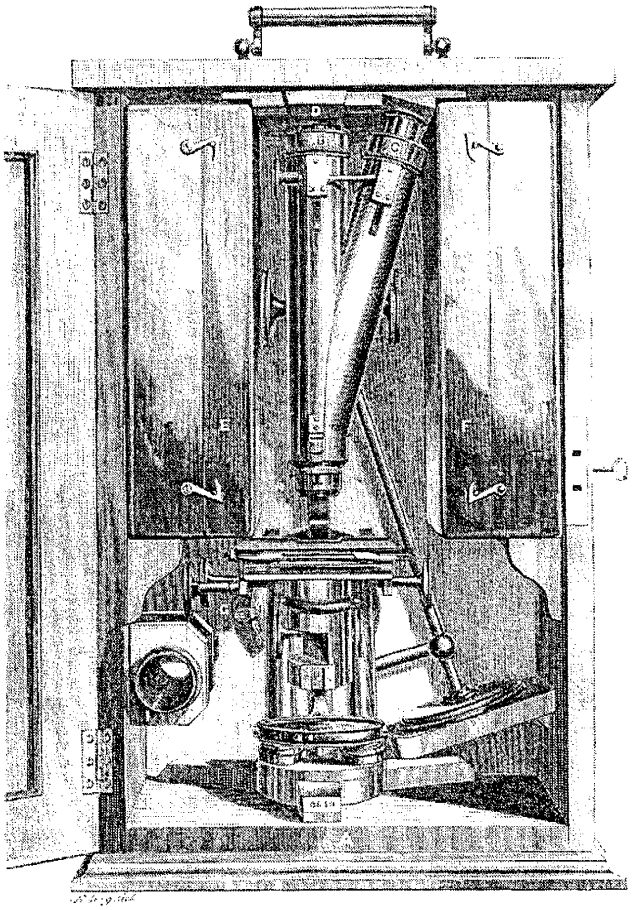
Journal of
THE MICROSCOPICAL SOCIETY OF SOUTHERN CALIFORNIA
Volume 3 Number 5 May 1998

A Victorian Gentleman and his Microscope

Thomas Glazebrook Rylands Explored the World of Diatomaceæ with his Smith & Beck "Large Best, or No. 1, Stand"

Herbert A. Gold

Thomas Glazebrook Rylands (1818-1900). From a 12" x 10" opal glass plate positive (ca. 1880). Note crack in the glass. Courtesy of the Warrington Museum and Art Gallery, Warrington, Cheshire, U.K.



Smith & Beck Large Best, or No. 1 Stand boxed with two cases of accessories from Richard Beck's 1865 treatise on the achromatic microscope.

Part 1. The Man.

The Rylands family name is well known throughout the North of England. As far back as the thirteenth century, the progenitors of the hero of this article were minor gentry and are known to have held lands in Lancashire.[1] In the early seventeen century, the broth-

ers John and William Rylands began weaving linen thread into fabric, beginning a manufacturing dynasty that lasted over ten generations. Some of the largest companies in the world making textiles, iron wire and cable dominated Victorian trade and bore the name Rylands. Today, the John Rylands Library of the University of Manchester houses a world class collection of manuscripts, incunabula, psalters and early bibles.[2]

Our subject, Thomas Glazebrook Rylands, was born in Warrington, 16 miles southwest of Manchester, in May of 1818. He and his family made a major mark on that area and he passed on to the Great Laboratory in the Sky in February of 1900.

Glazebrook's grandfather was a major manufacturer of sail cloth and was contractor to the Admiralty for the supply of the fleet. It is probable that Lord Nelson's 1805 victory at the Battle of Trafalgar was under sails woven in Warrington by Rylands.[3] Glazebrook's father, John, attempted to continue this lucrative business, but ran into serious trouble with the Government over his political beliefs. In the days following the French Revolution, he, as a Dissenter, Liberal and advocate of Reform was suspected of conspiring against the Crown. He narrowly escaped prosecution on several occasions, always swearing he only supported change by Constitutional means. John was foreman of the jury that acquitted John Taylor, the founder of the Manchester Guardian newspaper, who was accused of libel in 1819. It was this case that is credited with assuring freedom of the press in England. His strong feelings for political reform, as we shall see, greatly influenced his son.

With the decline of the sailcloth business, John Rylands founded a small wire mill in Warrington. By 1843 it became apparent to his sons that their father's lack of business acumen and time spent on Liberal causes, was rapidly sinking the family fortunes. The sons stepped in, retired old dad and made that small wire mill the basis of a huge manufacturing empire. By 1868 they owned their own coal mines, iron works and a distri-

MSSC Journal
Volume 3 Number 5 May 1998

CONTENTS

MICROSCOPICAL SOCIETY OF SOUTHERN CALIFORNIA

Publication Correspondence To
Editor Gaylord E. Moss
P.O. Box 9130
Marina del Rey, CA 90295
Tel/FAX (310) 827-3983
e-mail mosss@att.net

Dues and Membership Applications To
Treasurer David L. Hirsch
11815 Indianapolis Street
Los Angeles, CA 90066-2046
Tel (310) 397-8357

Prospective new members, please write to David L. Hirsch for membership application. Dues are $50 yearly for regular members and $40 yearly for corresponding members who are geographically too distant to attend regular meetings. Please make all checks payable in the name of our treasurer David L. Hirsch, **NOT** to MSSC.

bution system that made them the world's largest supplier of iron wire at that time.

The financial success of Rylands Brothers allowed Glazebrook to become the prototypical Victorian gentleman scientist while promoting the social and political reforms inspired by his father. He was very active in the Temperance Movement, was an avowed teetotaler, lectured widely on the subject and published a temperance magazine. While he professed his anti-smoking philosophy in a pamphlet on tobacco[4], his personal attempts to kick his own habit were unsuccessful.

As to the effects of smoking, chewing or snorting tobacco he had this to say. "Among those resulting from its physiological action are flatulence, dyspepsia, unhealthy secretions, indigestion, nervous diseases; also asthma and pulmonary disorders." "It is the companion of the drunkard, the idle, the spendthrift, the profligate, and the dissolute." Sadly, in describing his own habit of pipe smoking he said, "[it] had acquired a power over me which time alone can destroy."

Not surprisingly, Glazebrook was a strong advocate for the abolition of slavery. He was impressed by the account of the American slave Frederick Douglass' escape from slavery and caused a sensation in England when he had Douglass as a guest in his home.

His devotion to "causes" was great but his efforts in the pursuit of science were greater. These interests in the natural and physical sciences were serious, well researched and very actively pursued. There was hardly a scientific discipline that escaped his notice. He is quoted as saying, "a man ought to try to know something of everything and everything of some thing."

One area of his studies deserves note, perhaps in the interest of historical balance but more likely a bit of ex post facto condescension on the part of this author. He was a founder of the Warrington Phrenological Society. Its members believed that the study of the shape of the skull was an infallible indicator of one's mental faculties and character. The Society had a collection of over 200 casts of human heads and Glazebrook underwent the unpleasant experience of having a cast of his own head made. While the general principles underlying this "science" were generally disproved in his lifetime, he always maintained that much could be told about the character of a man by the shape of his skull.

That silliness aside, he had an insatiable thirst for knowledge and a great fondness for investigations of every sort. He made contributions to the study of entomology with articles in the journal, *The Entomologist*. Meteorology was a major interest where he studied the structure of snow flakes[5] and made regular observations of rainfall and barometric pressure at Warrington for the Royal Observatory at Greenwich. He invented a widely used set of weather symbols. Geology, mineralogy and crystallography captured his attention where he became adept at qualitative chemical analysis with a blowpipe and left a considerable collection of rare minerals and curious fossils. The list goes on to include an active interest and significant participation in the study of botany[6], ancient geography, architecture, heraldry, archeology and mathematics.

From an early age, astronomy and microscopy held a major fascination for him. He built a two story observatory with a revolving dome on the roof of his house which housed a 5" equatorial telescope and a 2" transit instrument. Both of these fine instruments were made by Cooke of York.[7] He took astronomical observations for many purposes including the calibration of his large collection of clocks and chronometers. His timekeeping efforts were shared electrically with a nearby friend who, at precisely 10 p.m. each night, fired a rocket that allowed neighbors for miles around to set their clocks.

These nightly observations were sometimes disturbed by the more rowdy youth of the town, who vied with each other to plant a stone through the open shutter of the dome, to the peril of both observer and instrument. Rather than return the miscreants' fire with a 12-gauge dose of buckshot, Rylands writes, "The shutter had to be lowered, and the only possible course was to wait patiently until the enemy raise the siege." I doubt it had occurred to him that if these boys had been off drinking and smoking they wouldn't have time to throw stones.

In 1866 he is judged to have successfully defeated Samuel Rowbotham, MD, in one of those characteristically English war-of-words conducted in the columns of the local press. Dr. Rowbotham had a small but zealous following of enthusiasts who, through public lecture and publications, sought to prove the earth was flat. Rylands presented his case with cogent scientific observations and without, thank heavens, any reference to the shape of Rowbotham's skull.

In his diary he says that from 1858 - 1865 he devoted almost all of his time not connected with business and public duties, to his microscope. Here his major interest was diatomaceæ where his researches and publications resulted in many species being named for him. He was personally acquainted with or corresponded with every major researcher on the subject. The list reads like a *Who's Who* of 19th Century biological sci-

ence: George Walker-Arnott, William Jackson Hooker, Robert Kaye Greville, John Ralfs, William Benjamin Carpenter, George Busk, Andrew Pritchard, George Johnston and many, many others.

His slide collection of botanical specimens numbered 2,000 and geological specimens 1,200. They currently reside at the Warrington Museum and Art Gallery in Warrington, England.

In 1859 he published an excellent article on microscope optics.[8] In his usual straight forward way he takes issue with the major writers of the day on that subject, by name, including Andrew Ross and William B. Carpenter. In his opening salvo he says, "The period has not yet arrived when even all those who employ the microscope methodically, as a means of scientific investigation, possess an intelligent comprehension of the principles upon which it is constructed and the nature of its powers as an optical instrument. There is a large region beyond mere manipulation, into which few apparently care to enter. The writers of our introductory treatises have been curiously imitative in dealing with this portion of their duty." It seems that not much has changed in the ensuing 139 years. He then follows with a clear, concise, mathematically supported discussion of his topic.

