated stage and CD camera for the Ultraprot.

Bill Hill reported on the proposed meeting for September 9 and the need to hold the November meeting a week later than usual because of the 11/11 holiday. HS

Microscopy Videos, The "How To" For Anyone To Learn

The vast amount of information that has accumulated is, to the modern student, available through the search engines of the internet. Unfortunately, it takes a powerful computer to quickly download long videos. Since we know that images can quickly transmit and reinforce complicated information, it is invaluable to have many illustrations available when learning new techniques in microscopy.

In the March 2008 issue of

MICROSCOPY TODAY (Vol. 16:2, pp 50-56) the Microscopy Society of America (MSA) published its list of DVD tutorials on many subjects related to microscopy. Many of the titles are related to electron microscopy but there are some interesting titles for those interested in light microscopy. For example, #15, Glycol Methacrylate Embedding for Light Microscopy, 60 minutes, color, Presented by Moe, 1980, is one of the older titles. Since there

are at least 306 DVDs available, if you are interested, you may view the catalog at: www.msa.microscopy.org/MSAUnits/Education/Videocatalog.html

The price structure is quite simple. Older titles are \$8.00 and the more recent (1998+) are \$15.00.

Should the Society's members decide to form a library and have a librarian willing to manage it, some DVDs would be a worthwhile addition. HS



Using a hand built Leuwenhoek microscope, Michelle Caisse examines cork cells

MODERN MEDICINE

...[student doctors] took turns carrying [medical books] home and copying out chapters and sketching diagrams by hand. But even that laborious process was an improvement from the school's status a few months earlier. Dr. Nazir Abdulo, a pediatrician, explained that while the Taliban had ruled Kabul, they had banned all books with illustrations and publicly burned any they found. Armed Taliban enforcers from the despised Department of the Promotion of Virtue and the Prevention of Vice had stood at the rear of the lecture hall during class, making sure the school's professors didn't draw anatomical diagrams on the blackboard.

"We are textbook physicians only," Dr. Abdul said. "We don't have the most basic tools of our profession. We have no money for blood pressure cuffs or stethoscopes. And I, a physician, have never in my life looked through a microscope."

Three Cups of Tea: One Man's Mission to Promote Peace...One School at a Time. By Greg Mortenson & David OliverRein Pp 287-288 Penguin Books 2007

"-he may have been the only one around who used a microscope to make diagnoses."

San Francisco Microscopical Society

Examples of DVDs Available from MSA

Confocal Microscopy System Performance: Spectroscopy and Foundations for Quantitation by R M Zucker

Basic Confocal Microscopy - Part I

Basic Confocal Microscopy - Part II - by J. Jerome & R. Price

Round Table: Safety Issues in the Microscopy Lab, (60 minutes). by S H Silvers, : E. Boylston

Microscopy & Microanalysis Over The Net by N J Zaluzec

Introduction to Confocal

Microscopy by Anda Camea 1999, \$8.00

Tech. Roundtable: Photoshoph 101 1998, \$15.00

Ethics in digital imaging Presented by S. Silvers, J. Kinnamon, R. Mattson, S. Dunn 1998 \$15.00

Five dimensional microscopy using wide field deconvolution, Practical considerations and biological applications, (50 minutes). 1996, Presented by W.F. Marshall

Recent Advances in Light

Microscopy by B. Herman

Uses of Microscopy in the Crime Lab by McAdam # 218, 1999

Miniaturized Artificial Machines in Biology by Multiple Speakers 1998 # 209

Recent Advances in Light Microscopy by B Herman circa 1994 # 168

A Few Words on Bits and Bytes: A Tutorial on Image Spectral Processing for the Novice, (120 min.) by J. F. Mansfield 1995 # 179

A Familiar Catalog of Stains and Tools for Microscopists

Edmund Scientific

We do not, in Micro News, tout specific programs or merchandise but we do try to remind older readers and bring to the attention of younger members the sources of inexpensive useful materials related to science and microscopy. A good example are the stains used in slide making. These are not easily available but Edmund Scientific offers three different kits ranging from \$20 to \$130

in price. While the most recent Fall 2008 catalog lists a number of microscopes, we usually recommend the purchase of a second hand microscope from a reputable dealer who refurbishes microscopes they take in trade when they sell to colleges and universities. Two models in the catalog caught my eye. One, by Celestron, the telescope maker, uses a 3.5 inch LCD screen instead of a eye piece. It might be useful for very young children although the \$300 cost seems high. The

second is the DigiScope with Motic Play Software that must be plugged into a laptop or table top computer. Magnification ranges up to 210x for about \$200.

