

## THE PARAFFIN LAMP - A RESURRECTION

by  
**Dave Hirsch**

We have among us MSSC members who are eBay afflicted. Assiduously, and with great frequency, we peruse the Antiques and Collectibles sections covering scientific instruments. Juicy scientific morsels are contemplated and bids placed. After an eternity the auction ends, and all the while we hope that some sniper didn't grab on to the prize at the very last second. This time the hammer drops and we are the holder of the winning bid. You know the winner when he or she comes to the meeting grinning from ear to ear, shlepping their prize to the envy and admiration of the group assembled. Regrettably, such is not always the case.

The auction advertisement mentioned a "*mystery instrument*," denoting that the seller didn't have the foggiest idea of what was being offered. Bottom line: I was the one and only bidder, acquiring the item for six bucks plus another fiver to have the brass fragments shipped to me. What I received is shown in fig. 1. It was a well-patinated brassthingy consisting of two main assemblies; a ring base with an attached post and an assembly with a two-inch diameter compound lens fitted to an arm which rode on a rack and pinion arrangement. The item had no signature or other identification. Astute MSSC mavens steeped in the lore of historical technology might have suggested some sort of Victorian period scientific laboratory device, a lamp, perhaps.

Gerard P.E. Turner's, "*The Great Age of the Microscope*" has a section on paraffin (kerosene) lamps.

Fig. 1



Paraffin lamp illumination was used by British and other microscopists well into the 1930s. British microscopical societies retained a number of these lamps for general use during meetings. Two such lamps are shown here. The lamp shown in fig. 2 has a glass chimney and is signed: "*Collins London. Bockett Microscope Lamp.*" The lamp shown in fig. 3 has a metal chimney and is signed: "*Swift & Son. London.W.*" The assembled fragment of the "*mystery lamp*" bore no resemblance to any of the lamps pictured. What then, would the missing parts, namely the lamp assembly and a chimney look like? It is no wonder the "*mystery object*" went for six bucks! In contrast, a piece de resistance, the "*Bockett Microscope Lamp, 19th Century*,

*signed Collins*” appeared on eBay. The first bid was \$100.00, reaching \$911.00 without meeting the reserve. The pristine condition and configuration of the lamp would put any collector of microscopes and accessories into a state of frenzy. Being thus challenged, the augmentation of the eBay find got underway.

Beyond that which already existed, the original in-toto form of my “*mystery lamp*” was indeed, a mystery. Back we go then to our old scientific instrument books and related references. Hopefully, the gleanings will offer clues as to how the “*mystery instrument*” cum lamp might have looked

when it illuminated a specimen for some long departed bearded and swallowtail-coated Victorian gentleman peering into his Powell & Leland binocular microscope.

After perusing several photos and sketches of old microscope lamps, I dug into my treasure chest loaded with driblets and drabs of sundry cast off materials. I recovered a conglomeration of scrap brass in the form of rod, tubing and sheets which came together as the lamp assembly shown in fig. 4. This end product was pompously alluded to as: “*An extrapolated reconstruction of a 19th century paraffin lamp.*” The assembly inte-

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**MICROSCOPICAL SOCIETY OF  
SOUTHERN CALIFORNIA**

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\* Prospective new members, please contact Herb Gold 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 checks payable to “Herb Gold - MSSC”.



Fig. 2

grated without difficulty to the existing base, post and bullseye. The completed lamp and chimney ensemble is heavier than an equivalent authentic paraffin lamp. This was due to limited availability of brass configurations of proper thicknesses. The wick adjusting element which screwed into the tank was of the proper size. A flat wick of a woven textile such as cotton is retained in a flattened tube equipped with a means for raising and lowering the wick. The wick is immersed in the tank and the fuel rises in the wick by capillary action. When the fuel is ignited it burns with an incandescent yellow flame. The incandescence is due to incomplete combustion accompanied by glowing particles of carbon, most of which dissipate into the atmosphere while some carbon accumulates on the inside surface of the lamp chimney in the form of soot. (Paraffin lamp lore states that adding a small amount of camphor to the fuel serves to produce a whiter flame). The soldered tank assembly can be rotated in the support arm. This feature permits the wick holder to be moved broadside for use with low power objectives or edge-on for high powers.

A sleeve section surrounding the wick adjuster was made from a 1.25" long x 1.50" diameter x 0.03" thick wall brass tubing. Two rows of 0.156"

diameter holes uniformly spaced with 12 holes per row allowed for ventilation. A brass clamping ring, 0.375" wide x 0.031" thick holds the flame chamber in position.

Compared to modern methods of microscopical illumination, paraffin lamps had limitations. The lamps were able to meet all of the criteria of the ideal Kohler illuminator except intensity. They provided illumination sufficient to the requirements of high power brightfield (in a situation of low ambient light), but was inadequate for darkfield especially at the highest powers.

The 'bullseye' condenser shown in fig. 4 serves to concentrate the light. Condensers can be free standing or may be integral with some makes of paraffin lamps as applied here. Most bullseye lenses are of a single element with a short focal length. The subject bullseye lens system consists of two plano-convex lenses, a two-inch and a four-inch focal length lens with the convex surfaces facing outward. In assembly, the lenses are spaced 0.25" apart. When the lens assembly is placed adjacent to the lamp flame port, a uniform "white" image is projected. The bullseye mounts on a gimbal and is adjustable to swivel and rotation. The gimballed bullseye is assembled



Fig. 3

to a dovetailed bar which has a rack on its underside. The bar-mounted bullseye is translated by means of the rack and pinion. The complete bullseye assembly may be swivelled horizontally on the end of the mounting arm. A spacer and a threaded stud were added to provide vertical adjustment of the lens system.

The lamp chimney, whether of glass or as a formed metal enclosure, enhances the flow of air by convection assuring optimum combustion. A mechanically assembled metal enclosure was used here. Assembly by soldering was not feasible due to the high combustion temperatures. Brazing, though preferred for assembly, was not used due to the lack of brazing equipment. The flame chamber was held together using tie rods. It consists of a two-inch outside diameter brass sleeve with a section cut out for the illumination port. Actual paraffin lamp metallic parts were made of material 0.03" to 0.12" thick. The rectangular aperture in front of the flame chamber facing toward the microscope is fronted with a holder sized to retain a 1 x 3-inch glass microscope slide which serves as a window. The glass slide is removable for cleaning or replacement and is retained by a knurled screw. Glass filters of applicable colors can be made from tinted glass. The chimney assembly is attached to a horizontal supporting arm and can be adjusted vertically



Fig. 4

cally and locked into position on the ring post. At this point, our "mystery instrument" ceases to be a mystery because it is now our version of a well defined paraffin lamp. For aesthetic enhancement, the gripping surfaces of all thumb nuts were knurled

and all component parts were buffed. Now, for the crowning touch!

Paraffin lamps of yore were usually supplied with storage cases, so back to the goody box we go in search of suitable case material. Fortune smiles at us as we come across some 0.375" thick mahogany fragments.

After the usual woodworking episodes, the sawdust finally settles and we have our storage case, complete with period brass hardware as shown in fig. 5. For storage the bullseye assembly is removed from the lamp and the bullseye is separated from the rack assembly. These parts are held in separate wood brackets. A utility box on the inside of the door holds extra slides, forceps, a spare lamp assembly, etc.



Fig. 5

When we consider the refinements and control relating to contemporary microscope illumination systems, current utilization of paraffin lamps would apply mainly to people who are butt deep in nostalgia, like Civil War enactors and their ilk. In kind, the Victorian wannabe gets a taste of historical microtechnique. In passing, the safety aspect of paraffin lamps bears scrutiny considering the volatility and combustibility of paraffin oil. For example, what steps were taken to prevent an avid and incautious microscopist from having his beard catch fire? Indeed, has this ever happened?

### Bibliography

Gerard P'E Turner, *"The Great Age of the Microscope,"* Adam Hilger, Bristol and New York, 1989, pages 289-290.

eBay Item 39264421. Bockett Microscope Lamp signed: "Collins," Nov/Dec 2002.

Micrographia. "The *Ideal Microscope Lamp*," page 2. [www.micrographia.com](http://www.micrographia.com) □



# WORKSHOP OF THE MICROSCOPICAL SOCIETY OF SOUTHERN CALIFORNIA

recorded by Herb Gold and written by Jim Solliday

Date: Saturday, 6<sup>th</sup> September 2003

Location: Ken Gregory's Residence



The workshop began at 9:20 am and was called to order by the President, Jim Solliday. The meeting was held at Ken Gregory's house with sixteen members present. The weather was bright and sunny and the members gathered under the tree in the backyard. Two tables were covered with exhibits and another table, located in the driveway, featured sale and giveaway items including some surplus items left by Dr. John Field for members to take on a first-come, first-serve

basis. Dr. Field had originally planned to attend the workshop, but was unfortunately called away at the last minute.

A new member, Sid Schiff, attended this meeting. Sid is from San Clemente and his interests include scientific apparatus and collecting old microscopes. Members welcomed Mr. Schiff to the fellowship and offered him our customary hand of friendship.

Ken Gregory then mentioned that he had successfully obtained two excellent speakers for the next lectureship meetings (third Wednesday of the Month). Dr. Clifton Franklund, from the Department of Biological Sciences, CSULB, will give a presentation on the microscopic analysis of oral biofilms at the September 2003 meeting. Ken described biofilms as populations of microorganisms that adhere to any surface with sufficient moisture and adequate nutrients. The subject of the October 2003 meeting will be human parasitology.

