MicroNews

San Francisco Microscopical Society Volume 6, #2 May 2011

WE NEVER EXPECTED THIS…

What a surprise! I met Mr. Hancock, a SFMS Life Member, on some occasions, when he attended one of our monthly meetings, and this coincided with a business trip to the Bay Area. I also visited him at his factory in Carson City, NV, on behalf of my employer, because we had a business relationship. His company, Micromanipulator Co., manufactured test and inspection equipment for Silicon Valley companies.

Helmut Will

A month ago, out of the blue, the Society was informed that it was one of the recipients of the estate of Robert Hancock of Carson City, Nevada. His estate had been put in a trust and since it was time to dissolve the trust the remaining funds were to be distributed. The share the Society would receive amounted to five percent. The board soon learned that this was a sizeable amount of money and that the trustee would send out about 90% of the funds in a short time and the rest as soon as a full account of remaining costs could be completed.

The board was amazed to receive eighty three thousand dollars, an amount that dwarfed our reserves composed of the Life Membership Fund and donations amounting to ten thousand dollars.

Now comes the very serious task of how to make responsible use of this gift. You have a voice in this task and the board looks forward to hearing your ideas.

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WHO WAS **ROBERT D. HANCOCK?**

When Al Escalante first met Stan, the nickname Mr. Hancock preferred to use, he was wearing a black suit and tie with an English bowler and a beard. Al's secretary added that "*he spoke in a language that was beyond normal*".

It turned out that "Stan" wanted to move his laboratory and scientific instrument manufacturing company from Escondido in southern California to Carson City, Nevada, and needed help in finding the right property. They became fast friends. It is Al Escalante's description of Stan, his friend, that forms the remainder of this article.

"The instruments he manufactured were pieces of art work that looked and moved like fine pieces of jewelry performing non-destruct

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INSIDE

Dr. Louise Glass on Fungal Communication

March 9 Meeting Report

What a great meeting last night, (March 9, 2011) the first but perhaps not the last cooperative event between the S.F. Microscopical Society and BAMS. Our cozy seminar room was packed with folks, and Louise gave a wonderful presentation, her first ever to a non-University/ Professional audience: accessible, interesting and with plenty of great visuals, including movies! Dr. Glass started her evenings presentation with BAMS and SFMS members packed into her lab, up against that way cool Ultra Low Freezer (-83 degrees C!) and lab benches awash in beakers, bottles and other fungally cultural events. It turns out that the new cytological labels are fluorescent rather than radioactive (yay, team), and there is even a special microscope for viewing fluorescent marked slides, a big beautiful Zeiss. Her fungus of interest is the ascomycete *Neurospora crassa*, one that appears in all of its orange glory on burned giant grasses like sugarcane. A similar species in that genus was also

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Dr. Louise Glass of UC Berkeley, who was our March 9 , 2011 speaker.

(Continued from page 1) Dr. Louise Glass

discovered by UC Berkeley researchers growing underneath the burned bark of pines at Tahoe after the recent fires.

When brightly labeled living and growing hyphae are viewed through these fluorescent microscopes, you can see, through color changes within the hyphae, a "dialogue" if you will between hyphal hreads … Louise called it "speaking and listening."

The hyphae use this communication to sense both genetically related material with which to connect up with and create fungal networks, as well as communicate differences and avoidance behaviors, between both genetically different hyphae and growing hyphal tips. Hyphal tips are specifically designed to spread out and prospect for new food sources, and so exhibit avoidance behavior when confronted with other hyphae, even of the same genetic make-up.

She also demonstrated how fungal colonies create demarcations between species in woody substrates. When mistaken interspecific connections are created, they rapidly get walled off and die, preventing the spread of viruses between species. This is what creates a black line pattern in wood called *spelting*.

Not only has Dr. Glass been researching methods of chemo-taxic fungal communication, but her lab is also looking at the production of bio-fuels in relation to some of these cellulose-degrading fungi.

Astute questions from her audience peppered her talk, to the point where one attendee actually "complained" that it was turning into a seminar! Well, yes, and what's wrong with that??!

As a final fungal note, Louise ran the movie of that jazz trio jamming with the fungal music of the spheres...spore drop from laser light, hooked up to various odd "instruments" ala a Rube Goldberg device, with a large audience of folks in the studio listening in, as well as observing the movements and light play. Nice to see it on a big screen and a whimsical end to a lovely scientific program.