To facilitate his scientific investigations he needed a microscope suitable to his station and broad interests. He approached the venerable firm of London opticians, Smith and Beck, to provide the instrument that will be described in the following section.

The scientific life of Thomas Glazebrook Rylands may be summarized in the following abbreviated list of organizations to which he belonged:

Fellow, Royal Microscopical Society
Fellow, Royal Astronomical Society
Fellow, Society of Antiquaries
Fellow, Linnean Society
Fellow, Geographical Society
Fellow, Geological Society
Fellow, Chemical Society
Member, Palæontological Society
Member, Entomological Society of London
Member, Liverpool Astronomical Society

He was a member of the Manchester Literary and Philosophical Society[9] and dozens of other local and regional scientific societies and associations where he was an active contributor and participant.

It is unbelievable that a man of his scientific involvement, wealth and stature in the community was never elected to the Royal Society. It can only be speculated that his strong liberal leanings, antipathy toward liquor and aversion to sloping foreheads militated against his acceptance.

Next Month

The June issue will conclude this article with a description of Glazebrook's microscope and all the accessories packed in those two large boxes. I will also have the opportunity of acknowledging all the wonderful people and organizations who helped in putting this article together. Stay tuned!

---

[1] Most of the Rylands biographical material, not otherwise attributed, is from R. D. Radcliffe, *A Memoir of Thomas Glazebrook Rylands, of Highfields, Thelwall, Cheshire,* Privately printed, 1901.
[2] Farnie, DA, *Enriqueta Augustina Rylands (1843-1908), Founder of the John Rylands Library,* Bulletin of the John Rylands University Library of Manchester, Volume 71, No. 2, Summer 1989.
[3] Rylands Family Tree from Warrington Museum and Art Gallery in a private communication.
[4] Rylands, TG, *An Enquiry into the Merits and Demerits of Tobacco Smoking,* 1843. Copy courtesy of the Warrington Museum and Art gallery.
[5] Rylands, TG, *Observations on the Snows and Snow Crystals of the Winter 1854-55, Made at Warrington, Lancashire, 1855.* "The lens used throughout was one of Mr. Ross's Coddingtons, the magnifying power of which is about twenty linear at six inches; it defines clearly lines which cannot be more than the four or five thousandth of an inch in breadth." Copy courtesy of the Warrington Museum and Art gallery.
[6] Rylands, TG, *On the Nature of the Byssoid Substance Found Investing the Roots of Monotropa Hypopitys,* The Phytologist, 1842. Copy courtesy of the Warrington Museum and Art gallery.
[7] Rylands donated the 5" instrument to the Liverpool Astronomical Society in 1893. See their Internet web page at http://www.liv.ac.uk/~ggastro/cityobs.2.html.
[8] Rylands, TG, *On the Optical Powers of the Microscope,* Quarterly Journal of Microscopical Science, VII, 1859. Copy courtesy of the Warrington Museum and Art gallery.
[9] Private communication from A. L. Smyth, Honorary Curator, The Manchester Literary and Philosophical Society and Roy Winsby, Honorary Secretary, Manchester Microscopical and Natural History Society.

WORKSHOP of the Microscopical Society of Southern California

by: George G. Vitt, Jr.
Date: Saturday, 2 April 1998
Location: Steve Craig's Lab, 27 persons attended.

1. **George Vitt** reported on the recent correspondence with Mr.Michael Dingley of the Australian Postal Microscopical Society and the receipt of a number of copies of their newsletter, *Amateur Microscopist*. George commented on the diversity of interesting and practical articles included in each issue and the excellent job that Mr.Dingley is doing both as Editor and in spearheading the Society. He also commented on optical comparison tests he ran on a c.1950s AO/Spencer student lab microscope There was a general discussion on the scanning of images. Later, George displayed and described some of the design features and methods of use of his AO/Spencer Mod. 37A polarizing microscope.

2. **Jim Clark** presented MSSC with a "White Board" which will be very useful for making illustrative sketches during our hands-on workshops. Thanks Jim! He then described his Leitz Labolux-POL microscope with vertical illumination and individually centerable objectives. There ensued a discussion on polarization and anomalies encountered, as well as the Michel-Levy Color Chart published by Zeiss. This chart is used in identifying birefringent substances with the Polarizing microscope. In graphic form, it relates the following necessary variables: 3+ orders of interference colors (shown in color); specimen thickness (microns); retardation (nm); and many closely spaced values of birefringence plotted as straight lines of different slopes. MSSC's forensics expert, **Ed Jones**, routinely uses this chart for the identification of fibers, a technique which he has developed to a fine art. (Subsequently, **Ron Morris** scanned this chart and sent it via e-mail to interested persons. Thanks, Ron!)

3. **Ed Jones** gave a talk on the use of the Becke line method of determining the refractive index of isotropic substances in a 'refractive index fluid'- which Becke had developed in 1892. (Here is a Memory Aid: when the distance from the specimen to the objective is made GREATER, the Becke line moves toward the substance of GREATER refractive index). Ed described that, by varying the temperature of the sample and its surrounding liquid (total immersion) by using a hot stage, the index of the liquid changes at a greater rate than that of the solid, and allows an accurate measurement of index in monochromatic (sodium line) light - a thermal vernier! The use of white light poses a problem because of dispersion producing yellow and blue in the Becke line.

4. **Stuart Warter** showed several microscopes:
a) B&L early form of the Chamot chemical (polarizing) microscope, built on the "Model" microscope c.1885-88, brass & iron, 12.5" high. Slotted ocular with reticle, 2 objectives, double nosepiece. Nickel plated rotating centering stage graduated in four 90 degree sectors; N.P. swingout substage with polarizer and removable condensing lens; analyzer in sliding housing in body; graduated rotating 2-sided dovetailed tailpiece; 2-sided mirror on swingout arm in rear dovetail; calibrated fine focus wheel. (Chamot chemical microscope introduced on a non-inclining continental stand in 1897 as a simplified petrological stand [Padgitt]).

b) English or French compound microscope, cased, maker unknown, c.1870, brass, 11.75" high; 2 oculars; rotating sliding slide carrier with sliding slide retainer and mounted stage forceps; removable cylinder with substage wheel of stops; substage Nicol polarizer; ocular Nicol analyzer; concave mirror. It has a removable claw-footed base; dismantles for packing in case; mirror slides on tubular tailpiece; double-wheel rack & pinion coarse focus; RMS thread; (Billings Fig.397 illustrates a simpler version.)

c) B&L Petrological microscope made 1929, s/n 220141, brass & iron, height closed = 13in. 3 objectives; 3 oculars with crosshairs (7.5, 10, 12X); Bertrand lens & diaphragm; rotating analyzer and swing-polarizer with condenser & diaphragm; rotating stage with added mechanical stage (Tasco); red selenite plate; 0.25 wave plate' 2-sided mirror; signed and numbered on eyepiece tube.

5. **Richard Jefts**, as we all know, has been methodically and meticulously chasing along the trail to attaining the ultimate resolution from a light microscope. Using his Ortholux, O.I. objectives, the far blue end of the spectrum, and hi-res B&W film, he had doggedly attacked the microstructure of the 'impossible to resolve' Pleurosigma angulatum diatom. His previous results, though very impressive, pale by comparison with what he showed us this day! The imagery results compiled the day before this Workshop (albeit in Xerox copy form) which he presented at this April 2nd workshop were, to say the least, utterly astounding! The diatom structure was shown clearly in regularly spaced, though a bit ragged, apertures spaced in rows and columns! When this image was passed around, it was met with reactions ranging from muted disbelief, to resigned acquiescence, and to sheer amazement! Dumbfounded, the MSSCers made hardly a comment. This, in itself, was also astounding. Later, Richard revealed that the Xerox was, in fact, a direct copy of a suitably apertured plastic dinner place-mat, intended

as an April Fool's caper! Richard, you were the only one this year - and you had everyone fully confused with your very SLY orchestration! Placematicum Jeftsei?

6. **Ken Gregory,** who had some previous hilarious entries on 1 April, was now all business. He showed 2 microscopes.:
a) Leitz Petrographic Microscope IIIM, #268,328 (1928) with 3 objectives, 3 eyepieces, 1/4 mica plate in metal mount, quartz-selenite compensator "Johannsen".
b) Fuess model IIIa (with large tube), #589, c.1900-15?, with top-of-the-limb fine focus as in the Model IIIb.

7. **Jim Solliday** reported on the book *Under the Microscope* by Curry, noting that it contained the Michel Levy chart. He added that Jennings had written a book on rotifers and locomotion.

8. **Herb Gold** showed a Spencer microscope and described how to oxidize brass.

9. **Don Battle** offered subscription forms to technical photo magazines, *Advanced Imagery* and *Photonics*.

10. **Steve Craig** offered some enveloped bands of 'friction saw' wires made by South Bay Technology, El Monte, CA. These wires (stainless steel?) are 0.010" in diameter, the ends joined to form a seamless loop. Those with metallographic microscopes should investigate how this joining had been done. It seems like quite a trick. (Could this be a variant of the 'mud saws' used by early workers in optical glass, gem cutters of the Middle East, and Japanese tsuba artists famous for their "Ito saw cuts"?)

11. **Jerry Bernstein** offered for sale a cased Leitz medical microscope ($350), and Microsoft *Professional Office* software ($40).

12. **Izzy Lieberman** exhibited a French colorimeter, c.1890.

13. **Bill Hudson** reported on his progress with the spectrograph restoration. He gave useful information for book collectors to prevent silverfish damage: Leave some non-toxic Thymol in a sealed book cabinet!

14. **Barry Sobel** brought many items for sale from the George Kleinman collection. There were many interesting and useful items which were too numerous to describe. The sale appeared to be a success. Barry showed a Ross-Zentmayer, c.1875, double pillar binocular microscope, a swinging substage that can go over the top of the stage, and a graduated rotary and x-y stage, with a Lister-Jackson type of limb with fine focus.

15. **Leon Stabinsky** showed a Hensoldt "Tami" pocket microscope, c.1960s, with a maximum magnification of 225X. The "Tami" had been part of equipment used by spies.

16. **Fred Hantsch** showed a Bushnell 8X30 binocular "kit", cased, that converts to a microscope meant for young people.