Jim Solliday displayed an example of the latest edition of *The Journal of the Microscope Historical Society* (edited by Dan Kile, [dkile4@comcast.net](mailto:dkile4@comcast.net).) The Journal is a professional quality publication, boasting a new and colorful format, is well illustrated and packed with researched articles. The President (Jim Solliday) gave his highest recommendation for this publication, especially for anyone interested in the history of the microscope and collecting the instrument. There was also a discussion led by Stuart Warter on the value of maintaining a hard copy of our own fine Journal. The members were then reminded that the next workshop (October 4<sup>th</sup>) would be held at Izzy Lieberman's residence.

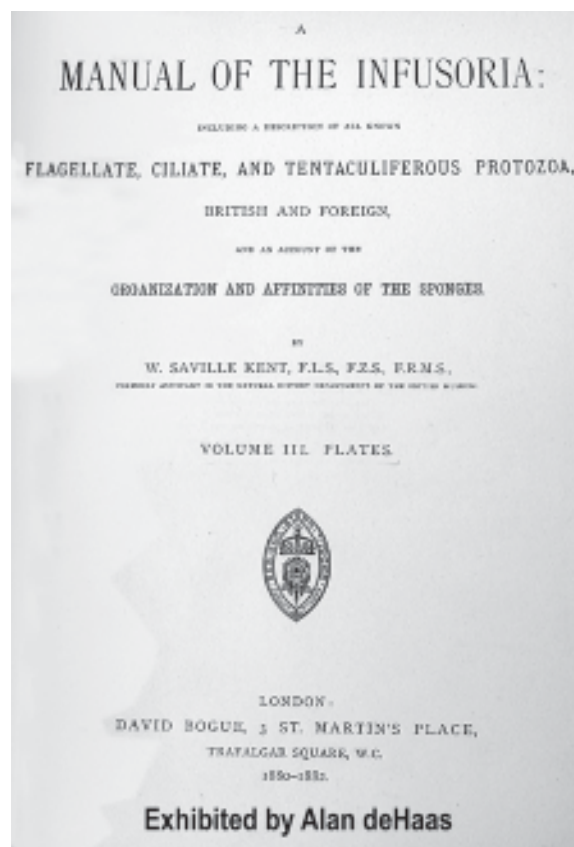
### Exhibits and Discussions:

**Alan deHaas** described for the group a collection of rare books he had set up on the desk in the house. All the books brought to the meeting were for sale at very reasonable prices. Alan has decided to keep all his books on optics, but liquidate books dealing with subjects such as the descriptions of microscopical discoveries. The two books that he brought outside to the meeting area were by Joseph Leidy and Saville Kent, both were authors of superbly illustrated works on the Protozoa.

Joseph Leidy's book was entitled *Fresh-Water Rhizopods of North America* (1879), published in Washington by the Government Printing Office

(U.S.G.S.) for the Department of the Interior. This was part of the U.S.G.S. report of the Territories. Volume XII, with beautiful color plates. Alan was asking a mere \$80.00 for this near perfect copy.

The second book, by Saville Kent, was entitled *A Manual of the Infusoria: Including a Description of All Known FLAGELLATE, CILIATE, AND TENTACULEFEROUS PROTOZOA, British and Foreign, and an account of the Organization and Affinities of the Sponges*, three volumes, (1880-1882). This is indeed one of the best-illustrated books ever produced on the subject. If one carefully studies the plates, he cannot help but realize that it should have taken a lifetime to create all the spectacular drawings. Volume Three, representing the plates, has literally thousands of illustrations all of the finest detail. David Bogue was the publisher of this three-volume set in London. At the time it was considered by the author to be a complete account of the subject.



Alan also talked a bit about the works of Ledermüller (Pub. 1760-1763) and exhibited two copies of this magnificent book. The hand-painted illustrations throughout this collection can only be described as among the best ever published. Of interest was the fact that the engraving of the mosquito found in Ledermüller's work is very much the same as that done over a century earlier by Swammerdam (see the illustrations for a comparison).

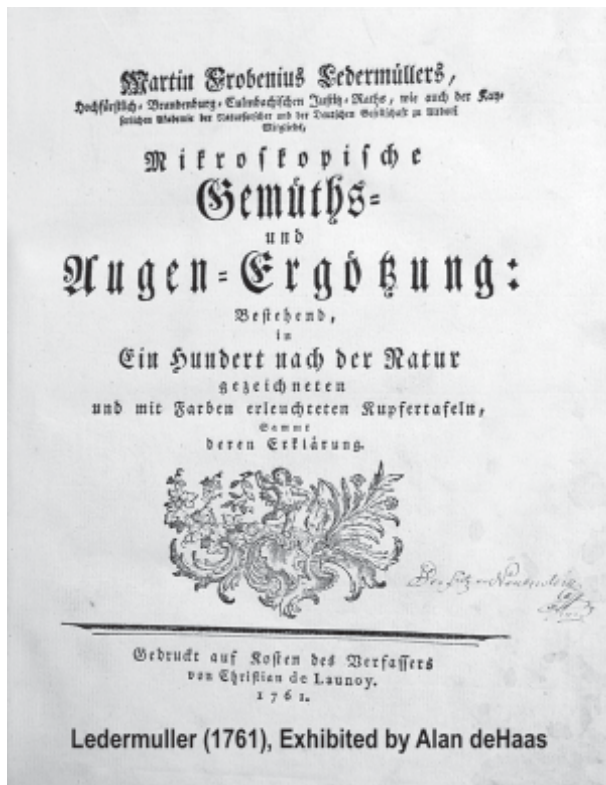


**Ledermuller (1761), Exhibited by Alan deHaas**



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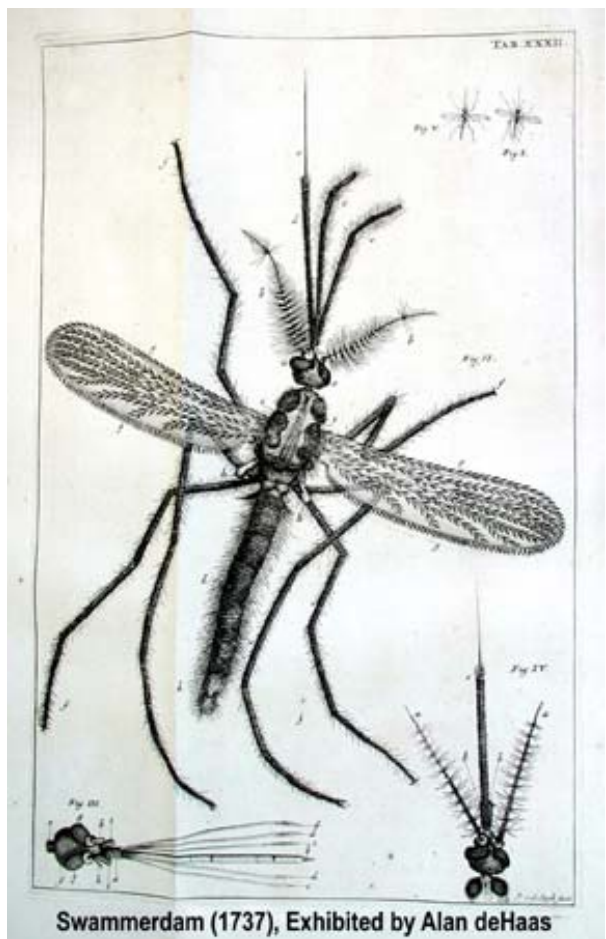