Many laboratory instruments are available that will provide, at a reasonable cost, the equipment needed for amateur work including a digital 200g max balance that is accurate to +/- 0.3g. For the young scientist in your family there are many interesting gifts kits.

THE MAYO CLINIC

We all recognize the name of this famous medical institution in Rochester, Minnesota. It is named for William Worrall Mayo, who was a science student in England, studying under John Dalton. It was Dalton who in 1803 formulated the atomic theory of chemistry.

Mayo sailed to New York in 1845 and worked as a pharmacist at Bellevue Hospital. Four years later he moved his family to Indiana where he studied medicine in Dr. Eliezar Deming's Medical College. The course lasted sixteen weeks. "Mayo and his 104 fellow students were forced to share a single microscope. This put them one up,

however, on students at Harvard Medical School, which wouldn't provide its first microscope for another twenty years."

"Mayo's unique education sparked a lifelong passion for chemical analysis, with what might be found by looking deeper — or just to the west. Traveling by horse and buggy in 1854, he left the malarial climes of Indiana and lit out for the brisker weather of the Minnesota Territory to set up a practice. Known as the Little Doctor because of his five-foot-four stature, he may have been the only one around who used a microscope to make diagnoses. In much the same spirit, he

pioneered ovariectomy — making abdominal incisions into ovaries to determine whether tumors were present — and refined the technique of what was all too accurately called kitchen surgery."

This rather interesting passage comes from **Physical, An American Checkup** by James McManus, published in 2006 by Ferrar, Straus, & Giroux.

SPHERICAL & CHROMATIC ABERRATION

Spherical aberration results when a simple convex lens will not give a sharply defined image. Rays of light passing near the central axis of the lens will come to a focus further along the axis than those rays passing near the edge or margin of the lens. The image produced is not only indistinct but also has a distorted shape. The defect is greatest in strongly curved lenses, those that have greater magnification. Correction is achieved by cutting off the marginal rays, changing the shape of the surface of the lens and by combining several lenses to make

a system of lenses. Microscope objectives typically are composed of systems of lenses, some of which are doublet lenses (two lenses glued together).

Chromatic aberration results when ordinary light is broken up into its component colors, also called dispersion. Long wavelengths, such as red, are bent the least while violet is bent the most. Correction is achieved by combining different types of glass that have different dispersive power

Cont in columns below



Gregory Antipa and Robert Griffin at the September 9 meeting at the Randall Museum. Both are life members of SFMS and have served as presidents of the Society.

Dr. Antipa will present **Cell Ultrastructure** at the November 18 meeting of the Society at the Randall Museum, 7:30

but comparable refractive power.

Flint glass which is composed of silicate of potassium and lead, has a dispersive power equal to twice that of crown glass which is composed of silicate of potassium and lime, although they both have nearly the same dispersive power. A biconvex lens of crown glass is combined with a concave lens of flint glass to reduce the chromatic aberration. Each type of glass, however, does not treat all colors equally so some further correc-

tion is needed since only two of the colors of the spectrum have been brought to one focus in ordinary achromatic objectives. The uncorrected color rays form the secondary spectrum. In the apochromatic objectives, three rays have been brought to one focus leaving only a slight tertiary spectrum. Compensating oculars are used with apochromatic objectives for best results since they further reduce chromatic aberration.

Based on Basic Microscopic Technique by R.M. Jones HS

MICROSCOPY TODAY (July 2008)

While most articles in *Microscopy Today* deal with electron microscopy, there are in each issue several that provide interesting information about light or fluorescent microscopy. My attention was caught by "Imaging Skin Epidermal Stem Cells: A Review" by Hilda Amalia Pasolli pp48-50. The two defining characteristics of stem cells are self-renewal and pluripotency. They can reproduce with-

out growing "old" and can develop into any of the several organs found in the skin, such as hair and epidermis.

The identification of stem cells was achieved by using labeled (^3H) thymidine incorporated in DNA. Cells that divide infrequently will retain the label while rapidly dividing cells will dilute out the label.