But no worries, even in the daze of DNA there will still be a place at the table for field biologists. Somebody has to be able to recognize organisms in all their glory in the field, or what will those lab rats have to work with?! ;)

Posted by: "debbieviess"

amanitarita@sbcglobal.net

Debbie Viess

BAMS list is credited with first publication of this article.

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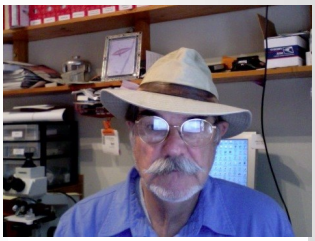

Dr Wayne Lanier, Our speaker on May 11, 2011 at Merritt College. Please see notice on page 8.

Life on a Grain of Sand by Virginia Morell, Edited for brevity from Discover Magazine April 1, 1995 issue, available at www.discovermagazine.com

On this typical sunny morning on this southeastern Florida beach, holidaymakers loll on their blankets and splash in the waves. Walking among them are two rather atypical beachcombers: Robert Higgins, 62 years old, (in 1995) dressed in a T-shirt and shorts and a floppy hat that covers his close-cropped hair; and Marie Wallace, a dark-eyed woman in her mid-forties in similar garb. They carry with them a shovel, buckets, plastic bottles, a fine-mesh screen, and a supply of freshwater--all the tools they'll need for today's scientific expedition.

The animals Higgins has his eye out for are known collectively as meiofauna. . Meiofauna describes animals that fall between two sizes of collecting screens, Higgins explains. The larger screens are made with one millimeter mesh, and scientists use them to winnow out big sand dwellers such as sea urchins and sea anemones. Meiofauna readily pass through such sieves, but scientists can gather them by using the 42- micrometer (.042 mm) screen--a mesh finer than a silk stocking.

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ARENOPHILIA MICROSCOPY

In some box, somewhere, there is a record of what occurred at a meeting of SFMS in the mid 90's. Someone must have put out a notice and perhaps recorded what occurred at that meeting. Unfortunately, access to such records is not available to me. My recollection is vague, partly because it was one of the first meetings I attended, and partly because I was not particularly interested in the topic. What interested me was the Society, composed of people engaged in microscopy and its many applications.

Were we in an East Bay restaurant? Did we eat a meal before the speaker launched into his topic? I have forgotten such details but I know that the speaker made an impression on me and from time to time, I return to the topic of that evening's presentation. I unpack my microscope and look at *harena (or arena*) the Latin word for sand. Roman arenas were covered in sand to soak up the blood.

The latest impetus to study this subject is the confluence of a neighbor's trip to Hawaii and the publication of ***Sand: The Never-Ending Story*** by Michael Welland, UC Press, 2009. Michael is a geologist and he and his wife divide their time between living in London and France. My neighbor, was kind enough to collect samples from beaches and record where each sample originated.

Collectors of sand are arenophiles. The material collected is smaller than gravel or pebbles but larger than silt or mud. It ranges in size from 2 millimeters to 0.0625 mm or about 1/400 of an inch in diameter. The scale was developed by Chester K. Wentworth who refined an earlier scale proposed by Johan August Uden in1914. The Uden-Wentworth scale is still in use today. Some arenophiles collect sands for their color, others for their constituents or composition. All sands carry the 'DNA' of their origin, and thus trace back to specific geographic regions. Rivers or wind may carry them a great distance but their composition matches the material of its geological origin. The main constituent of sand formed from rocks is silicon dioxide. Biogenic sands, formed in ocean regions rich in marine life are composed of foraminifera.

Antony von Leeuwenhoek, born in 1632 in the city of Delft, studied sand grains, drew them as geometric shapes with each angle identified by a letter. His imagination saw more than was there and he described seeing in a grain of sand *"a ruined temple, but in the corner of GHI appear two images of human shape, kneeling and extending their arms to an Alter…"*