Ledermuller (1761), Exhibited by Alan deHaas



Ledermuller (1761), Exhibited by Alan deHaas



Swammerdam (1737), Exhibited by Alan deHaas

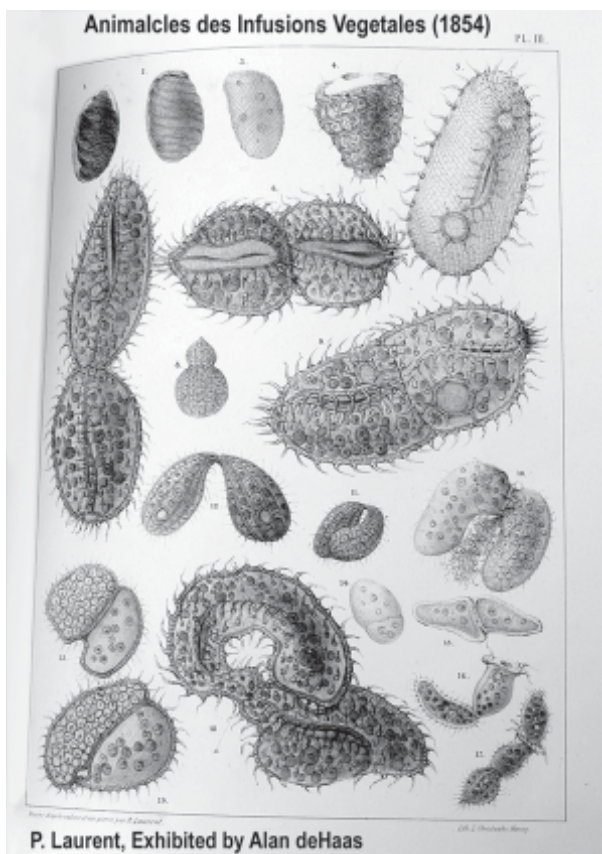
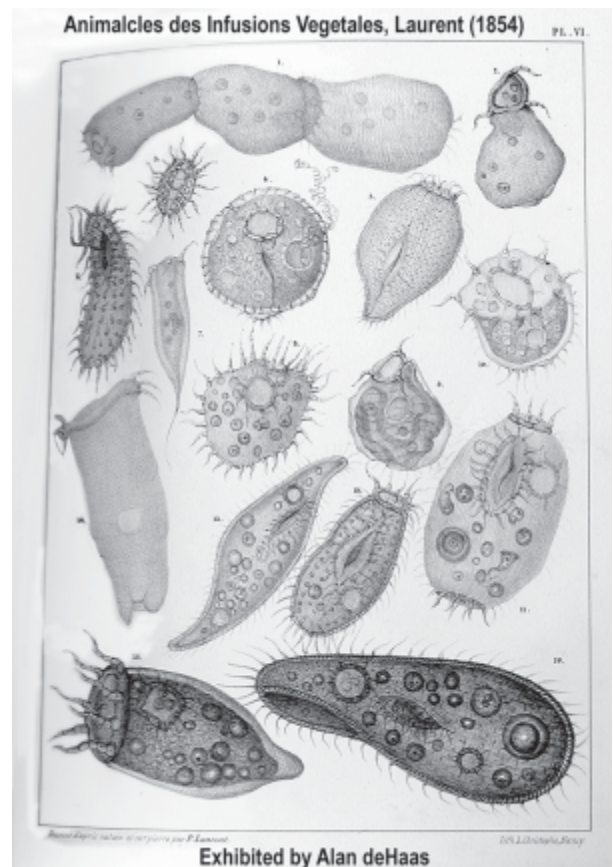


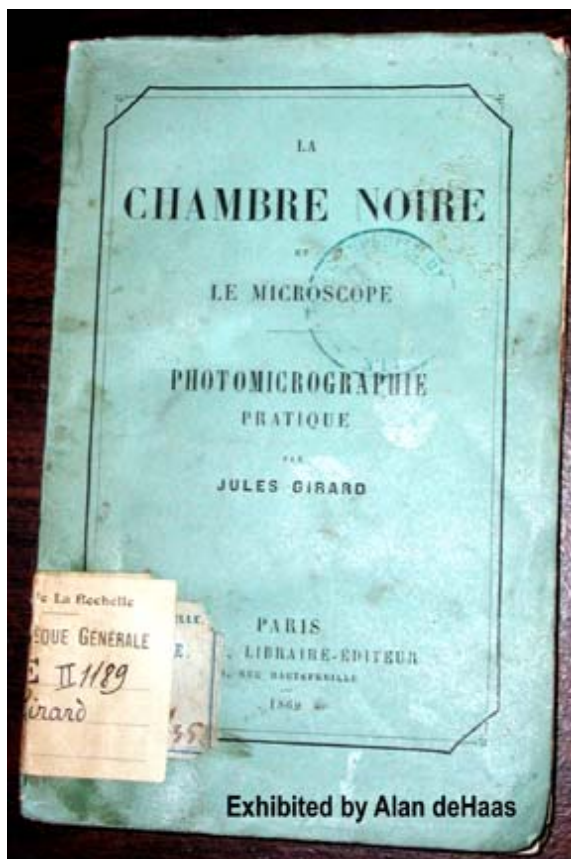
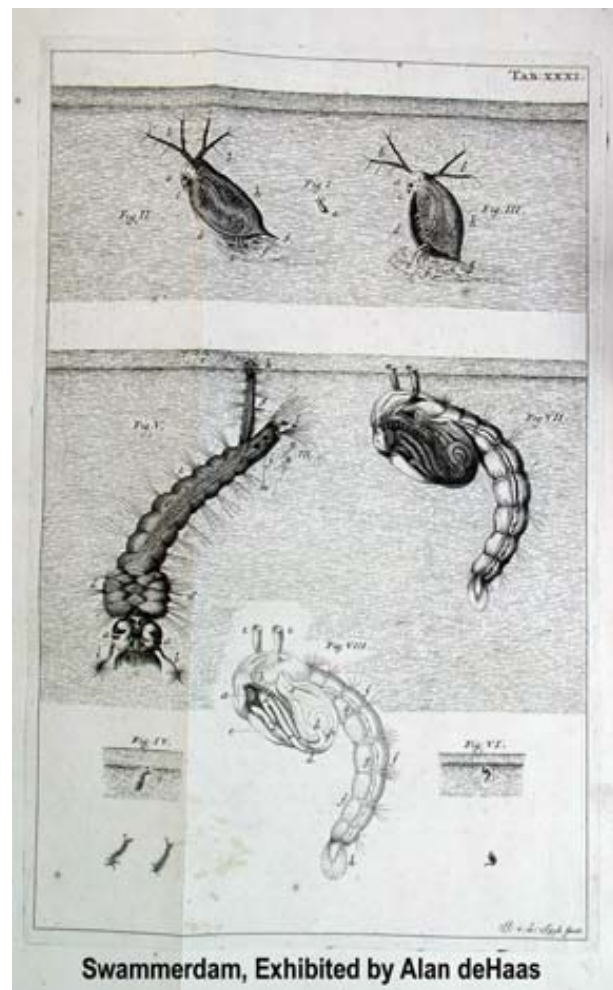
Ledermuller (1761), Exhibited by Alan deHaas



Alan then set out for sale a copy of *Amimalcles des Infusions Vegetales* by P. Laurent (1854). This also had splendid plates illustrating primarily the Protozoa (see illustrations).

Inside the house, Alan exhibited a rather large collection of valuable books that represented copies from the 16th through the 19th Centuries. It would not be practical to list all the books that were on exhibit, but you are directed to the illustrations for a representation of a few of the better known examples.





**Ken Gregory** exhibited a large early Reichert stand with a five-objective nosepiece. The year of manufacture was estimated to be circa 1884. The body along with the circular stage can be swiveled around the axis of the scope much like that of the early Oberhaeuser drum microscopes. Also on exhibit was a Carl Zeiss stand that offered the same feature. The two provided a good example for comparison and illustrated the universal appeal of this feature. This option was very useful for dissection work and essential for techniques in arranging diatoms by hand. The specimen could be rotated along with the stage and body of the microscope preventing any displacement from the axis of the instrument. The object would remain in perfect alignment with the objective and eyepiece but could be rotated to match any position for application of the dissection instrument. The hand of the worker could remain steady on an armrest next





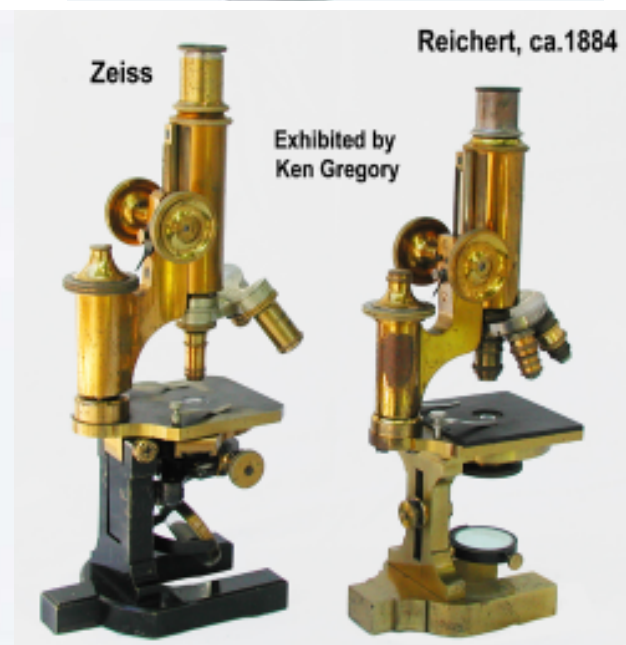
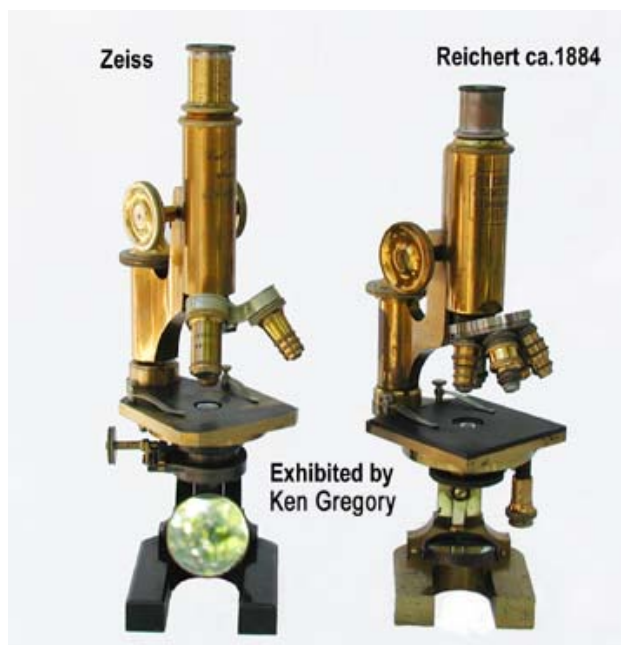
Microscope APS). This was to illustrate the similarity to a portable stereo Bausch & Lomb exhibited by our new member, Sid Schiff. Both scopes were from the early Twentieth Century (circa 1912-1918).