"The bulge" (at the base of the hair follicle) "is an attractive location for skin epithelial stem cells for several reasons: it resides at the base of the permanent part of the hair follicle where stem cells are in a convenient position to regenerate the hair at the end of each hair cycle, and they are in a close and contiguous position to reconstitute wounded epithelium. The deep position of the bulge also guards the stem cells from mechanical stress and from sunlight-induced mutations, which is crucial for cells that must maintain an intact genome for many years.

SFMS Activities — Participate and be active

Board Meeting, September 27

The SFMS Board Meeting is where you can take part in deciding the activities and direction of our society. We start at noon with a potluck and at one with the actual meeting. All are invited to attend at 20 Drake Lane, Oakland, at Henry Schott's home. Please RSVP Henry 510-339-9609 or hschott@aol.com if you are coming to share lunch and let Henry know what you bring.

For Members Only

We have two categories of members, Regular Members and Life Members. Regular Members have the privilege of paying dues every year and they are due now. By mailing your check (\$12) to Treasurer, 20 Drake Lane, Oakland, CA 94611-2613 you will save the treasurer a lot of time and effort. If you really want to make him happy, buy a Life Membership (\$144) and he will never bother you again. HS

What Comes Next

Even though you get Yahoo notices of meetings and activities, we try to let you know what lies ahead before it is upon you. Our regularly scheduled meeting was on 11/11 but that is a holiday and the Randall Museum is closed, so we will meet a week later, on Tuesday, 11/18 at the Randall with the meeting starting at 7:30. There is plenty of parking so car-pool and save on the transportation cost.

SFMS MEETINGS

Stamp



The SFMS Board met at 20 Drake Lane, Oakland on Saturday, September 27, 2008. Minutes will be available at the next general meeting on Tue. 11/18/08

FROM:

Micro News

San Francisco Microscopical Society
20 Drake Lane
Oakland, CA 94611-2613

TO:

MEMBERSHIP INFORMATION

To join the Society, fill in the form available at www.sfmicrosoc.org and mail it to the above address with your annual 2009 dues of \$12.—made out to SFMS.

Life membership is \$144.00

DIRECTORY CORRECTIONS

Our Life Member, Herb Daubner passed away after a lifetime of work with microscopes. He died in February but we were informed in June when we received a message from his wife Ceedola Daubner.

We misspelled the last name of Bill Hieb, (*i before e except after c*). We should have known better.

George Sakaldasis lives at 8047 Coach Dr., Oakland 94605 gesakaldasis@hotmail.com

We have a new member that joined after the Directory was printed: Please welcome: Nancy Lee Gray
2900 Main St
Alameda, CA 94501
510-395-1139
choose4health@yahoo.com

Priya Chandramouli may have left the State—address and e-mail no longer valid.

HOW LIFE STARTED

September 9 Meeting

While a number of people may have replicas of the Leuwenhoek microscope, Al Shinn is the only one in the Bay Area who has held workshops on actually making these replicas. A number of years ago, he led a Saturday workshop for the Society that resulted in at least one member now having his own hand-made replica.

A film maker needed to have a replica for one of the scenes in the documentary he was producing on the theories of how life began and he turned to Al Shinn for this prop. As a result, Al received a DVD of the program that was produced and we got a

chance to see it.

The meeting was well attended by 10 people who enjoyed the popcorn that Bill Hill provided. (Watching a movie requires popcorn!) Although the small hand-held microscope made only a fleeting appearance, the documentary presented the various scenarios that could have brought about life on this planet. Stanley Miller's experiment provided one of the more likely scenarios. He cycled gasses through a closed system that involved heat and "lightning" and produced amino acids and nucleotides, as well as other organic compounds.

The documentary was both entertaining and well made and was enjoyed by the members.

Brian J. Ford Dinner Meeting.

Two long tables in a private room held the members of the forensic group and the Microscopical Society. We joined together to hear B. Ford, a biology research scientist at University College Cardiff in England. He is a fellow of the Linnean Society and the Royal Microscopical Society. His entertaining talk and slide presentation dealt with the communication that exists between plant cells.

He has published several books including *Single Lens, The Story of the Simple Microscope.*, Harper Row, 1985 HS