17. **Stuart Ziff** reported that the MacMaster & Carr catalog is available on the Internet.

18. **John de Haas** showed his documentation, with copies for handouts, which contained a table of ALL microscope objectives made in Germany until 1918. He discussed some polarizing microscopes: Leitz's first petrographic stand came out in 1885; the B&L c.1940s polarizing microscopes: showed small conoscopic figures, as was the case in most polarizing microscopes of that period; the Leitz QM polarizing microscope of the 1930s; that the use of the 1st order plate is important in medical work, and not just in mineralogy.

19. **Dario Solares** showed and described an incubator he had designed and built for the purpose of growing cultures. It features a digital temperature control accurate to 37deg.C +/- 1 deg C, shows the maximum and minimum temperatures during a run, and uses medical size petri dishes. (37 deg.C is body temperature).

20. **Ron Morris** reported that the Manchester Microscopical Society had sent him some foraminifera. He then described the use of the Zeiss epi-scope for use in semiconductor work (for sale-$500) where polarized vertical illumination is important, with Nikon objectives having long working distance.

21 **Jim Clark** posed the question, "How do you look at a CD-ROM with a microscope since the plastic is too thick for most hi-power objectives?" Jim also offered for sale ($100) a Honeywell Repronar, complete with Pentax camera, for the copying of 35mm slides by xenon flash. The new proud owner is Allen de Haas.

22. **Allen de Haas** showed a huge Erfle eyepiece.

23. **Larry Albright** reported on the forthcoming slide show preparatory to our having an exhibition of photomicrographs at the Palos Verdes Art Museum in September. He said that Jim Solliday will find out how the museum expects the artist to prepare his work for wall hanging.

24. **Larry McDavid** showed a brass hydrometer, English, c.1900 which had been used to measure the alcohol content in beer and wine. It consists of a hollow sphere with thin cylindrical stems protruding dia-

continued on page 91

Minutes for the MSSC meeting of 15 April, 1998.

David L. Hirsch

The regular meeting of MSSC opened at 7:53 PM in the gymnasium of the Crossroads School. STEVE CRAIG introduced his guest, Mr. David Peronko, who described the work he was doing in the study of Myocene Arthropods. Using selected fossils found in the Barstow, California area, David processed them with a 10 percent solution of hydrochloric acid to separate the silaceous material comprising alga stromatalites. PRES. GEORGE VITT introduced misses Anastasia (Stacy) and Alexandra (Sasha), daughters of his niece. The charming teenagers, both brilliant scholars versed in three languages, reside with their parents in Castro Valley, California. We hope to see them at future MSSC meetings. The bulk of the evening was spent selecting photomicrographs for display at the Palos Verdes Art Center, from September 11 to October 9, 1998. Additional details were given in the April, 1998 issue of the MSSC Journal. Dozens of photomicrographic transparencies in various categories were projected on a screen and the membership made their choices accordingly. The selections will be made known at the May, 1998 regular MSSC meeting. PHIL LOHMANN discussed the methods for framing and mounting of prints made from the selected photomicrographs. MSSC members are giving it their best shot and we eagerly look forward to do our part in helping to make the exhibition a great success. Corresponding Member FRED TULLENERS, from Fair Oaks, California (which lies about 10 miles northeast of Sacramento), sent me photographs showing a Bausch & Lomb monocular microscope which appears to be from the early 20th century. An interesting feature of this stand is the right angle eyepiece , which included a prism. The letter and pictures were turned over to ALAN BISHOP, who will seek provenance on the microscope and report his findings. Feedback from other MSSC members is welcome.

Without fear of contradiction or reprisal, I am proud to proclaim that among our members, we possess a massive amount of smarts on microscopy and things microscopical. Within our rising membership (we are now 90 strong!), chances are that one or more of us has the answer to your microscopical queries. Is some entomological question bugging you? Do you seek the identity and function of that odd, optical looking thing you picked up at a yard sale? Send your inquiries to GAYLORD MOSS, whose address is given on the inside page of each Journal issue. Your letter will be presented to the membership for resolution.

STUFF FOR SALE. An Oberhauser drum type microscope, circa 1855 was offered by BARRY SOBEL. (818)986-5887. DAVE HIRSCH offered a mahogany framed, turn-of- the-century, H.L. Becker analytical balance with a black onyx base. Priced at $350. (310)397-8357. JIM CLARK (619)443-6154 offered a circa 1935 AO Spencer, triple objective binocular microscope, plus a case. Call for price.

SHOW AND TELL. BARRY SOBEL set up three dual purpose displays; vintage microscopes with slides prepared by KLAUS KEMP, showing artistic arrangements of butterfly scales and diatoms. The microscopes included; a Ross binocular stand from the 19th century, a Swift 19th century monocular and a Cooke Troughton & Simms monocular stand, circa 1930. Three MSSC members will rendezvous in London on Sunday 26 April, 1989 to attend the 24th Scientific & Medical Instrument Fair at the Radisson Portman Hotel. The goings-on at this 'really big shew' will be reported at the Saturday, May 2 workshop by BARRY SOBEL and LEON STABINSKY. DAVE HIRSCH will stay a while longer in England to seek out those elusive Cuffs, Marshalls and Powell and Lealands secreted in someones garret or hayloft.

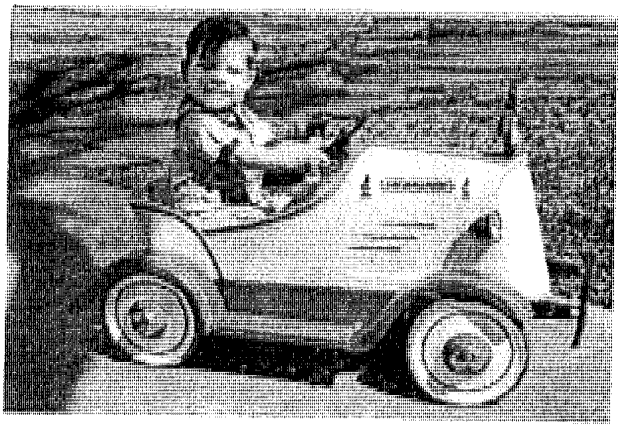
Workshop of 2 April 1998 - continued

metrically from top and bottom. The bottom stem is meant for attachable weights and the other, longer one, is graduated. All parts and the various attachable weights were serialized, and there was an ivory-mounted thermometer. The geometry of the instrument allowed very high resolution - 0.001 grams/cc! Larry also showed a rare and cleverly designed small container, in the form of a 3" tall bottle, for storing and dispensing drops of mercury. Made of hard wood, it has a precision threaded screw-on wooden cap with a small round hole in its center. From the inside bottom of the bottle, there extends upward a needle with a tapered end which engages and seals the cap hole when the latter is screwed down. Unscrewing the cap slightly allows a measured small amount of mercury to be dispensed.

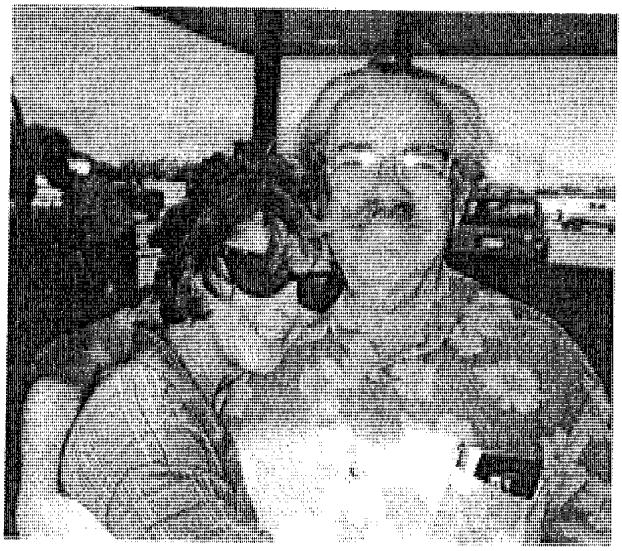
Larry also reported that he has a reproduction of the original lab notebook of Michelson, c.1920, in which he recorded his finding when making the historic measurement of the velocity of light!

This was quite a Workshop with many interesting instruments shown, especially polarization microscopes. We extend our thanks to Steve and Millie for their fine hospitality.

Member Profile
Larry Albright



First car



With Helen on Mammoth trip 1997

Just Call Him Mister Wizard

Helen Albright

On the one hand, Larry couldn't have been born into a worse time and place: the Midwest during the Great Depression to a traditional and respectable family.

On the other hand, his father was a pharmacist, maker of liquids, powders and elixirs, and "things that go bump in the night." Larry even had a little laboratory in the back of the drug store where he made fireworks to sell on July 4, on this same hand, his mother taught typing (a prerequisite for later, comfortable computer keyboarding), took photographs and operated an antique store in their home. One can imagine the makings and ingredients of the child bubbling and mixing together to become the adult Mr. Wizard (his CB radio handle).

Still, the tiny town of Longton Kansas was not the place to nourish an artistic and technological wonder and, not surprisingly, he left home in June 1950, the very week of his high school graduation. He moved to Wichita, working in a zoo and eating left over white bread intended for the monkeys. He then attended Oklahoma A & M for two years, first majoring in electrical engineering, then radio speech, during which time he worked in radio stations as announcer, engineer and floor sweep.

By then, it was 1952, during the Korean War. He had a choice to be drafted and spend two years in the army as potential cannon fodder or enlist and spend four years in the Navy. The war was over a few weeks after he joined, but Larry still had 3.9 Navy years left. Luckily, recruits were tested, and he ended up in an electronics school, playing with gizmos and gadgets and building expertise which became a firm foundation for his career as an artist. During the service, he went to sea as an electronics technician on the aircraft carrier "Shangra La, "one of the first canted deck carriers. While working on the electronic systems for "toss" bombing, he was sent down to the hanger deck in the middle of one night and was surprised to see marines standing about everywhere. He was even more surprised to see that the exercise was the loading of a nuclear device on a Grumman aircraft. In the early 50's hardly anyone even knew that ships were carrying these things. It was a sobering event. A benefit of the carrier duty was time spent ashore in Japan, Okinawa, Hong Kong and the Phillipines while the planes conducted shore exercises. He later taught electronics and operated a service radio station in Millington, Tennessee, working as a disc jockey and transmitter engineer at night while teaching radar in the daytime.