Ken also presented a very unique microscope that was designed to be used in the hair care industry. It featured a large view screen and included both a polarizer and analyzer. The image of an individual hair could be projected on to the screen for both the worker and the customer to see. It is thought that McBain Instruments sold this particular design. Ken said the scope was available for sale for a mere \$40.00.



to the stage. It was mentioned that this feature became less popular with the introduction of more mechanically accurate rotating stages in the late 19th Century.

Ken also brought out for the group a very nice Bausch & Lomb portable microscope (Portable







**Stuart Warter** exhibited two interesting European microscopes, one an early Drum type and the other a later Continental model. The Drum was signed by Nachet and manufactured some time in the 1850s; it was sometimes referred to as a compound-dissecting microscope. The Continental was by Hartnack who succeeded Oberhaeuser in 1860. Both the Drum and the Continental featured the same rotation capability, as did the two stands exhibited by Ken Gregory. The stage, arm and bodytube could be rotated around the axis of the microscope with the mirror and foot remaining stationary.

Edmund Hartnack (1826-1891) was located at the time at Place Dauphine 21, Paris. By 1870, he had moved to 39 Waisenstrasse, Potsdam (Berlin), Germany (1870-c.1927). Hartnack became one of Europe's most influential makers, adding much to the improvements of the microscope. According to Mayall, he was first to substitute the horseshoe foot in place of the

Drum-base introduced earlier by Oberhaeuser. This allowed the use of oblique illumination and better access to the substage apparatus. He also was said to have placed the fine adjustment screw at the top of the limb instead of at the underside. This improved form became what was to be known as the "Continental type." Zeiss and Nachet added the heel that extended the base behind the pillar making it more appropriate for the inclination joint.

The above remarks by Mayall must be considered in the light of the fact that earlier instruments signed by Oberhaeuser have been found having an inclination joint; also in a few early stands the fine adjustment screw was placed to the top of the limb (Oberhaeuser, c.1853). It is likely that Hartnack was working with Oberhaeuser in the early 1850s, long before the partnership of 1857 began. (See Oberhaeuser/McAllister stand, c.1853, Warter collection.) In contrast to what Mayall said, Nuttall states that Oberhaeuser

developed the horseshoe foot in about 1848 and that Chevallier advertised an intermediate form of horseshoe in 1841. However, there can be very little doubt that it was Hartnack who popularized the horseshoe continental microscope.

**Larry McDavid** gave us a report on the North American Sundial Society, which recently met in Banff, Canada. He also had the chance to visit both Lake Louise and the glacier where he was able to walk out over the ice. He indicated that the scenery was not nearly as nice as it could have been due to the extensive forest fires burning at the time of the meeting. Larry did pass around a ring-dial that he won during his visit. For more information on the North American Sundial Society please see <http://www.nass.org>.

**Allen Bishop** brought in a new book dedicated to the work of Amici. It was packed with rare illustrations of a large number of Amici's microscopes. The book was by Alberto Meschiari and was entitled *The Microscopes of Giovanni Battista Amici* (only the introduction is in English). For more information you can contact; Fondazione Giorgio Ronchi, Redazione e Amministrazione: Via S. Felice A EMA, 20-S0125, Firenze, Italy. Or contact the author at: [am.al-meschiarimo@libero.it](mailto:am.al-meschiarimo@libero.it).

Allen then exhibited a beautiful large Winkel-Zeiss polarizing stand, Model IV-M that was manufactured in 1936. This outfit came complete with a case and all the appropriate accessories. The Winkel (R. Winkel GMBH, Gottingen) Catalogue refers to this microscope as the Petrological Working Stand IV-M. This is a large stand with a similar design to the Winkel Stand V-M, differing only in that the compound mechanical revolving stage is replaced by a fixed revolving stage. The stage on this microscope is divided into 360 degrees and has verniers reading 0.1 degree. The point was made by Alan deHaas that the Fedorow universal rotating stage could be used with this stand. This instrument was intended for original scientific investigations relating to mineralogy and petrography as well

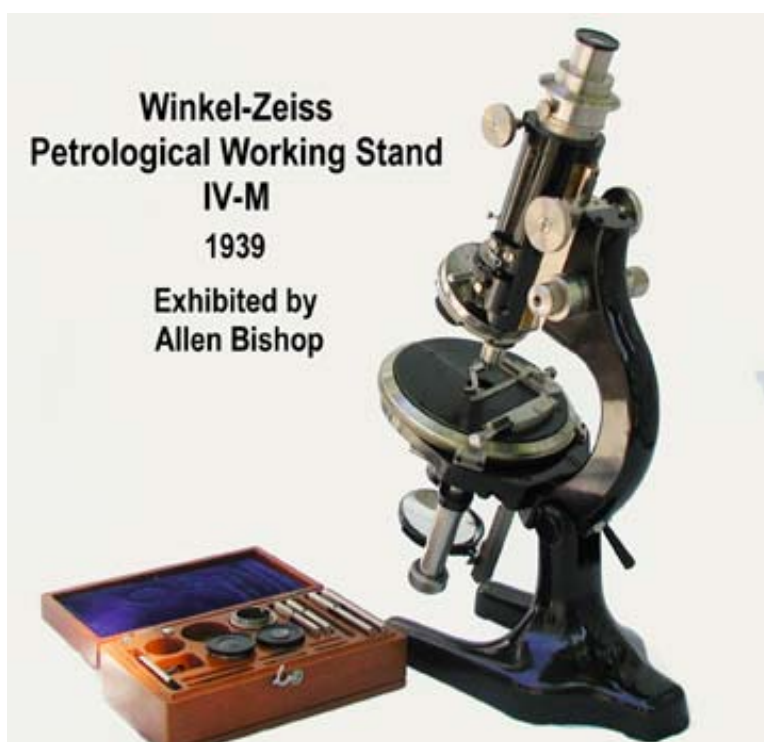


as for the technical study of natural and artificial minerals.

The stand has a large, heavy foot with a hinged joint for inclination and a long projecting heel, which ensures an absolutely steady position when the stand is inclined. The coarse adjustment is controlled by rack and pinion, while the slow motion is produced by a side micrometer screw, which can be operated from both sides. The fine adjustment screw carries on one side a divided drum with fifty intervals, each of which corresponds to a tube displacement of 0.002mm. The eyepiece drawtube is secured against turning, has a millimeter scale and is displaced by a rack and pinion attachment. After the removal of an intermediate sleeve the drawtube will receive eyepieces with an enlarged field of view. The stand is also furnished with a revolving nosepiece with centering collars having the standard RMS threads. A slot just above the nosepiece serves for the introduction of a quartz wedge and gypsum plate. The mirror can be raised and lowered as well as inclined in all directions. The

tube has a Telan lens incorporated as well as the analyzer being protected from the accumulation of dust by a cover-glass and can be turned through an angle of 90 degrees. The amount of rotation is shown by a graduated arc with intervals of two degrees.

An important note is that the Amici-Bertrand lens slides into the tube above the analyzer and is computed for use with the achromatic objective 42M (also the a42M and the Fluorite objective 41M in conjunction with the Huygens 6x eyepiece). The Catalogue recommends that the following optics should be used with the IV-M. Achromatic objectives include: 2.5M, 10M, 23M, 42M and the 69M homogeneous immersion lens. The eyepieces available were the Huygens 6x with cross-lines and movable eye-lens, Huygens 9x with micrometer scale and the 12x with cross-hair and adjustable eye-lens. Also recommended were the following auxiliary items: quartz wedge with colors of the I-III. Orders, in metal mount, gypsum red one order, in metal mount and a mica plate with  $\frac{1}{4}$  W.L. phase-difference, in metal mount.



**Reino Mascarino** told the group about some unusual rotifers that he discovered in a nearby lake. He talked about his ongoing efforts to locate and study his favorite microscopic subject. He mentioned a book that he was looking for on the subject of rotifers. He also talked a bit about his wife's work with frogs. He emphasized the value of the microscope in their efforts to raise exotic frogs. One facet that he described was his delight in watching frog's eggs develop with his Leitz Greenough stereomicroscope. Alan deHaas then described the benefits and effects of the high numerical aperture versus the long working distance stereoscope. We also talked about the differences between the newer photo-stereos and the effect of the older Greenough type.