In the Oakland Museum there is an exhibit (currently closed for renovation) of life between the sand grains of a beach. It must be a challenging place to live. The exhibit avoids microscopy by having magnified each grain and each organism about 10,000 times. The environment between sand grains may seem particularly hostile to us, acquainted as we are with sand between our toes and items such as fingernail files and sandpapers. Even on a macro scale many organisms have adapted well to living in sand including sand dollars (Echinarachnius sp.), sand crabs and among the chordates Amphioxus. Many insects manage well in the shifting sands of desserts. Of the roughly 40 phyla of organisms, twenty-two have representatives that live between sand grains. From viruses and bacteria on up the evolutionary tree of life, creatures have adapted to living between sand grains. We owe much to Robert Higgins, now retired from the Smithsonian Institution, for his pioneering work on meiofauna (lesser animals) who since the 1960s devoted his studies to finding and describing these animals. This

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SPELL OUT "SFMS" IN **DI-**

I have been meaning to ask about this for some time, but … now is a good time!

It was during the 1990s, I think, I remember seeing a slideshow in one of my biology classes that included an image of an old, custom Diatom slide, with Diatoms in a shape that spelled out "SFMS". This slide was from the 19th Century and was from the original manifestation of our society. My memory of what class I saw the slide in is hazy, but I'm thinking it was the Introductory Botany class I took at Hartnell College in Salinas many years ago. (That same class had original Ed "Doc" Ricketts slides in its stockroom collection, which was pretty cool.) I have no idea where the photo of the slide was taken.

Has anybody seen one of these old SFMS diatom slides and know where they might be found? I'd love to get some images of it to use as a society logo.

Peter Werner, President, SFMS

(Continued from page 1) Hancock

-tive testing at the sub-micron level. This required strong magnification utilizing great optics to view the layers within the wafers."

"He also developed and produced manipulators for non-destructive failure analysis within the silicon wafers. His company developed a large quantity of variable probes along with hybrids requested by end user customers for their proprietary analysis of future products. These instruments were operated manually in the beginning and graduated into step-and-repeat computerized movements. … To make things more complex, the XY movements of the stage carrying the wafer to be tested had to maintain their capability and integrity of conducting a completion of analysis."

"… instruments had to be assembled by special people having great mechanical aptitude and giving special attention to detail.

The Micromanipulator Company (of which he had been CEO and President) celebrated 50 yrs. in probing expertise in the year 2006, celebrating at trade shows, seminars and conferences around the world."

Mr. Hancock was a life member of the San Francisco Microscopical Society and died in 2000. His wife died in 2006. His estate was settled in 2011 and SFMS received 1/20th of it as a bequest.

FACEBOOK

I would like to announce the SFMS Facebook page, which will be our main place for announcing news and events to the larger public until our now-outdated webpage is revised. The Facebook page can be found at:

http://www.facebook.com/pages/San-Francisco-Microscopical-Society/148358801848609

Peter Werner

What is Scitable?

http://www.nature.com/scitable

Scitable is a free science library and personal learning tool brought to you by Nature Publishing Group, the world's leading publisher of science.

Scitable currently concentrates on ***genetics*** and ***cell biology***, which include the topics of evolution, gene expression, and the rich complexity of cellular processes shared by living organisms.

Scitable also offers resources for the budding scientist, with advice about effective science communication and career paths. —00—

March 9th Joint Meeting with Bay Area Mycological Society

MICROSCOPY, MYCOLOGY, AND NEW SKILLS by Peter Werner

SFMS has been pleased to sponsor several events related to fungal microscopy over the last few months. On January 23 at the San Francisco "hackerspace" Noisebridge, I had the pleasure to lead a workshop on mushroom identification using microscopy. At our general meeting on March 9th, 2011, we were pleased to present UC Berkeley fungal cell biologist Louise Glass in a joint meeting with the Bay Area Mycological Society at UC Berkeley.

The two meetings highlighted the importance of microscopy at all levels of fungal biology. At the "basic" end, fungal taxonomists and advanced amateurs use simple desktop compound and reflected-light microscopes to identify and describe fungal species. At the advanced end, fungal biologists use cutting-edge fluorescence, deconvolution, and confocal setups to make new discoveries about fundamental aspects of fungal biology and the fungal cell.

A key tool of mycology since its earliest days has been the microscope, and even amateur mycologists who have reached the level where they wish to start putting definitive species names on their collections will inevitably find themselves in need of a microscope and the skills to use it. Once they make this leap, they open the door to one of the most fascinating areas of mycology, an area where amateurs can and do contribute to the discovery of newly-described species.