After the end of four never-ending years, he returned to Wichita for an unremembered period of time, running a recording studio and becoming involved with a group of artists. He married, and with $26 and bride in tow, arrived in Los Angeles, settling in an ersatz wigwam in a mobile park called Mission Village.

With his skills, jobs were plentiful. He worked at a variety of electronic jobs, spending five years at Hughes Aircraft. One night, one of his co-workers with whom he shared the same bench died. All that remained of him was his coffee cup. Larry stared at the cup. He quit the next day.

Launching a risky career as an artist, he began working independently. First he studied photography with Ansel Adams for a summer, (remember his mother's

Trouble on the road. Desert trip 1975.

Eagle Scout

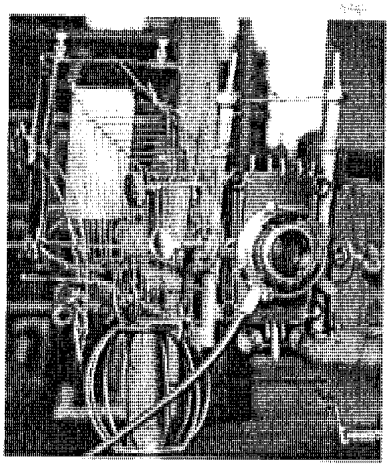
Navy - 1955

hobby) and opened a photography gallery in Venice called the ICON. For two years he exhibited his own works and that of others. He enjoyed wandering around making art of the life and scenes of Los Angeles. He also had a 1941 ex-army Dodge Power Wagon ambulance in which he roamed Death Valley and other wild places of the West before the 4 wheel drive craze filled them with people. The insulated cabin of the ex-ambulance with fans and vents was perfect for the desert as was the ruggedness of the vehicle which, with a store of onboard spare parts, like axles, never left him stranded. Another memorable vehicle was an MG TD which had been revitalized with a Studebaker engine.

Much later, a Cessna 182, which he owned with MSSC member Chris Brunt provided many delightful flights including some for business delivering high voltage crackle tubes to Reno, Nevada. Memorable was the beauty of flying at night at minimum safe altitude following the brilliant California freeways .

After working as a photographer, he became a jeweler, then a maker of artistic assemblages. Welding together pieces of metal, he made trains, boats and tea pots. All fanciful and unique. Unfortunately, most pieces were sold and he owns only a few.

His career as a neon artist arose from the making of "Rube Goldberg" like inventions which made an elaborate commotion and accomplished nothing. These contraptions used neon pieces and it was the neon that became the most interesting part to him. Buying a complete neon plant from a defunct shop in Bakersfield called "Road-runner Sign Service" was the start of a "glowing career" (forgive us). And having the equipment to make things he could not buy was an exciting plunge into fun science. A lot of experiments were done. Many ended up in the dumpster. Some survived.



Camera sculpture

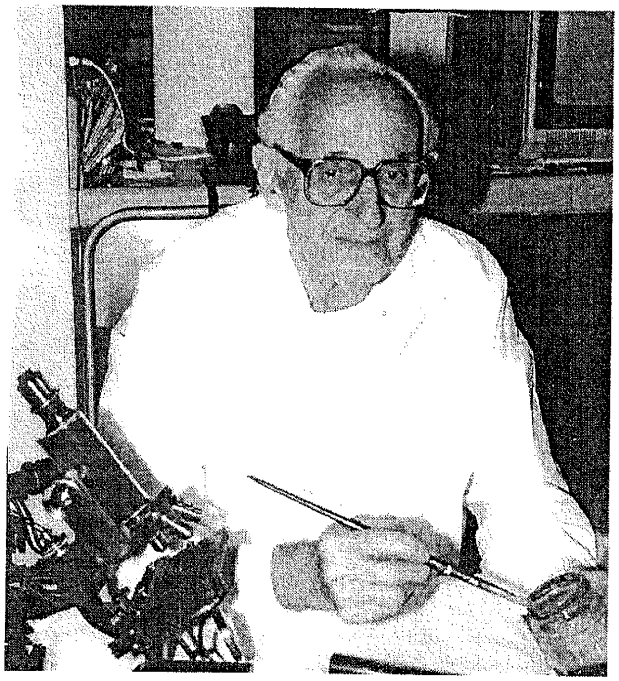
Some of Larry's friends were working on a film "Close Encounters of the Third Kind" and asked him for tiny neon pieces to illuminate the plastic models. As the models had to be lit on camera for very long periods, sometimes weeks, neon's cold light worked because it did not melt the plastic as incandescent lamps would do. So, began a career in movie work, making lamps for models, blue screen, and other special effects. It was a fascinating and challenging work base for a business. His screen credits include Close Encounters, One From the Heart, Battle Beyond the Stars, Abyss, Hudsucker Project, Honey I Shrank the Baby, 1941 and Con Air. Outside the film industry, he helped develop the "Eye of the Storm" plasma lamp sold in stores.

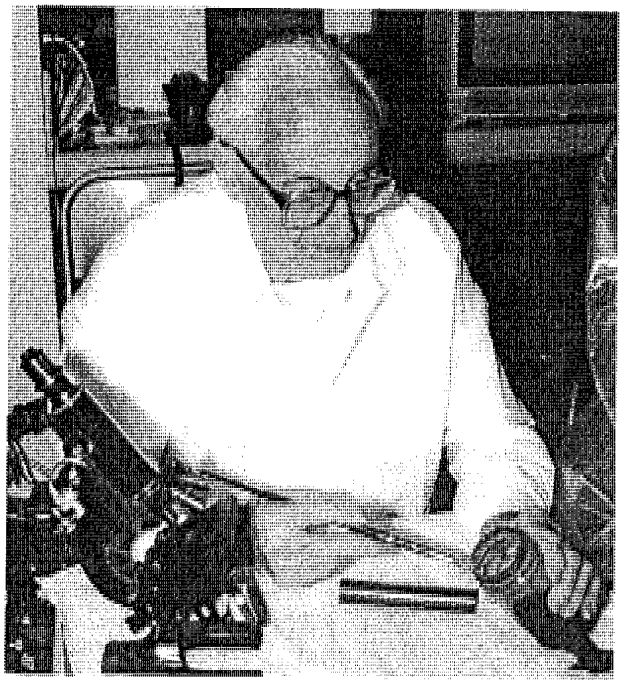
Larry now does special electrical effects for movies and theme-parks all around the globe, serving such clients as Disney, Universal, Six Flags, Knott's Berry farm Hilton Hotels, etc. Over the past few years he and Chris Brunt have combined talents to create magical effects. The most recent scripting neon and crackle tubes installation is in Tomorrow land at Disneyland.

Turning his hobby into a full-time career has made for a fulfilling and hectic life. By happenstance fortunately Larry found the MSSC and the hobby of microscopy has become an engrossing and rewarding replacement for a hobby turned into work.

Lacquering Mini-Workshop Report

Larry McDavid





John de Haas at the workshop in his home following the Saturday morning meeting at Steve Craig's lab

Collector purists insist on leaving an original lacquer finish undisturbed, but occasionally the finish is so bad (or missing) that something must be done. Re-lacquering, though, seems complex and is often intimidating. This is an interesting topic and some of us gathered at John de Haas' home after the April meeting for an impromptu mini-workshop on lacquering old brass. This is a summary of John's presentation and demonstration.

John de Haas, of course, has many wonderful old brass microscopes and has long perfected his lacquering techniques. Watching John make this process look easy were Alan Bishop, Jim Clark, Ken Gregory, Larry McDavid, Ron Morris, Barry Sobel, Jim Solliday, Stuart Warter and others I'm sure I failed to note. John was not expecting the crowd that appeared at his door, but we all learned how to get started and many left with sample supplies.

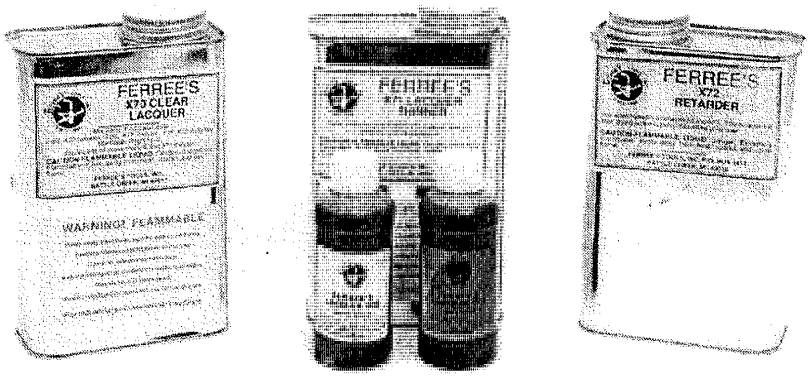
John demonstrated by applying colored lacquer to an old brass microscope barrel using materials he had already prepared. Then several of us tried our hand as well. I reached two conclusions: this requires practice to do well, and finding the correct supplies is part of the secret. John identified his favorite materials and I have contacted the vendors to confirm availability; a list of these items is included at the end of this report.

CLEANING OLD BRASS

The first step in re-lacquering is to remove the existing lacquer and inspect the brass surface finish. Old lacquer is best removed by completely immersing the parts in a 50% solution of household ammonia in water. It is important that all surfaces be completely covered with the solution as the reaction with air actually blackens brass. After about two hours the parts can be rinsed in water and scrubbed with a brush. Rubbing with a cloth soaked in lacquer thinner may be necessary as well.

All parts should be carefully inspected for dirt accumulations and residual lacquer. Knurls should be cleaned using a rotating fine wire brush. A knife edge file or triangular needle file may be used to clean internal corners formed by shoulders or steps.

At this point, inspect the finish on the brass. If the polish is adequate, no further rework is needed. If there are scratches or if the finish is dull, it is important to



Lacquering materials ordered from Ferree's Tools, Inc

polish the surfaces. The final lacquered finish is highly dependent on the surface quality of the underlying brass.

Polishing old brass requires care to prevent damage. Particular care is needed to prevent wear on corners and dimensional fits. Use buffing wheels judiciously as the brass surface can easily be worn if too much speed or force is used. Cylindrical parts are best polished by rotating them in a lathe.