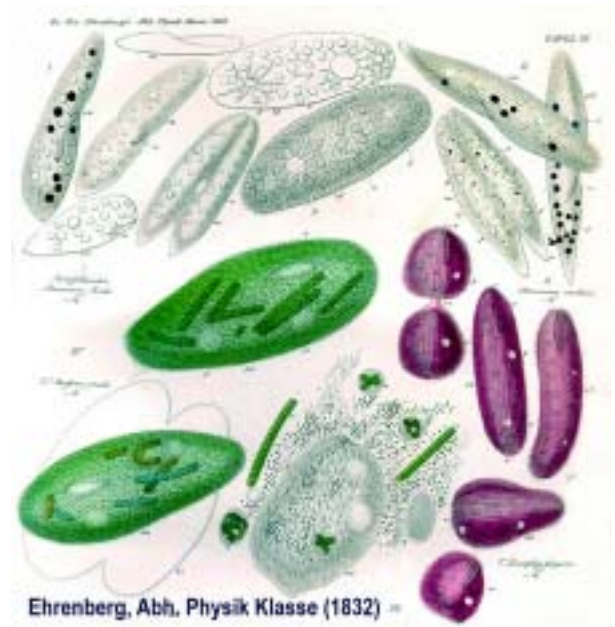


**Jim Solliday**, after previously talking with Alan deHaas decided to bring in a collection of antique books that were published during the first half of the 19<sup>th</sup> Century. This was to help complement the contribution of books brought in by Alan and focus additional attention on the subject

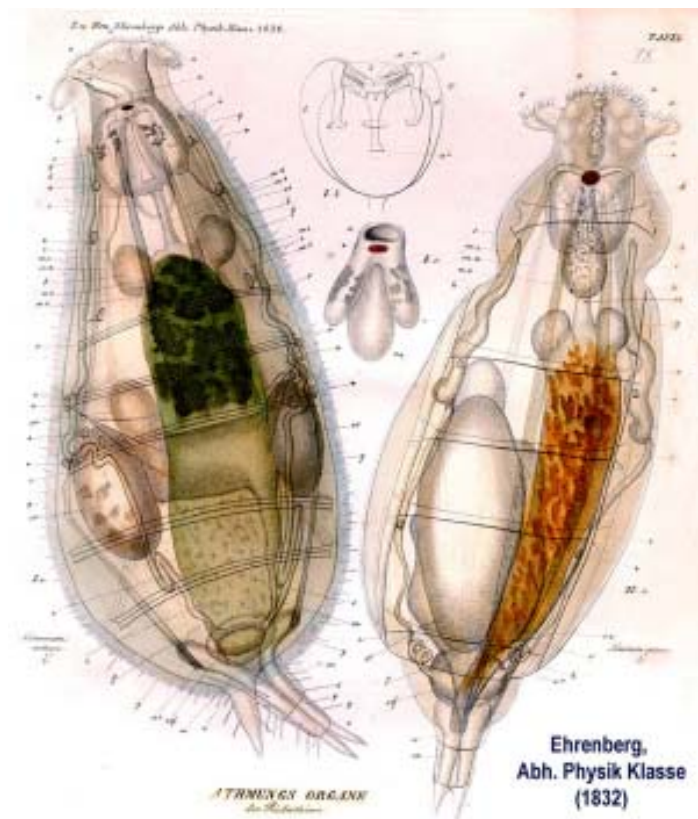


of books. The books that were chosen were some of the finest produced on the microscope of that time and were indeed very popular among microscopists.

The most important item that was exhibited was a collection of works by Christian Gottfried Ehrenberg (1795-1876). This was a collection of eight papers bound together into a two-volume set (Berlin, 1830-1849). This series of papers represented Ehrenberg's fundamental contributions to the fields of micro-zoology, in which he studies the muscles, nervous and vascular systems, digestive and sexual organs of a range of microscopic animals. Ehrenberg did not yet separate the multicelled animals from the single-celled forms, a concept that became popular in systematic zoology only after 1850; rather, he believed that he could demonstrate the presence of complete organ systems in single-celled animals. He made a rather interesting case supporting this position in the work he did with rotifers, and used this to argue against spontaneous generation and the "chain of being."

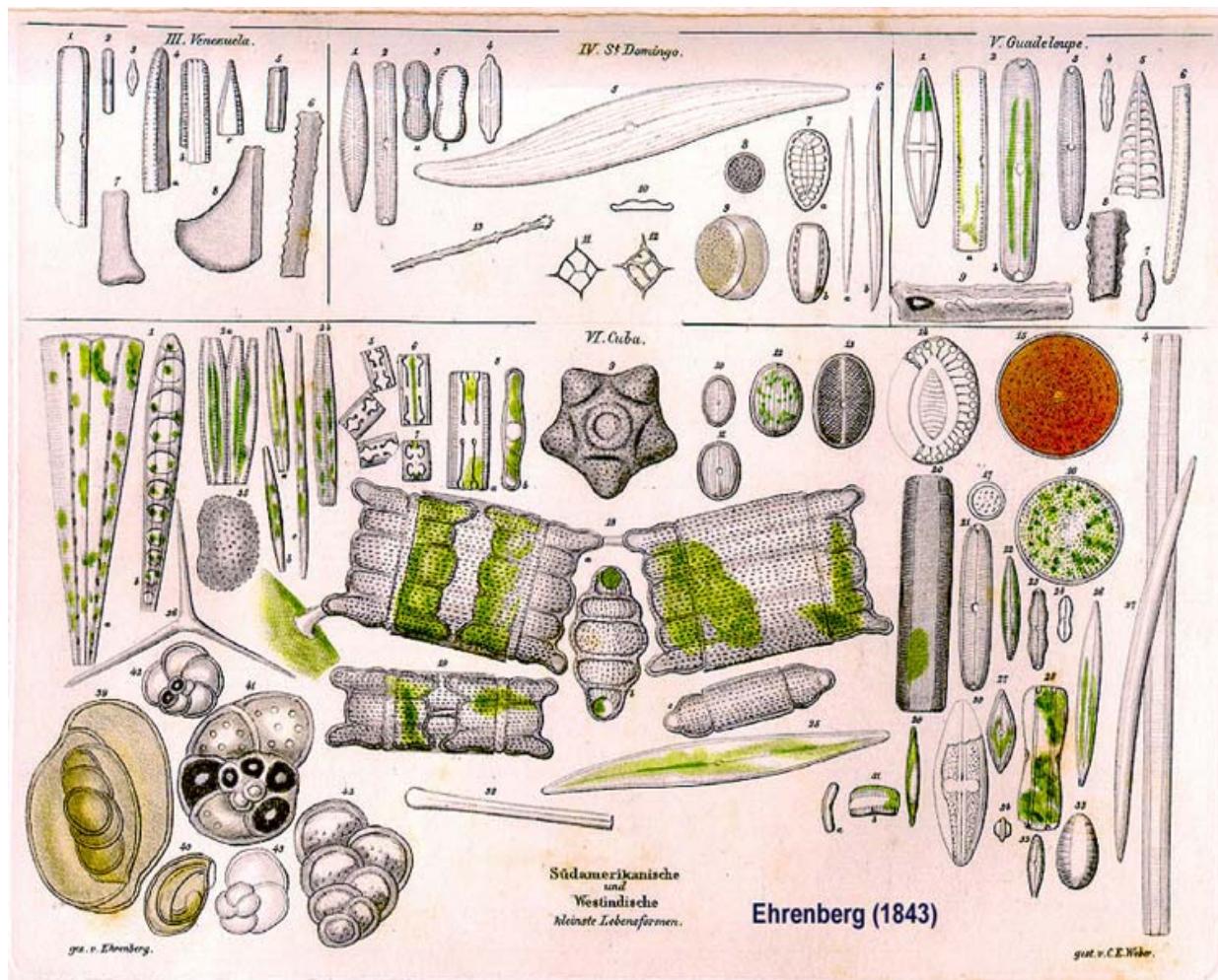


The second volume concentrated on what was considered the study of the infusoria. This is Jim's favorite work as it features some of the most spectacular illustrations of marine deposits (diatoms, forams, et al) in Ehrenburg's collection.



Ehrenberg is considered the father of the study of diatoms and was the first to publish a description of diatomaceous earth. The revelation that large rock formations were actually the result of the massive accumulation of living organisms was both revolutionary and inspired a surge in the study of geology. He remains solidly associated with the study of diatoms, as more than one-third of all the known species were named and described by him. This volume included the following works: *Verbreitung und Einfluss des mikroskopischen Lebens in Sud-und Nord-Amerika*; *Der Landesschule PFORTA widmet beim 300jahrigen Stiftungsfeste (1843)*. *Mikroskopische Analyse des curlandischen Meteorpapiers von 1686 und Erlauterung desselben als ein Produkt jetzt lebender Conferven und Infusorien (1839)*. *Die Bildung der enropaischen, libyschen und arabischen Kreidefelsen und des Kreidemergels aus mikroskopischen Organismen, dargestellt und*



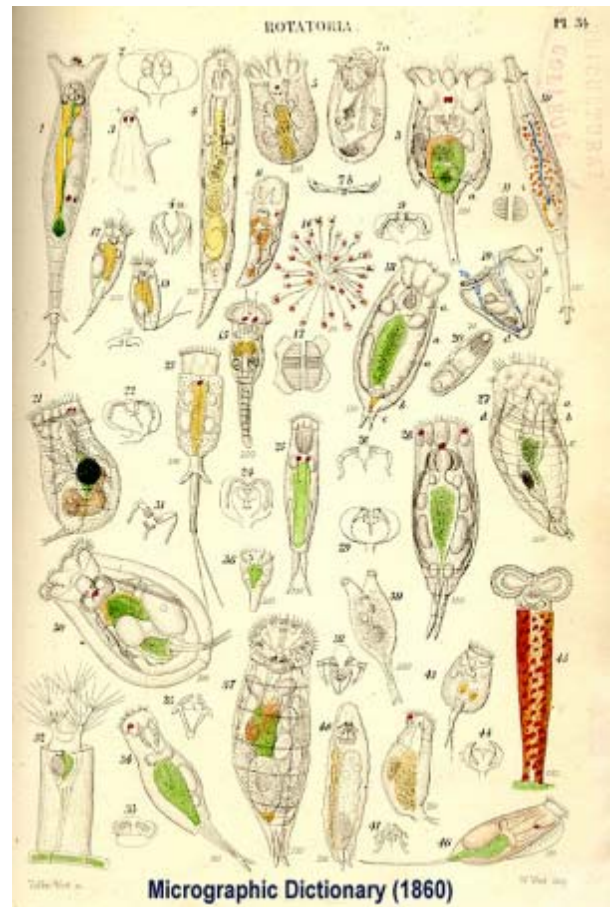




*physiologisch erlautert* (1839). *Passet-Staub und Blut-Regen ein grofses organisches unsichtbares Wirken and Leben in der Atmosphere* (1849). All were published in Berlin and accompanied by magnificent plates. The above account has been included in these notes as a reference and helps to illustrate the magnitude of work assembled in these two volumes. The contents of the first volume are not included as they would be too exhaustive.