The equipment needs for basic fungal microscopy are simple. One needs a bright field microscope capable of oil immersion levels of magnification with at least average levels of resolution (up to 1000X total magnification and 1.25 or better NA), preferably one with Koehler illumination capability. A simple stereoscopic dissecting scope is also needed to observe larger structures up close. One can easily find compound microscopes fitting this description new or used on eBay for a few hundred dollars or so, and simple dissecting scopes for that much or less. Be on the lookout for used equipment sales at colleges or laboratories, which can be sources for bargain equipment.

One also needs a simple set of micro tools for dissection. A set of needle-nosed tweezers, a dissecting needle, some boxes of double-edge razors, and a few boxes of glass slides and #1.5 cover glass slips are essentials for your kit. With some 3% to 5% potassium hydroxide and some 1% Congo red or Trypan blue stain, you should have everything you need to prepare information-rich slides that will tell you much about the fungal organism you are trying to identify.

The challenge is to build the skills you need to make good slides and be able interpret what you see. This is information I hope to impart in occasional fungal ID workshops, such as the ones I have lead at Noisebridge or at the annual Sonoma County Mushroom Association "SOMA Camp". At the same time, you must have access to identification literature. Volumes I, III, and VI of David Largent's *How to Identify Mushrooms to Genus* series are an essential part of a basic fungal taxonomy library, and thankfully still in print and quite affordable.

Access to more specialized mycological literature can be more difficult to come by. The library of the Mycological Society of San Francisco is an excellent source and access to it is a worthwhile benefit of membership. A great deal of scientific literature can be found via Link+ (http://csul.iii.com/), a very useful interlibrary loan system that links a number of university and public libraries throughout California and is available through several Bay Area public library systems. The UC Berkeley libraries are an outstanding resource and have practically all the literature one could need; members of the public can purchase borrowing rights, something that is discounted for community college students and free for public school teachers. (See http://www.lib.berkeley.edu/services/borrowing.html for more info.) Increasingly, basic monographs are being scanned and put online, available to all. A good gateway to these can be found at http://www.mykoweb.com/systematics/index.html.

While traditional bright field microscopy has been the backbone of morphological systematics in fungi, fluorescence microscopy is a tool that is greatly underutilized for this purpose. Many fungi strongly display a property called autofluorescence, in which cellular compounds fluoresce when illuminated by particular wavelengths of light. In some species, this property is quite strong in certain tissues and cell types, and the localization and spectra of autofluorescence is something that could be a key micromorphological trait in many species. It's an underexplored area in the morphological taxonomy of fungi, and something that will hopefully be utilized more as fluorescence microscopes become increasingly common in biological laboratories.

The main area in which fluorescence microscopy has been utilized in mycological research has been fungal cell biology. In this area of research, protein-specific antigens are used to bond fluorescent stains of a particular response wavelength to a specific organelle or other cell element, such as mitochondria or microtubules. In some cases, the organism can be genetically modified to express fluorescent proteins on such a cellular structure. Shining light of the right wavelength on the hyphae will cause the stain or protein to fluoresce at a different wave-

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(Continued from page 4) Microscopy

length, making the structure of the organelle or other element clearly visible in real time. In this way, the dynamics of hyphal growth, branching, fusion, reproduction, and other basic functions can be readily observed. In some cases, a gene can be deliberately "knocked out" and the fungus grown without a functioning copy of the gene. By comparison with the non-knockout strain, the function of the gene can be revealed.

At our March meeting, Dr. Louise Glass showed us how she was using such techniques to answer some basic questions on fungal communication. Growing fungal hyphae must reveal a wide range of information to other hyphal strands as they grow, in order to successfully produce a mycelial network, to mate, to distinguish self from non-self, and distinguish between different strains and species. Fungi do this by means of chemical signals. By tagging a particular signaling chemical with green fluorescent protein (GFP) and another with a red fluorescent protein called mCherry, Dr. Glass was able to find that interacting hyphal strands are able to communicate in a highly organized manner, with one hyphal tip signaling that it is actively "listening" and the other signaling that it is "talking". When this is finished, the two strands reverse their roles, and this process continues back and forth very rapidly, much like the way we communicate through a variety of verbal and non-verbal cues to signal speaking and listening. In this way, the growing hyphal tips are able to locate each other, coordinate their growth, and fuse where necessary to form a network.