Scratched or corroded surfaces may require use of a medium Tripoli cutting compound before polishing. For polishing, John prefers to use green rouge; red rouge (iron oxide) works well also but is somewhat messy to use. Either of these may be loaded onto a soft rotating buffing wheel or may be applied against a rotating part by hand using a soft cloth (or cheese cloth) moistened with lacquer thinner until wet. Light force must be used and it is important to not allow any heat to build up in the process.

It is essential to thoroughly clean the polished parts to remove all abrasives. Any residual polishing compound will surely cause streaking when applying the lacquer.

It should be noted that different brass materials exhibit different colors when polished. Old red brasses with high copper content will have a natural warm, almost reddish, tint. Newer high-strength brasses with higher zinc content will be whiter in appearance. No amount of polishing will change this natural color, but the dyed lacquer can usually be adjusted to produce a pleasing final color.

Chrome plated surfaces can be carefully polished by hand using a fine (e.g. 0000) grade steel wool wet with mineral oil. Buffing compounds are available for chrome, but extreme care must be used to avoid breaking through thin chrome plating.

THE LACQUER

The real secret to getting the desired finish appears to be not the lacquer itself, but the dyes needed to achieve the golden-brown color we admire on old brass microscopes. John uses a woodworker's cellulose lacquer commonly available, but he blends several dyes to achieve the desired color. John did not measure the blends, but judged the color by eye. If you use this method, make enough dyed lacquer to complete the entire job as the color may not match on subsequent batches.

First, the lacquer must be thinned for better flow when brushing. Without thinning, the lacquer will streak and may cause excess buildup. John adds about an equal amount of thinner to the original lacquer. The thinned lacquer should fall cleanly off the end of a wood stirring stick in drops. It is best to add the thinner gradually, stirring each time and allowing a few minutes for the mixture to equilibrate. It is better to have the mixture too thin than too thick!

It is necessary to reduce the rate of evaporation of the solvent in the lacquer in order to increase the drying time. Without this modification, it is difficult to blend adjacent brush strokes along the barrel. John adds a product known as "lacquer thinner retarder" to the thinned lacquer for this purpose. The retarder also enhances the flow of the lacquer on the part surface. John adds perhaps 4 ml of retarder per 60 ml of thinned lacquer.

The preferred lacquer dye is sold by Ferree's Tools, Inc. for musical instrument repair. Two colors are available: Light Gold and Dark Gold. In restoration, the goal is to match the original color as closely as possible. How much of each dye is needed must be determined by testing.

To match color, use a test sample with the same surface finish as the parts to be lacquered. A flat plate is easiest to use. Start by adding a few ml of the Light

Gold dye to the lacquer mixture. Mix well and apply to the test sample; the color can be evaluated even before the lacquer is fully dry. If the color is too light, add a few ml more of the Light Gold dye and test again after cleaning the previous lacquer off with thinner. If the color is still too light, add a few ml of the Dark Gold and test again. You will have to experiment to get the dye proportions for the color desired.

LACQUER APPLICATION

John began by, again, cleaning the brass barrel with fresh lacquer thinner. He said it is really important to clean off any residual polishing compounds from surfaces and knurls. He thoroughly wet the brush with the dyed lacquer and then wiped the brush on the top edge of the container to remove almost all of the lacquer; it is important to get lacquer throughout the bristle length, not just on the tip.

Holding the barrel horizontally, John made a single brush stroke across the entire length of the barrel. He held the brush so that most of the bristle length was in contact with the barrel, and he lifted the brush near the end of the stroke so that only the tip was in contact as the brush reached the end of the barrel. This stroking technique eliminates excess lacquer buildup at the end of the barrel.

He then quickly wet and wiped the brush again in the lacquer container, rotated the barrel and made another stroke. It is important that all additional strokes be completed before the lacquer from the first stroke dries too much. The entire surface of the barrel can be completed surprisingly quickly with just a little practice. If done too slowly, the final lacquer stroke will not blend with the first stroke. This all takes some practice, as many of us discovered!

It is important to keep the brush moving against the surface. A small turntable can be used for application on flat circular objects. The lacquer is applied starting at the center and flowing to the outer edge. If a second coat is desired, the first coat must be very dry; allow several days at least. The new lacquer won't be hard for at least a week. It is easy to remove freshly applied lacquer if the desired result is not achieved. We wiped the barrel using a cloth moistened with lacquer thinner.

THE BRUSH

John suggests using a one-half inch square-end brush, but, as I have discovered, it is not this simple! The brush that John generously let us use is a very old, very high-quality pure red sable brush. I have looked for similar brushes at artist's supply houses without success. Red sable brushes are not common today, being replaced by a less expensive material known as "Sabeline," which is a sable/synthetic blend. Pure red sable brushes are available at large artist's supply stores but cost substantially more than those made of Sabeline.

Another key issue is the length of the bristle. John's brush has very long bristles; typical artists' brushes have much shorter bristles. I discovered that a different class of brush known as "Sign Painter's Brushes" have much longer bristles to hold more paint for long sign character strokes. This type of brush is available, but I had to locate a commercial sign maker's store to even identify the brush. Again, pure red sable is available, but expensive. If you are using short strokes on a small part, then pure sable artist's brushes may be usable.

Regardless of the type of brush material, a full-bodied brush is needed to hold sufficient lacquer throughout the stroke. Just allowing more lacquer to remain on a thin brush will only lead to uneven coating thickness throughout the stroke. It is also important that the end of the brush not be "splayed." Keeping the brushes clean and stored upright will help. These brushes are expensive and deserve good care.

OTHER LACQUER APPLICATION TECHNIQUES

Lacquer can be sprayed on using an airbrush; one designed for more viscous materials is recommended. A small DeVilbiss spray gun with a clear glass cup is available from Ferree's and is a better long-lived choice. Lacquer for spraying should be thinned more and several coats applied.

Another technique suggested is to apply the lacquer by brush and then quickly use a spray gun to mist pure lacquer thinner on the part. The thinner will reflow the lacquer, eliminating any brush strokes.

We did not try any of these spraying techniques in the workshop. A well ventilated area is needed for spraying solvent lacquers. EPA guidelines for volatile solvent volumes need to be considered.

INKED ENGRAVING

Many microscope parts are engraved with names or numbers; this engraving is often filled with a black colorant for contrast. Removing the lacquer finish and polishing the part often removes this colorant which then must be replaced. John also demonstrated how to do this.

Removing a lacquer finish may not fully remove old colorant within the engraving grooves. It is best to fully remove the old colorant using an engraving tool or

needle before replacing it.This should be done while cleaning the part before lacquering. If new lacquer builds up excessively in the engraving, this may need to be removed before the new colorant is applied in order to ensure good definition of the engraving.

For engraved polished brass, John prefers to use a black lacquer stick made for this purpose by New Hermes, Inc.The lacquer stick is in the form of a large paper-covered crayon. The crayon is wiped by hand over the engraving, thereby forcing the colorant into the engraved grooves. Subsequently, the excess colorant remaining on the part is removed.

John first rubs a very small amount of mineral oil into the engraved area to help the colorant penetrate and "wet" the engraving. Then he rubs the crayon over the engraving.There will be some colorant left on the surface which can be removed by repeatedly wiping with clean sheets of toilet paper.A hard plastic or rubber squeegee may help initially, too.

The engraving can be re-inked either before or after lacquering, but John prefers to add the colorant after the final lacquer coat is hard. If the colorant is applied before lacquering, the lacquer may bleed out some of the colorant. One of the advantages of using a well-thinned lacquer is that it will not fill up the groves of typical engravings.

Occasionally, a painted or blackened part is engraved. This type of engraving is often filled with a gold colorant.Two materials are available for this today.John has always used a gold or silver lacquer stick made by Faber Castell; unfortunately, this company has been bought and sold twice and these lacquer sticks are no longer available. However, New Hermes does offer gold, silver and white lacquer sticks as well as the black one described above. I recently bought a gold lacquer stick which John tried and liked.

When I discussed gold filling with a local engraver, he demonstrated a product that he greatly prefers over the lacquer sticks.This is called Gold Leaf Rub 'n Buff and comes as a paste in a small tube. Squeeze a small amount of the material out onto the surface and with either a finger tip or a hard plastic squeegee wipe it into the engraving. After a few minutes of dry time, wipe off the excess with a clean squeegee.The filled area can actually be lightly buffed later to improve the luster.

CONCLUSION

Though the technique obviously requires practice to perfect, John convinced us that lacquering can be done successfully and good results can be achieved. Getting the correct tools and supplies is important as well.After watching John's demonstration, many of us got to practice under his guidance.

John wanted to also discuss satin finishing of brass and special requirements for lacquering objectives, but there was just not enough time. I am hopeful that we can prevail on John to repeat this workshop and expand its coverage.

This workshop, though informal and rather last-minute, was very successful. I know that some of us have been collecting the materials and are already practicing on our own.This was a great example of MSSC members helping each other while having fun.

LIST OF SUPPLIES AND SOURCES

1. Lacquer Materials. Cellulose lacquer, lacquer thinner, lacquer thinner retarder and lacquer dyes are available from Ferree's Tools.

Ferree's Tools, Inc.
P. O. Box 1417
Battle Creek, MI 49016
800-253-2261

Ferree's P/N	Description Price
X70	Clear cellulose lacquer, quart $10.00
X71A	Lacquer thinner, quart $6.00
X72A	Lacquer thinner retarder, quart 4.30
X73LA	Light Gold Dye, 4 oz. $2.75
X73DA	Dark Gold Dye, 4 oz. $10.00
F35	DeVilbiss precision spray gun TBD (F36 and F37 attachments are required)

Previously, Ferree's offered a kit of the above lacquer materials, but this kit is no longer available.These items must ship by UPS and there is an $18.00 hazardous material surcharge in addition to the usual shipping charge.

Only the two dyes are really unique; the other materials can be obtained from local hardware or woodworkers stores. I have ordered some of these items including extra bottles of the dyes which I will make available at the next meeting.