Next, Jim discussed a small book put together by L. Mandl (1839) and entitled, *Traite Pratique du MICROSCOPE, et de son emploi Dans L'etude des corps Organises*. Including, *Recherches sur L'Organisation des Animaux Infusoires*, by Ehrenberg, Paris. This book was exhibited to illustrate just one more author who extensively used Ehrenberg as a source of authority and to fill major subject matters.

The next book Jim talked about was by Andrew Pritchard (1832), *The Microscopic Cabinet of Select Animated Objects; with a description of the Jewel and doublet microscope, test objects, &c*, London. It is illustrated with thirteen hand-colored engraved plates of original drawings by Dr. Goring. Pritchard included in his text most of the beliefs



of Ehrenberg. He continued to hold onto Ehrenberg's interpretations through just about all of his publications up to at least the 1860s. This would include Pritchard's *History of Infusoria* (1861), a very well known work and reference source for the time. Pritchard did finally mention the views of other contemporary workers in his final editions.

One of the most controversial of Ehrenberg's positions was that he was convinced that diatoms should be catalogued in the animal kingdom. He hypothesized that creatures that could move about using their own power were animals and those that were fixed to a substrate were plants. Most of the other well-known authors of the time such as Carpenter and Hogg held to the positions of Dr. Friedrich Kutzinger who classified the diatoms as the *Bacillarien oder Diatomeen* (golden algae, or plants). The animosity and competition for authority between Ehrenberg and Kutzinger



became legendary and eventually drove Dr. Kutzing into a completely different area of study.

Another author exhibited by Jim was the Rev. William Smith. He was very important in the English world and reinforced the classifications of Kutzing. Smith published, *A Synopsis of the British Diatomaceae: with remarks on their structure, functions and distribution; and instructions for collecting and preserving specimens*. This was a two-volume set bound together, published in 1853 & 1856, with the plates prepared by Tuffen West. It is Jim's opinion that this publication represents the best illustrations ever assembled on diatoms. The drawings were equivalent to that of Greville's which were engraved by the same artist (Tuffen West). *Grevill's Diatom Tables* were published between the years of 1853-1872, mostly in the *Quarterly Journal of Microscopical Science*. These famous plates illustrate the work of the following great diatomists: Brightwell, Donkin, Greville, Gregory, Lauder, O'Meara, Shadbolt, Roger,



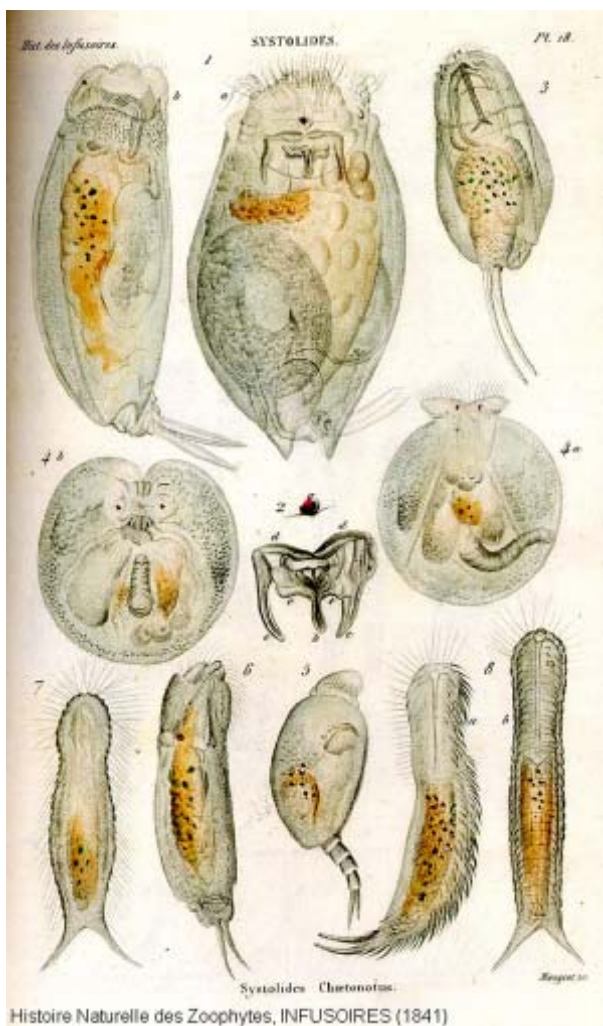
Roper and Norman. Amazingly all were drawings taken directly from the microscope. By the 1890s a number of the major authors began to employ the use of photomicrography. During the transition from drawing to photomicrography some workers photographed the diatom and then interposed a drawing over the image. This was to correct for the lack of depth of field in the typical photograph. However, after all is said and done, the Rev. Smith's, *The Synopsis of the British Diatomaceae*, remains one of the most desirable works to be had by the serious student and collector.

Next in the exhibit was a discussion about the inspiring naturalist and microscopist, Felix Dujardin, who in 1841 published his great work entitled, *Histoire Naturelle Des Zoophytes, Infusoires, comprenant la physiologie et la classification de ces animaux, et la maniere de les etudier a l'aide du microscope*, Paris, Librairie Encyclopedique De Roret. This was a two-volume set with 22 beautiful hand colored plates. Dujardin produced some of Europe's most beautiful engravings of the Infusoria. He also invented one of the first achromatic substage condensers, which he used in his work.

Here in the United States, the Rev. Francis Wolle in 1890, published his encyclopedic, *Diatomaceae of North America*. Illustrated with 2300 figures, all drawings by the author and published in Bethlehem, PA. If you leaf through this magnificent work you would be convinced that this was the accumulated work of a lifetime. Each plate is filled with sometimes dozens of beautifully detailed drawings of the diatoms. This is also one of the rarest of books on the diatomaceae and “worth its weight in gold.”

Just about all the books exhibited above were produced during the first half of the 19th Century and relied on microscopes that were either pre-achromatic or made in the very early years of the achromatic microscope.

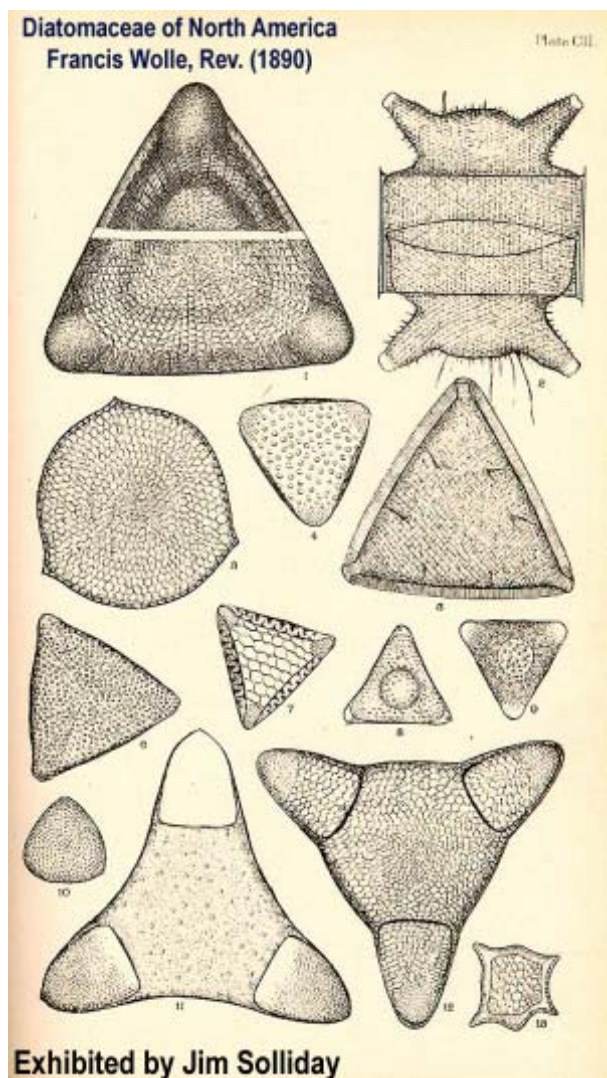
In order to illustrate the types of microscopes used at the time, Jim exhibited a very popular



type of microscope that potentially could have been used by one of the above authors. This microscope was described by John Mayall as the best instrument one could buy during the first quarter of the 19<sup>th</sup> Century. The microscope standing before the group was a large English instrument signed by *W & S, Jones, London*. It was known as the Jones “Most Improved Compound Microscope,” made after the original design of George Adams. Billings states that this is the best microscope made prior to the achromatic period.