Just as I encourage anybody who is serious about studying fungi to get proficient with a microscope, I also encourage microscopy enthusiasts to add mushrooms and other fungi to the organisms they regularly observe. Fungal structures are very beautiful and intriguing, on both a macroscopic and microscopic level. By collecting fungi in the wild for observation, and learning something about their natural history, one adds an extra layer of knowledge that only deepens appreciation of the fascinating structures revealed by the microscope. PW

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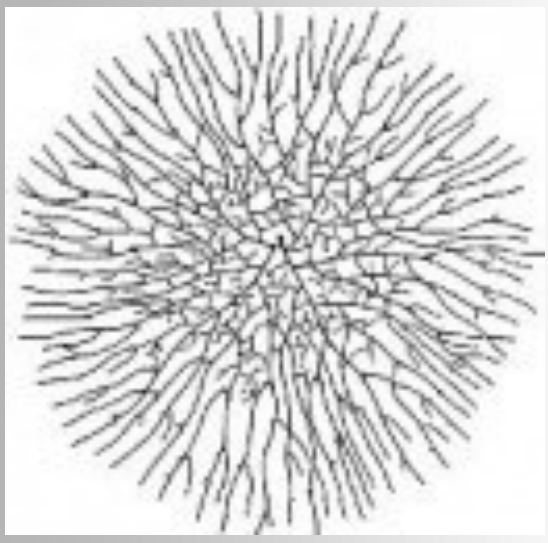
Faith is a fine invention
For gentlemen who see;
But microscopes are prudent
In an emergency!

Emily Dickinson 1830 - 1886



Hyphal growth showing interconnections in the central region but not in the periphery.

(Continued from page 3) ARENOPHILIA

population consists of organisms that are smaller than one millimeter and are often colorless. No wonder that we do not see them when we are sunbathing on a beach! Wikipedia provides the following example:

Mystacocarida *are interstitial crustaceans, part of the meiobenthos. Their taxonomy is extremely conservative, superficially all mystacocarids look alike. There are only 12 described species divided between two genera, Derocheilocaris and Ctenocheilocharis. They are found along the coasts of South and North America, southern Africa, and the western Mediterranean. They are tiny crustaceans, around 0.5 millimetres (0.02 in) in length, and live in the spaces between sand grains on intertidal beaches. They have a cylindrical body, with five thoracic and five abdominal segments. There are four pairs of small thoracic appendages.*

Rotifers, nematodes, mystacocarids, tardigrades, gastrotrichs, turbellarians, and kinorynchs make up many of the more common groups of animals. With over 2,500 species of rotifers alone, the variety encountered between sand grains must be overwhelming to any student of the meiofauna. In our ignorance of the ecology of beaches, we do not realize that the reason we are able to enjoy the clean sand of the seashores is due to the meiofauna who remove the bacteria and decaying organic matter that accumulates along the shore.

Michael Welland's *Sand: The Never-Ending Story* tells the story of one of nature's humblest and yet most common materials. He addresses the subject from a variety of aspects enriching our knowledge of geography, climatology, geology, marine sedimentation, and astronomy as well as science history.

Historically of interest to microscopists is Henry Sorby who was born in the English steel town of Sheffield. Wikipedia provides the following:

(***Henry Clifton Sorby*** *(10 May 1826 - 9 March 1908), was an English microscopist and geologist. He took up the study of*

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OHLONE COLLEGE SCANNING ELECTRON MICROSCOPY COURSE

Ohlone College announced the recent acquisition of a new Hitachi SU-1500 Scanning Electron Microscope to augment it's unique and rapidly growing biotechnology teaching program. The microscope is housed at the College's new state of the art teaching facility; the Ohlone College Newark Center for Health Sciences and Technology in Newark California. Students enrolled in the *Biotechnology 120: Introduction to Scanning Electron Microscopy* course conduct individual or group research projects and techniques.

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TECHNIQUE FOR GATHERING MEIOFAUNA

Many of the meiofauna cling in various tenacious ways to the sand grains, and so, Higgins says, people have invented a variety of collecting techniques, depending on what animal they're trying to catch. The most common method is to wash the samples of sand and gravel with magnesium chloride, which stuns the animals and causes them to loosen their grip. But a bath of freshwater, Higgins has found, seems to work just as well, causing the creatures to lose control of their salt balance and thus their bodily functions. If they're exposed to the freshwater for only 20 seconds, the bath seldom kills them, he says, so they're still in pretty good shape when you get them to the lab.