2. Brushes. Artists brushes can be obtained from large artists supply stores such as the following:

Art Emporium
2430 E. Chapman Avenue
Fullerton, CA
714-870-0430

Sterling Art
18871 Teller Ave.
Irvine, CA
800-953-2953
www.imagesite.com/products

The long-bristle sign painters brushes are available from businesses supplying this trade. They typically do not advertise except in the Business Yellow Pages. I have used the following:

McLogan Supply Co., Inc.
711 S. East Street
Anaheim, CA
714-999-1194

Sign-Mart / Plastics Plus
410 W. Fletcher Ave.
Orange, CA
714-998-9470

3. Engraving Colorants. Lacquer stick crayons are sold to the engraving trade but I have been able to buy by phone using a credit card. Prices shown below are approximate.

New Hermes, Inc.
7042 Lampson Ave.
Garden Grove, CA
800-843-7637

New Hermes P/N	Description Price
30-465-31	Engravocolor Stick, White $6.00
30-465-32	Engravocolor Stick, Gold $ 6.00
30-465-33	Engravocolor Stick, Silver $ 6.00
30-465-35	Engravocolor Stick, Black $6.00
999-121	Paint Fill Tool (plastic squee gee) $1.50

Other color Engravocolor Sticks are available. These sticks are quite large, 0.8 oz. New Hermes will send a catalog.

The gold leaf paste is available in large craft stores, such as Michael's. It is a wax metallic finish sold as Rub 'Buff by American Art Clay Co., Inc. (Amaco). Many colors are available, including several golds. The best one for gold filling engraving is Gold Leaf No. 76361A. A 0.5 oz. tube costs about $3.50.

4. Polishing Materials. Polishing supplies are available from industrial hardware stores and jewelry craft stores as shown below. Prices are approximate.

McMaster-Carr Supply Co.
P. O. Box 54960
Los Angeles, CA 90054-0960
310-692-5911
www.mcmaster.com

McMaster P/N	Description Price
4786A3	Tripoli Cut & Color (brown) $ 3.77
4785A2	Chrome Coloring (white) $10.20
4783A3	Red Rouge (red) $ 5.37

Bourget Brothers
1636 11th Street
Santa Monica, CA 90404
310-450-6556 ext. 400
800-828-3024 orders
www.bourgetbros.com

Bourget Bros P/N	Description Price
47-437	Brown Tripoli, 1/4 lb. $1.45
47-325	Water Soluble Red Rouge $3.80
47-407	Green Rouge $3.30

Bourget Brothers is local to Southern California and has a wide variety of polishing supplies. The water soluble red rouge is better than standard red rouge because it can be washed from hands and clothing, unlike the typical red rouge. The green rouge works well and can be cleaned also.

Bourget also stocks a complete line of buffing wheels and other related equipment. A separate buffing wheel is required for each type buffing compound.

Lab Notes

James D. Clark Jr.

The upcoming meeting Wed May 20, will feature a talk by Jim Solliday on"Pond Water and the nature of life therein". The second part of the program will be a "hands on" lab activity to allow members a chance to brush up on their microtechnique. Here's how it will work–

Bring to the meeting-

A microscope (simple student type is fine)
Illuminator or lamp and small extension cord
Slides and cover slips
(we should be able to furnish some)
Pipettes, droppers, paper towels and any other small items that might prove useful.

Pond water sample (if available, there will be lots of sharing)

So, dust off that scope and join in on what promises to be a fun evening. If you can't bring a scope(Ortholux or Zeiss Universal "to heavy"), there will be plenty to go around.

Any questions call Jim Solliday or me.

The topic of Lab or "hands on" activities and how to integrate some of these into our group"s monthly agenda was discused at the May 2nd officer's meeting. The following five possibilities were proposed and I include the list here for your consideration. A short discussion Wednesday, and maybe a show of hands will help provide some direction in this effort.

The proposals were to:

1. Have separate hands-on meetings of special interest groups (SIGs) completely separate from either Saturday workshops or third Wednesday meetings.
2. Have hands-on meetings on Saturday afternoon after the morning show-and-tell.
3. Have hands-on-meetings in the second half of the third Wednesday meetings after the speaker of the evening. The collector group would meet as usual in the second half, but other group(s) would adjourn for hands-on to another part of Crossroads.
4. Have hands-on meetings before the normal speaker at the third Wednesday meetings. Perhaps, hands-on from 6 to 7:30.
5. Make scheduled (perhaps every fourth Wednesday meeting) hands-on only nights with several groups meeting in lieu of having a speaker for the evening.

I fully ascribe to the "don't mess with a good thing" principle, however a plan that would allow for a "hands on" element when appropriate could be added to our Society's program schedule. Look forward to seeing everyone Wednesday.

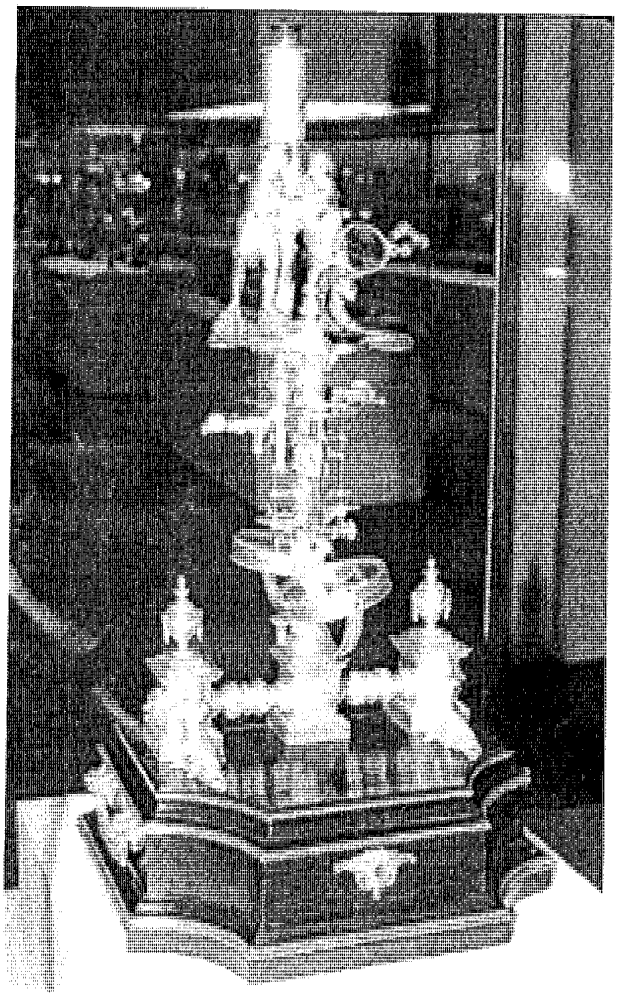
Jim Clark

An American Microscope Collector in England

Barry J. Sobel

Touching the Rosetta Stone

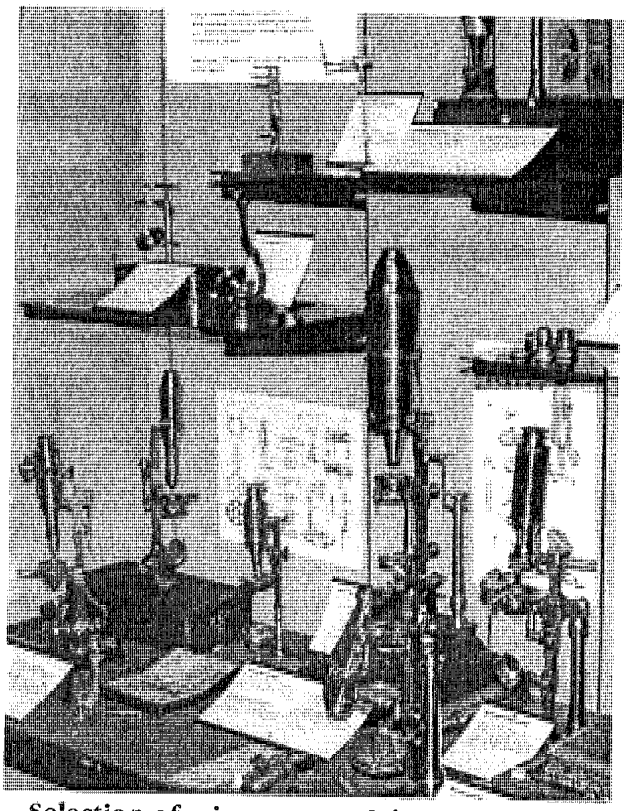
Leon Stabinsky and I started our trip from Los Angeles and after eleven hours on the plane we arrived 30 minutes early at Heathrow. The trip on American Airlines was quite pleasant both ways. We shared a cab from the airport which cost about £ 30 . (£1=approx. $1.7) After we checked in at the Hart House hotel, a bed and breakfast near the Portman (SAS Radisson) Hotel, site of the Fair, we took a cab and visited Derek Howard, Arthur Middleton and Trevor Phillip Waterman. Waterman had the most impressive things, with price tags to match. For example, an Adams variable for £65,000, an acorn microscope of ivory for £1200 and a Watkins with original case but mirror replaced for £6500. He also had impressive orreries and globes. Arthur Middleton had a few microscopes, but more in the way of globes and maritime/surveying instruments. Among the microscopes offered by Middleton were a Ellis aquatic signed by Bate, a large portable polarizing microscope by Swift(£2500) and a Gould microscope on folding flat tripod for £1200.At Derek's, I purchased an unusual Culpeper type microscope entirely of brass but with straight single-piece pillars in original case with accessories. I also bought an Andrew Ross circa 1855 dissecting microscope(signed) complete in its original case. I also got A Swift dissecting scope in excellent condition (Stevenson binocular head); he wanted £2800 for an R&J Beck best number one with most of the accessories including a quad nosepiece. Waterman wanted about £5800 for a large Ross-Zentmeyer in fine condition, but with few accessories. There was also, in one of the shops, a marvelous compendium of simple and compound microscope, solar microscope and all accessories signed and numbered by Benjamin Martin. Waterman also had a signed screw



The silver George III microscope by Adams Science Museum, London.

barrel compendium with original stand, the barrel half ivory, with the flexible linked mirror support, virtually complete, original condition signed by Scarlet.