The lacquered finish remains in almost perfect condition and all mechanical functions are in good working order. Included are two eyepiece tubes and a rotating objective turret with six lenses, representing six different magnifications. Also, a devisable achromatic objective with a spring-





loaded nosepiece has been added. This achromatic lens continues to produce an outstanding image and is quite capable of resolving any of the details needed to assist Dr. Smith or Mr. Pritchard in their voluminous works. The lens should be rather good as it was made by Hugh Powell of London.

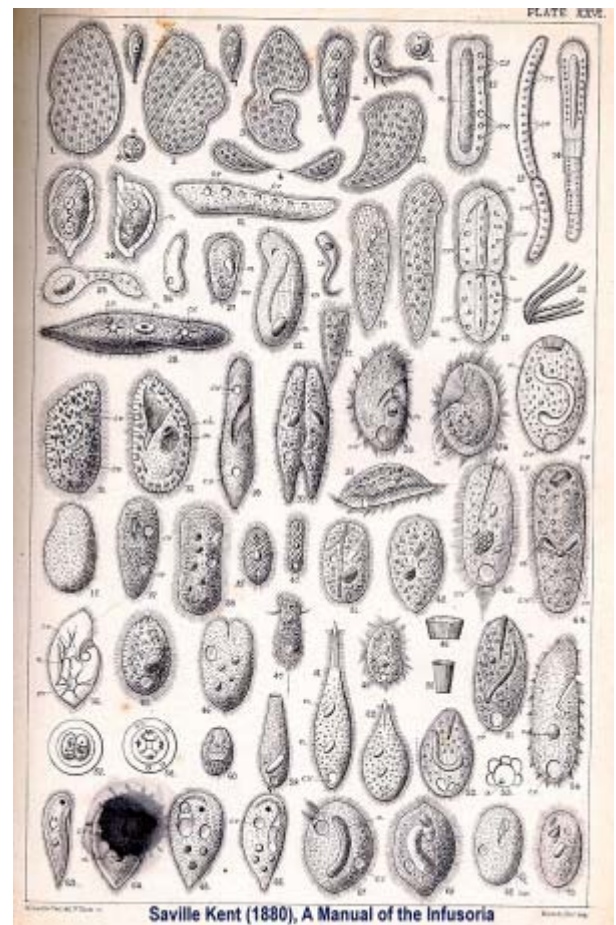
The microscope stands on a folding tripod foot, which supports a rather tall pillar. The limb of the scope is attached to the top of the pillar by a substantial compass joint, which permits the inclination of the microscope. The limb acts much like an optical bench and supports all the components of the stand including the mirror, condensing lens, stage, arm and bodytube. The arm is capable of holding either a simple lens or

the compound bodytube. It also acts as an aquatic arm permitting the movement of the body in all directions, including both in and out in relation to the limb. In fact, there is a small rack and pinion which assists the movement of the arm. The stage can be move both left and right by a small micrometer screw located at its base. All the usual accessories were exhibited, including a frog plate, aquatic slider, bullseye condenser, stage forceps, auxiliary stage plate, aperture sleeve, Bonnani spring-stage, ivory sliders and many other appropriate items. Unfortunately there was no case.

**Jim Clark** exhibited a beautiful example of the Bausch & Lomb Model CBE, made ca.1929. This was a very nice stand for advanced work (Research) and was illustrated in the Catalogue that Jim set on the table. The microscope featured a removable binocular body and three objectives. The substage illuminator is a high-end aplanatic condenser and the square stage was covered in







vulcanite. It also features a built in mechanical slide holder with X-Y movement.

The Catalogue describes this microscope as follows: “CBE-*A Binocular Instrument for Research.*” After pointing out the disadvantages of the monocular tube the catalogue touts the convenience and comfort of the binocular, especially when used for long uninterrupted periods of observation. “*To overcome these conditions we offer in the Microscope CBE a research microscope which not only permits the simultaneous use of both eyes, but which accommodates the entire series of single objectives ordinarily used on compound microscopes of the monocular type. The compound slide, upon which the eyepiece tubes are mounted, is adjustable so as to permit any observer to accommodate the eyepieces to his own interpupillary distance. A scale on this slide enables the tubes to be set instantly at the correct distance, once it is determined.*”





The catalogue continues to describe the binocular as follows: *"The binocular feature affords relief from eyestrain and fatigue. The eyepieces are parallel and the optical construction of the body tube is such that there is no necessity for converging the eyes. The effect is as though the observer was looking into the distance and is, of course, very restful to the eyes. This means that less concentration is required on the part of the observer, enabling him to give all of his attention to studying the specimen."* This led to a discussion of the advantages versus the disadvantages of the converging binocular body tube. Some of the members stated that it was impossible for them to use the parallel type binocular while other could not use the convergent type, which were popularly made by Spencer. It all depended on whether the user was near or far-sighted. It seemed that the near-sighted user preferred the convergent type body tubes.

**Izzy Lieberman** shared with the group a number of problems he experienced with the airlines. This of course brought out a variety of

similar experiences that other members had dealing with the same service.

**Sid Schiff**, our new member exhibited a very nice example of a traveling Bausch & Lomb Greenough stereoscope. This instrument came folded inside a very nice hardwood case and was in almost new condition. Sid introduced this instrument with the hope that some of our members could tell him more about it and if the price he had paid was reasonable. After recognizing some of the features of this scope, Ken Gregory went into the house and obtained an example of a Bausch & Lomb compound traveling scope that was manufactured at about the same time period. Ken's portable scope was listed in the B&L Catalogue as the Portable Microscope APS and was made in about the year 1915. The consensus of the B&L experts was that Sid's traveling stereo scope was indeed quite rare and was something that none of us had seen before. Our new member was assured that the price he paid was without question very fair indeed.



**Herb Gold** exhibited a wonderful Leitz Integrating stage. The vintage of the instrument and the look of the case caused the members to believe it to be prewar. Also, its condition was seen to be quite good. Alan deHaas gave the group a description of the primary purpose of this sophisticated stage and how it was used. It was explained that it was needed in determining the total area or percentage of a certain mineral within the matrix of a rock section (this is but one example of its use). Other more convenient methods for this function have been recently

introduced in association with computer image analytical programs. A page from a German Leitz catalogue illustrating the stage could be seen on the table.

Finally, it was announced that the members were invited to go to lunch after the meeting at a local restaurant. The President brought the meeting to a close at 11:50 a.m. leaving plenty of time for photographing the exhibits. A hearty thanks were expressed to the members for their participation and continued support. □



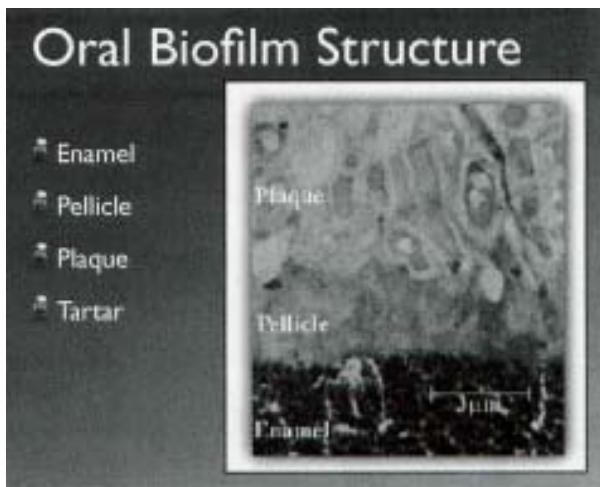
# MSSC MONTHLY MEETING

Wednesday 17th September 2003

at New Roads School

reported by Leonie Fedel

At this meeting, Dr. Clifton Franklund, Department of Biological Sciences, California State University, Long Beach gave a lecture on the microscopic analysis of oral biofilms. Biofilms are populations of microorganisms that adhere to any environmental surface with sufficient moisture and adequate nutrients. Dental plaque is an example of the development of a biofilm.

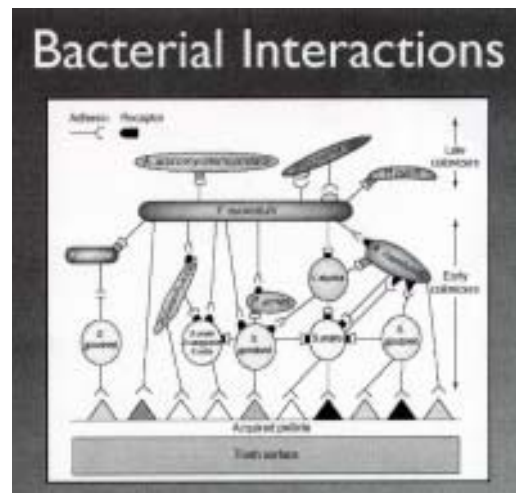


Dr. Franklund started his presentation by giving an overview of periodontal disease which affects over 60 million people in the US and is the main cause of tooth loss in adults. Periodontal disease is the result of a chronic host inflammatory response to oral bacteria - over 400 different species of bacteria are involved including *Fusobacterium*, *Porphyromonas*, *Prevotella*, *Actinobacillus*, and *Bacteroides*. Gram-positive cocci colonize the tooth and gums, followed by gram-negative anaerobes, leading to mineralization, inflammation (*gingivitis*), and finally tissue destruction of the gums and hence tooth loss.