Accordingly, Higgins puts handfuls of the sand into a bucket of freshwater, then swirls the mixture into a slurry. Incapacitated, the meiofauna surrender their grasp on the sand grains, which settle to the bottom of the bucket as the animals continue to whirl. Wallace, Higgins's assistant, kneels next to him, holding the sieve over another bucket. Higgins deftly pours the slurry through the sieve, leaving most of the sand behind. Wallace's bucket fills with water; trapped in the sieve is a frothy residue that contains the meiofauna. Wallace rinses it into a bottle with squirts of filtered seawater. In this way she and Higgins fill several bottles, holding, Higgins promises, thousands of meiofauna.

In the 1920s zoologist Adolf Remane began using a finer screen to study the beach sands of Germany's North Sea. He revealed a profusion of creatures previously unknown to science, and not a year has passed since without the discovery of at least a dozen new meiofaunal species. It's a rich, complex world, says Higgins, but it's one we've barely scratched the surface of.

Among the shiny chips of sand are the flat, segmented worms known as gastrotrichs, bristling with spines. There are pear-shaped rotifers, wormlike turbellarians that can transform their fat sausage bodies into slender threads as they maneuver; and rigid, boxy tardigrades. Elsewhere there are shrimplike mystacocarids and copepods, and mitelike halacarids. —-000—-

BECOME A MEMBER OF THE S.F. MICROSCOPICAL SOCIETY

WWW.SFMICROSOC.ORG

HOW TO JOIN:

FILL OUT THE APPLICATION-FORM FOUND ON THE SOCIETY'S WEB SITE .
SEND IT WITH A CHECK FOR $12 DOLLARS (OR $144 FOR LIFE MEMBESHIP) TO:

SFMS Treasurer
435 Melrose Avenue
San Francisco, CA 94127-2217

For information or future events, explore our web site.

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Replica of one of Leeuwenhoek's microscope.

Coffee Stains

ALAN ALDA: Are these historic coffee stains here? Are these the ones that gave you your inspiration?

SIDNEY NAGEL: Oh, they're a day old or so. But when they're as lovely as this, wouldn't you have trouble wiping them up?

ALAN ALDA: (Narration) Yes, it's true, Sid really does find coffee stains beautiful -- because they made him wonder why, when a coffee spill dries, it always leaves a ring. Enough of Sid's colleagues took the question seriously that experiments began to watch what happens as a coffee spill dries.

SIDNEY NAGEL: So Rob here has been looking under a microscope at some of the drops that instead of using coffee we've used particles that you can visualize under microscopes.

ALAN ALDA: I'm seeing a lot of particles moving from over here to the edge.

ALAN ALDA: (Narration) The question was, what's causing this flow? The answer hinged on the fact that the edge of a spill becomes pinned in place by tiny rough spots on the surface, so the edge can't pull back as the liquid evaporates. As the edge loses liquid to the air, it has to be replenished by liquid from within the drop - and the flow that results carries with it the tiny suspended particles.

ALAN ALDA: Is this white band particles that have built up on the edge already?

SIDNEY NAGEL: That's right. And so you see how slowly and carefully they come in there and they pack very nicely into a very well packed, almost crystalline ring.

ALAN ALDA: (Narration) The careful packing means that even this humble discovery could have unexpectedly useful consequences - for instance in manufacturing ultra-fine wires in electronic circuits. So even in coffee stains, there can be inspiration.

ALAN ALDA: It's really interesting to me that this kind of stain from a few drops of coffee has probably shown up on countless millions, thousands of millions, of counter tops…

SIDNEY NAGEL: On my counter top alone it's shown up that many times!

ALAN ALDA: And many of these counter tops were the counter tops of serious, curious scientists. And yet you and the people you work with took these stains seriously and you thought that something can be learned from that that will lead us to a deeper understanding of things other than coffee stains

SIDNEY NAGEL: I have this kind of broad view of what physics should be. And it's not just building the big new superconducting supercollider or a new Big Bang theory of the universe. It's also trying to understand phenomena such as this that gives us the feel and texture of our daily lives, and it's just important to understand.