On the next day we visited Nick Webster who owns a huge warehouse in Acton and whose main business is setting up sets and scientific/medical props for the movie industry. Most of the warehouse is full of medical equipment; everything from beds to crutches. He also has a good stock of scientific equipment from two centuries back to only a few years ago. A former major instrument dealer, he still has a large inventory, a little of which he is willing to part with. His most impressive inventory is in antique microscope slides, but he is unwilling to part with most of the more in-



Selection of microscopes. Science Museum, London

teresting or uncommon ones; average price for E. Wheeler slides was £4.5. A Non-Dancer microphotograph of Saturn cost me £25. Injected and stained tissues were a bit more reasonable as were the slides of the Jersey mounters (£3.5). He would not sell a single mineral section. I purchased a single Swift 1/6 objective for £35, and two other similar objectives for the same. He wanted £45 for a generic but nice objective with correction collar, a low power Zeiss objective, and would not sell a small unsigned French objective. He wanted £300 for a Ladd oxidized and lacquered brass simple type of Gillette condenser (no gearing, the diaphragm moved by hand). I did not take it. We had tea and biscuits at his place and after a nice visit, we left for the Science Museum.

That museum, I am sure, is unparalleled in quality of the displays and the explanations given. The collection of microscopes is most impressive; although not the largest, it is very well representative and contains many of the worlds most impressive and important microscopes. It includes King George III's huge silver microscope by Adams, the Prince of Wales microscope, a Cary-Gould made of silver, and some of the largest as well as smallest microscopes ever made. Older types as well as later types are all well-represented. The museum also has a very impressive collection of orreries and many other kinds of instruments.

On the next day we traveled to York, a lovely town about 2 hours north of London by train. A quaint town covered with cobblestone roads, there is much to do and see. The tour bus is half price with a train ticket stub and you can get on and off all day as long as you don't lose the ticket like we did! Scientifically the high point was the Castle Museum, "devoted to everyday life." What the title does not say is everyday life in the past - from the remote past to recent. This included several instruments and a realistic store setting of a early 19th century mathematical instrument maker. That evening we ate dinner with Derek and Paul Howard and family. He is a longtime friend of Leon's. There, in his lovely house, we were treated to his private collection of magnificent microscopes, several extremely rare ones including a bell-shaped ivory one which accepted Von Ypserle mounts, a Tourac and Oberhouser microscope with a right angle attachment holding a built in miniature camera lucida for drawing. There was also a small rare and complete measuring microscope, a Watkins-type and others. The Watkins type had elegant feet which did not have a vertical cabriolet bend, but had an s-shaped horizontal appearance. It accepted a compound tube as well as functioning as a single; this is a rare item. A large French dissecting microscope which could accept Petri dishes resembled a similar Beck Product and was 100% complete. There was also a mint condition Charles Chevalier.

The next day we went to the Bermondsey Flea-Market area. We arrived around 6:15 a.m. - later than usual; this market, previously a good source of instruments has in recent years been less so. We saw many clocks, watches, and inkwells however, as well as the usual china, etc. We also visited the shop of Victor Burness close by. Next was the most exciting museum, at least for me. We traveled about an hour by train to Oxford. After eating lunch in a pub, we entered the museum. I thought I had died and gone to heaven because this was clearly the most spectacular microscope collection I had ever seen. No book or picture or description could do it justice. Everything from box microscopes to Powells were there. Compendiums, solar, miniature, you name it and it was there with few exceptions. What was not there was often present as a replica. The astrolabes and sundials were equally complete and impressive. We were also priveleged to meet Dr. Hackmann of the Museum of the History of Science in Oxford. I was flattered when he complemented me on my article on accessories for antique microscopes in the April 98 issue of our MSSC Journal. I shot over a roll of slides which I prayed would turn out. This was the most difficult part since the instruments were close to each other, displayed much the same way as I do.

Saturday is the day for Portobello Road and off we were at about 6:15 a.m. Many shops were not yet open but several important ones like Desmond and Liz Squire's were. The antique area is T-shaped and most of the

shops are on a moderate hill. Stands are both indoors and out, on the ground floor and in the basement; you will really get your exercise here!. There is no uniform opening time with some opening at 6, some at 7, some at 8 and some as late as 9 a.m. Even so, several trips around were needed to be sure to cover every stall. Well known dealers here include Stuart Talbot, the Squires, Peter Delahar, Elizabeth Bennion, David Burns, James Layte, and Paul Hamilton. Everybody is open, rain or shine and it did rain while we were there. The selection at Portobello was, at best fair, as far as scientific instruments were concerned. Prices ranged from low to very high but there were no real knockout pieces in any case, at any price; some pieces were more expensive than the same piece at the Fair. Microscopes were not plentiful. The ones that were there were not very desirable. Leon had better luck with miniature viewers and live box magnifiers than I did with larger pieces. Virtually no objectives or accessories were to be found and the few slides available were either diatom arrangements or butterfly scales and were ugly compared to Klaus Kemp's. Portobello was also a fine place for jewelry, pens, clocks, watches, small furniture, music boxes etc. There were some nice physics pieces such as tangent galvanometers or Wimhurst machines. Medical antiques were more plentiful. Bermondsey was better for carriage clocks, but only because the prices were lower. Some of the same dealers showed up at both places. Perhaps the rarest and most unusual piece at the Portobello market was a walking cane which contained a brass Withering botanical microscope. The handle unscrewed and the microscope hidden in the upper part of the cane could be screwed on to replace it; the bottom end of the cane had a folding tripod hidden within it so that when assembled, the microscope rested on a sturdy stand at a comfortable height for observation while standing.

The last day in London was at the Scientific Instrument Fair. There was clearly a greater variety and higher quality of items than at any of our fairs in the States. It would compare in some ways to the New Jersey Fair. The number of good items was probably a bit better. American dealers were present in abundance including Tesseract and Ray Giordano. Dealers from France and Germany as well as the U.S. and U.K. were well represented. The selection of microscopes was surprisingly similar to the U.S. Fairs; many ordinary Leitz and Zeiss types, a few Cary-Gould types, and some nicer ones like a binocular Collins complete, and Brass Culpepper types. On the other hand, there were no microscopes worth over about $3500. As in the U.S., there were some poor marriages of microscopes (sometimes unknown to the dealers). The selection and availability of antique slides was extremely poor. There were a few things at good prices but very little in the way of a steal or great bargains. Like our own dealers, there were a great number of polished instruments. I just missed a nice Baker Nelson Model microscope (£650) which had a unique type of fine focus but it went to a good home - a first time English microscope buyer who was very excited to get his first instrument. I could see the thrill in his eye as he examined it and finally took out his checkbook. At the Fair, we met up with fellow MSSC member and treasurer, Dave Hirsch, who obtained a very interesting "Ultra Lomara" microscope in original case with a surprising range of accessories. The case was as interesting as the instrument, as it looked like a case for a set of binoculars. After the Fair, Dave, Leon and I went off for a pleasant lunch at Selfridges. As we said goodbye, Dave was to spend another few days touring England, while Leon was going on to Belgium and I was to come home the following day.

The only place I saw fabulous instruments for sale was at Trevor Phillip Waterman's store; either no one bothered to bring them to the show, or they just did not have them. Interestingly, there was not a single Ross microscope at the show, only one (relacquered) Powell and Lealand dated 1853, similar to my own, only a few Smith and Beck's (one number one stand with accessories for over £2600). Accessories were almost nonexistent. More than one dealer told me if they got them, they would not sell them, but would wait for a microscope which "needed" them. One dealer advised me he would sell them, if he got them, but only at a very high price.

The worst part of the trip was leaving. It cost only £4 to Paddington station, and another £5 to take the express train to Heathrow. The express train transfers you to a bus about half way. You must know your terminal so you know which bus to take. The bus is at platform level so there are no stairs to climb to take your wheeled baggage in. One small step out at the terminal; that is where the nightmare begins. First there is the relatively short walk to the airline in question. Then the long wait for the first level of security where they ask you questions such as they would in the U.S. For me, the line for this first level of security was moderately long but moved very slowly. Once through the first checkpoint, you have to take each bag and insert it into the x-ray machine where it has a 50% chance of being rejected, coming backwards to you out of the conveyor. You then need to proceed to another x-ray machine where, if you have microscopes, they will certainly make you open the luggage and at least partly unpack and search it. The only good part of this is that they will seal the luggage with strapping as securely as you like. You then proceed to a "lounge" where there are shops like our gate areas, but you are still not at the gate. You need to pass through hand-bag security here. Once your gate is posted on the screen, you then proceed to your gate which in my case was more than a mile walk! Boarding started from the rear and

continued on page 103

Other Voices

Herbert A. Gold

Here is the second appearance of this aperiodic column. It's goal is to share with the membership a brief summary of the communications we receive from other microscopical societies.

This month we received *The Journal of the Microscope Historical Society*, Vol. 6, No. 1, Spring 1998. The editor, Dr. Manuel del Cerro, traveled to Holland and saw both interesting microscopical sights and sites. In Delft he saw van Leewenhoek's tomb, at the Boerhaave Museum in Leiden were three of the Delft draper's microscopes and another at the Uthecht University Museum along with an extraordinary collection of more modern microscopes. There's a brief investigation of *Demodex folliculorum*, the mite said to live in the hair follicles of our nose, eyebrows and eyelashes. Maybe that ugly little creature is crawling around on you but certainly not on me. The feature article is a delightful tale of the search (successful) for a Bausch and Lomb Model R. This was a "baby" or miniature stand popularized in the 1930's for budding scientists. One would have had to have been a pretty well endowed researcher (and I don't mean that as a sexist comment) to afford to spend $21 for a microscope outfit during the Depression.

The Postal Microscopical Club of Australia has favored us with the *Amateur Microscopist*, No. 20, July 1997 and a number of their back issues. The first thing that caught my eye in the current number is the back cover. Here is a catalog page reproduction of Swift's gloriously idiosyncratic Stephenson's binocular stand. MSSC member, Barry Sobel, amazed us with a similarly configured, recently acquired stand. Van Leeuwenhoek is the subject of the lead article. The material is based on Clifford Dobell's biography, *Antony van Leeuwenhoek and His 'Little Animals'*. AvL discovered the bacteria in dental plaque and identified the cause of bad breath. He flossed his own teeth with a fowl's feather and cleaned them with salt every morning. It is said that he examined the explosion of gunpowder under his microscope. Given the small object to objective distance involved with his single lens, it's no wonder he's not alive today. *Artemia Salina*, better known as brine shrimp or sea monkey is the subject of a very interesting article. They live in salt water but not in the ocean. Huh? How about the Great Salt Lake! These fascinating *Crustacea* are well described here.

In our next Bulletin we will have a look at back numbers of the *Amateur Microscopist*.

An American Microscope Collector in England **- continued from page 102**

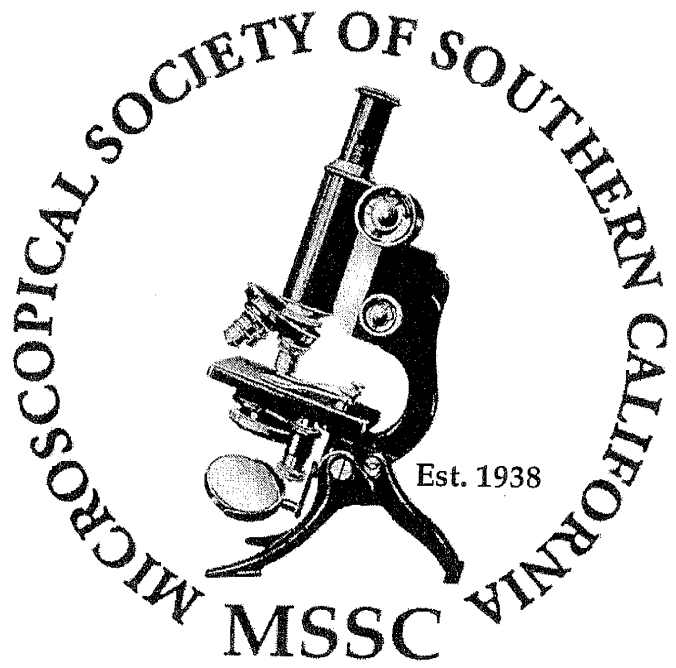
it started quite early, about 45 minutes prior to departure. It took longer than I thought to get through all of this and 2.5 hours was the time from the hotel to the plane. The three hours that I allowed was adequate but certainly not excessive. If I had known this, I would have left more time, especially allowing for the baggage searches. Also, in the States, you are permitted to take a nail file or screwdriver or pocket knife with you on the plane; not in the U.K., not even a pocket screwdriver is allowed. Considering what I went through, I am not surprised many passengers arrived on the plane at the last moment or close to it. Once we got on the plane there was a 50 minute delay due to traffic congestion.

Overall we had a wonderful time. To summarize what is available, I provide my own subjective assessment as a predominantly microscope collector in the table below. I have included overall ratings of the locations, as well as dealers with either the highest quality or greatest variety of instruments especially related to microscopy or optics or that have actual stores. * indicates many polished or altered instruments and/or many replicas. Replicas were not present at the Scientific Instrument Fair.

LOCATION	VARIETY	QUALITY	PRICES
Bermandsey*	fair to poor	fair to poor	fair to good
Portobello*	fair to good	fair to good	fair to good
Scientific Instrument Fair*	good	fair to good	average to good
Waterman	limited	good to superb	very excessive
Middleton	limited	variable	excessive
Squire	limited	good	average to higher
Howard	very good	very good	reasonable
Webster	fair to poor	good	average

The New Logo

James D. Solliday



Choosing a new logo for our Society has been a difficult process. We had no shortage of attractive ideas with contributions coming from a number of our members. Arriving at a final chose has been more time consuming then expected. The officers of the Society would like to thank the members that submitted their ideas. The quality and originality of the submissions were so good that to decide was almost painful. Thanks also to all the members who made the effort to turn in their vote.

The final choice features a unique and rare American microscope that was manufactured by the Spencer Lens Co. The microscope was introduced in 1915 as the *Spencer New Portable Microscope No.60*. The unique feature is that its legs fold back on themselves, allowing the instrument to be stored in a very compact (magnalium) aluminum case (see first international published illustration in the *RMS*, 1915, pp.68). The instrument possesses all the features of the typical higher class stand including an Abby condenser and a triple nosepiece. The find adjustment was the same as on the larger Spencer stands. With the exceptation of the folding foot, the most important feature was its aluminum storage case. It consisted of two halves hinged together having the overall appearance of a very small briefcase. It also provided excellent protection from the weather. The walls of the case were strengthened around the edge by a narrow band of increased thickness, which is sufficient for holding a felt buffer to make the case dust-tight. The outer surface was covered with a baked-on imitation leather enamel. The case dimensions are, 8"x 6"x 3" with the weight of the whole package only 9 lbs. There are built in tubes and fittings which hold a number of special accessories including: a mechanical stage, a haemaglobinometer and the choice of a haemacytometer or Spencer camera-lucida, all fitting inside the lid. Internal fittings also hold a collection of slides as well as extra eyepieces. In 1917, the W.M.V. Willis & Co. catalogue of Philadelphia described the use of the microscope as follows: "This microscope is

offered for Bedside Diagnosis, and for the use of the physician who has occasion and desires to carry his microscope with him at times, as well as having a very efficient instrument for his office and laboratory use. It is a full size, completely equipped, compound microscope, so uniquely designed and put up in such compact form that it may be carried without inconvenience to the bedside of the patient."The Spencer catalogue of 1924 describes it as a "thoroughly satisfactory instrument for use in the laboratory of the hospital, medical school or private practitioner, meeting all the requirements that are ordinarily made of the high-grade microscope, and at the same time so compact as to be packed in about one-quarter the space occupied by the case of ordinary instruments." For those of us who like the older look, the finish of the instrument is of lacquered brass and black enamel. At the May 2nd MSSC workshop, Norm Blitch exhibited before the membership a fine example of our new logo microscope. He was kind enough to demonstrate how nicely the instrument could be set up from its unusual metal storage case. I am sure that I speak for the rest of the members when I say it was a fine and impressive microscope and one in which we can all be proud to have as our new logo. The instrument has a very nice shape and represents innovative American design and workmanship. It was still advertised in the Spencer catalogues in the early 1930s and was very likely still available at the time of the founding of our Society (1937). Look for this new logo to appear on coming MSSC publications and documents.

The name of Spencer is one of the oldest associated with American microscope making. It might be of interest if I include a bit of history concerning the Spencer microscopes. Charles Achilles Spencer was born in 1813 and died in 1881. In 1838 he established his business in Canastota, New York. His dynasty lasted 100 years. In 1838, he built for himself the lathe on which he made the first achromatic lenses produced in the United States. In 1847, he visited Prof. J.W. Bailey at West Point. It was there that he saw a microscope made by Chevalier. He claimed at once that he could make a better instrument. Dr. Gillman took him up on his boast and a few months later, Spencer returned with a microscope that greatly impressed both Bailey and Gillman. By 1851, the American Association for the Advancement of Science called Spencer the best maker of objectives in the world. In 1878 Prof. Barnard of Columbia University entered some of Spencer's objectives, without his knowledge, in the Paris Exposition. At the conclusion of the exhibition they were awarded the Gold Medal for superiority (TAMS/64/ p.30). In 1854-1865 he was in partnership with Mr. Eaton establishing the firm of Spencer and Eaton, of Canastota, N.Y. In 1865 to 1875, the firm was known as C.A. Spencer and Sons. After the fire of 1873, in which the workshop was destroyed, they moved to Geneva, N.Y. and worked with the Geneva Optical Works (1875). In 1877, they were again independent and were known as the C.A. Spencer & Sons, Geneva, continuing until 1880. From 1880-1888 Herbert Spencer continued as H.R. Spencer & Company, then moved to Cleveland, Ohio from 1889-1890. He then set up in Buffalo, N.Y. operating as the Spencer & Smith Optical Company until 1895. Fred R. Smith had worked with Charles Spencer for 18 years. In 1895, Spencer et al formed the Spencer Lens Co. which continued until 1935 at which time it was acquired by the American Optical Company. As early as 1898, Spencer had issued a catalogue describing their "Continental Stands" which consisted of 3 models. In 1915, the Spencer Lens Co. introduced their New Portable Microscope, No.60 (the new MSSC logo). Herbert Ruthven Spencer was born in 1849 and died in 1900 and was a very important part of a great American microscope making legacy producing instruments that are still in use today. I for one am proud to have a Spencer Microscope as the logo of the Microscopical Society of Southern California.

MAY MEETING

Wednesday, May 20 at 7 PM
Crossroads School
1714 21st Street
Santa Monica, CA

It's Springtime

An Introduction to Pond Life

Multi - Media Slides and Music and a Hands - On Workshop

Jim Solliday will present one of his incomparable multi-media shows that fade between two slide projectors with synchronized accompanying music matching the mood of the slides.The subject will be the microscopic creatures that can be found in a pond. Anyone who has seen one of Jim's presentations will not want to miss this one.

After the 35 minute multi -media show of the beautiful and interesting things that can be seen, we will all have a chance to look at the real thing.

Jim will demonstrate how to make wet mounts, showing the results on Larry Albright's inverted Nikon microscope with attached video camera. We should see such things as rotifers, daphnia (water fleas),nematodes, algae, diatoms and protozoa.

Then the next step will be for members to make their own slides and see what they can find. Members are encouraged to bring their own microscopes and any water that they want to look at. The interesting specimens can be put on Larry's video setup so that the whole group can view them. Our several experts on pond life will be there to identify what we find.

Things to bring are:

1.A microscope, single tube is fine.
2.Light source with extension cord and multiple plug strip if you have one.
3.A jug of stagnant pond water if you have a source.
4.Any favorite books on pond life that you think others might like to know about.

Slide making materials as well as some spare microscopes will be provided.

Jim will also show what is needed for both a field collecting kit and for slide preparation in the lab.

This should be an outstanding combination of artistic entertainment and education. It might be an evening to bring a child who could be stimulated by the wonders of the unseen animals in scummy ponds.

Editor's Notes

Once again, it is a great pleasure to be able to assemble the excellent writings of the many members who continue to contribute to our Journal. I feel privileged to see these articles first and to work with them. Since most articles come from local members, however, I am concerned that there are corresponding members out there who have fascinating input, but -that they are somehow reluctant to send it in because they are far from the action here. Please, do not hesitate. Think about your accomplishments, experiences or ideas that would be of interest to the other members and take the time to write them up. Feel free to send in a rough draft, and I will be glad to work it up with you into final form.The experiences of those outside of California can add further richness to our shared experiences. How about some member profiles from our distant members? I look forward to hearing from you.

Gaylord E. Moss