Source: http://www.pbs.org/saf/transcripts/transcript904.htm#6

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(Continued from page 5) ARENOPHILIA

rocks and minerals under the microscope, and published an important memoir "On the Microscopical Structure of Crystals" in 1858 (Quart. Journal Geological Soc.). In England, he was one of the pioneers in petrography; he was awarded the Wollaston medal by the Geological Society of London in 1869, and became its President. In his presidential addresses he gave the results of original researches on the structure and origin of limestones, and of the non-calcareous stratified rocks (1879-1880).

He had previously been president of the Royal Microscopical Society. He wrote on the construction and use of the micro-spectroscope in the study of animal and vegetable coloring matter, and in later essays he dealt with such varied subjects as the microscopical structure of iron and steel, and the temperature of the water in estuaries.

He pioneered a method of grinding slices of rock so thin that light would pass through the specimen. This allowed microscopical examination. He wrote the following in an article on the microscopic structure of crystals for the Geological Society of London: "In those early days people laughed at me. They quoted Saussure* who had said that it was not a proper thing to examine mountains with microscopes, and ridiculed my actions in every way. Most luckily, I took no notice of them." *Saussure was a renowned Alpine geologist. (pp 188) (TO BE CONTINUED)

By the editor.

Dr. Wayne Lanier's References (Our May speaker) :
Most recent published video: http://www.youtube.com/watch?v=usH4GC5C4f4

Fun video to watch [fun for me, anyway]: http://www.youtube.com/watch?v=nrlqoeNrj3E

See also my name on Flickr.

JUST ONE:

FONDEST MEMORY OF MICROSCOPY

One of my fondest memories is setting up dissecting and compound scopes, slides and supplies and lichen reference books on the hood of the car while parked by the coast highway near Stinson beach. I was just getting 'serious' about lichens and wanted to study some of the species I found on the rocks at the coast. What better way than to 'do it now'! I had recently purchased the compound scope from a surplus sale at the remodeling of the Life Sciences Building at UC Berkeley and had equipped the scope *with a halogen light in a tin can* that plugs into the 12V source in the car.

Bill Hill, Vice President
SF Microscopical Soc.

FROM:

MicroNews

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

TO:

Stamp

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Micro News is published four times in the calendar year, January, May, September and November.

MAY 11, WEDNESDAY, **MEETING ANNOUNCEMENT**: Dr. Wayne Lanier

TIME: 7:30 but come as early as six to work with microscopes. LOCATION: MERRITT COLLEGE, 12500 Campus Rd., Oakland, CA 94718
ROOM> 247 in the "C" building. PARKING: $2.00 (EIGHT QUARTERS for the ticket machine,)
Bring samples, particularly pond or marine organisms but any other material you may want to view with the fine microscopes available in the lab..

Microbial Community Dynamics in Variable Extreme Environments

In terms of biomass, number of species, oxygen production, carbon dioxide fixation, and value on the European Carbon Market, microbial communities in variable extreme environments are stunningly productive. For example, a small shallow pond 10-ft X 10-ft at mean-tidal elevation in a San Francisco Bay salt marsh minimally produces as much oxygen per year as a large hard-wood tree with trunk 1.5-ft in diameter and canopy more than 30-ft in diameter. Such areas are worth as much as $400,000/acre on the European Carbon Market. Why is this so; what can we learn from it; and, how can we study it better...?

Field Microscopy: What I (Wayne Lanier) have been doing for around three years, is taking groups of adults and children out on the salt marsh in what I call "field lectures". Depending on the number, I carry one or two Swift FM-31 Field Microscopes and we study the microbial mats in salt marsh ponds. The two most interesting sites are LaRaviere Salt Marsh, near the Fremont Visitor Center of the Don Edwards San Francisco Bay National Wildlife Refuge; and the "WEEP" study site, near the Alviso Learning Center of the Don Edwards. I have also been studying several salt marsh ponds in the San Francisco Heron's Head Park salt marsh, near Hunter's Point. Unfortunately, recent erosion along the southern shore of the salt marsh has made taking large groups out to those study ponds rather difficult. These field lectures are my "payment" for a Department of the Interior Permit to study and collect on the Don Edwards.

I will have Winogradsky-type samples from Don Edwards San Francisco Bay National Wildlife Refuge salt marsh ponds; from Trona Reef in the Mojave Desert; from Trona Lake; from Mono Lake; and, possibly, from Death Valley.