The progression of the disease is affected by the presence of a number of virulence factors. Of these Lipopolysaccharide (LPS) has been

implicated in processes as diverse as attachment to host tissues, evasion of phagocytosis, molecular mimicry, and (most importantly) immune stimulation. From the literature, it is clear that LPS, proteinaceous virulence factors, metabolic end products, and host factors all contribute to the tissue damage seen in periodontal disease. Furthermore, in many cases these factors may perform the same or similar functions. The complexity of this clinical situation makes it very difficult to determine causal relationships between bacterial species, their products, and tissue damage.

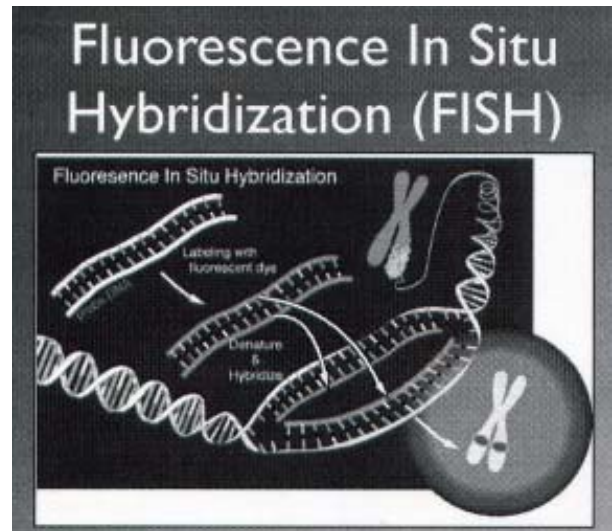
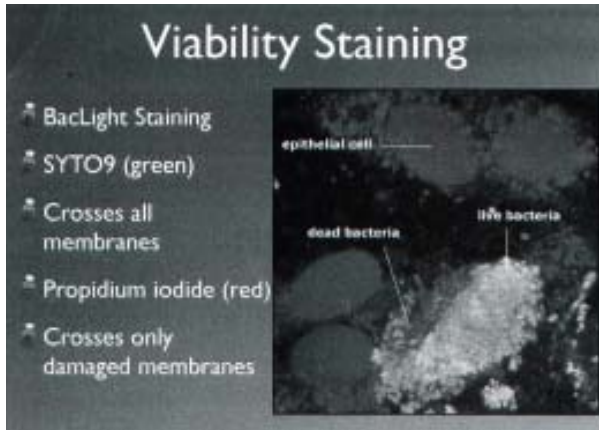
However, one of the most commonly isolated microbes from the gingiva is the Gram-negative anaerobe, *Fusobacterium nucleatum*. Given the predominance of *F. nucleatum* in oral infections, Dr. Franklund is focusing on researching the role of LPS in promoting the inflammatory response observed in advanced periodontal disease. A clear understanding of this important molecule will enable him to determine the role(s) that it plays in forming biofilms, evading or subverting the immune response, and promoting of host tissue damage.





Dr. Franklund continued by discussing the techniques he uses to the study oral biofilms:

- BacLight staining;
- SYTO9 staining ;
- Immunofluorescence analysis;
- Fluorescence in situ hybridization (FISH) analysis;
- Confocal scanning laser microscopy;
- Microscopic flow cell analysis.



For further information and updates on the research please visit Dr. Franklund's research page at [www.csulb.edu/~cfranklu/research.html](http://www.csulb.edu/~cfranklu/research.html). □



# WORKSHOP OF THE MICROSCOPICAL SOCIETY OF SOUTHERN CALIFORNIA

recorded by Herb Gold, written by Jim Solliday

Date: Saturday, 4<sup>th</sup> October 2003

Location: Izzy Lieberman's Residence



The workshop was called to order by our President, Jim Solliday at 9:10am at Izzy Lieberman's residence with 17 members present. The weather was unusually pleasant with the sun shining and the temperature being mild. As usual, there were plenty of refreshments available including doughnuts and coffee. A number of tables were set up with one featuring the exhibits and the other holding the sale and giveaway items. The President noted the quality of microscopes and accessories set out on the exhibition table.

Dr. Ken Gregory, announced that Dr. Larry Ash would be the guest speaker at the next Wednesday Lectureship meeting on October 15, 2003. Dr. Ash works at UCLA and is a specialist in Parasitology. He will speak about parasites common to Southern California which can be contracted by children. Examples of transmission from animals (often pets) to humans will be described. This talk continues the current series of topics dealing with microscopic organisms that can affect humans.



The members were reminded that the popular November Exhibition meeting was approaching. Individuals should begin preparing their exhibits for this annual event. Each year a wealth of wonderful displays and projects are presented during this meeting. This is an appropriate meeting to which to bring the kids or a guest. The President reiterated that all types of exhibits are welcome and anything from an elaborate poster display to a simple microscope with your favorite slide is appropriate. Participation is the main thing and the more members that add to the effort the better the event will be.

Finally, we were informed that the March/April edition of the Journal was now ready and should appear at the next lectureship meeting.

### Exhibits and Discussions:

**Ken Gregory** set up a number of optical instruments to share with the group. First he told us about a Bausch & Lomb microscope he purchased from eBay that came in an elaborate hardwood case. The case obviously did not belong to this rather common microscope but was of 19<sup>th</sup> Century European origin. Having seen a number of very similar cases exhibited here at our workshops by Stuart Warter and Jim Solliday



it was determined that it belonged to a Seibert (German) Microscope. The question was just what should he done with this wonderful case as the B&L just did not fit properly.

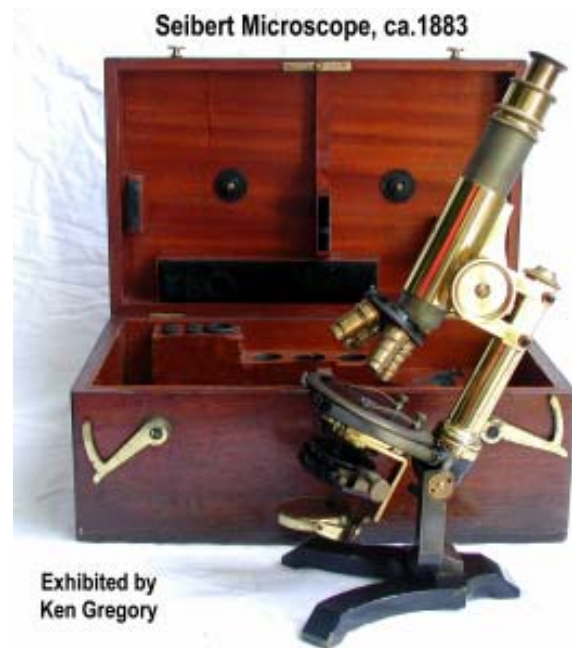
A short time later Ken noticed a single Seibert microscope offered on eBay without its proper case. On top of that, it was up for sale by the same dealer that had sold Ken the case. Without hesitation Ken bid appropriately in order to win this rare and important Seibert stand. Lo and behold after the microscope arrived it was a perfect match for this beautiful mahogany case. Thus Ken acting as the conservationist he has become, brought these two valuable items back together as they should be. It is to his credit and vigilance that he continues to make the world a better place for all those lost microscopes. The illustrations show this Seibert microscope standing in front of its proper case, also exhibited is an example of a similar Seibert brought in by Stuart Warter to illustrate the same style of storage case. Both instruments feature the “C”-shaped pillar and horseshoe-type foot. According to John deHaas, Ken’s Siebert was made sometime around 1882 or 1883.

Ken Gregory also offered for sale a large ophthalmic device, which was intended to measure the curvature of the cornea. This instrument was dominated by a very large



graduated sector, which can be seen in the accompanying illustration. The condition of this instrument seemed quite good. Also offered by Ken was a large retinal microscope, which was manufactured by Bausch & Lomb (ca.1929). The members first noticed the horizontally mounted binocular observation body. This item was described as a binocular with a large “*auto-collimator like*” telescope. One of the fellows referred to it as an “*Ophthalmometer*”. These two items were prominently displayed and were both for sale.

**Stuart Warter** exhibited a beautiful Seibert microscope with mahogany case, very similar to the stand brought in by Ken and described above. It was pointed out that the storage cases were quite similar and of the same pattern. The instrument was identified as a Siebert Model II and was the same type of microscope used by Gram of the Gram Stain fame. Stuart kindly brought this particular instrument in to help Ken in the description of his outfit. It should be said that it is rather rare and unusual to see more than one early Seibert in the same place, especially out here in California. Seibert did not sell that well in the United States when compared to makers like Leitz and Zeiss. In fact at the turn of the Century, the most common imports were small French microscopes. However, among the serious instruments, the most ubiquitous were those imported by Zeiss, then Leitz, Reichert and



finally, R&J Beck. Seibert hardly even registered and could be counted with stands imported by Paul Waechter and R. Wasserlein of Berlin.

**Jim Solliday** exhibited a very early 18<sup>th</sup> Century microscope, the type of which was invented by John Cuff. This example is in excellent condition and good working order. The microscope is complete, and accompanied by all known accessories provided. The instrument is normally referred to as Cuff’s Double Microscope and is a good example of his 1744 design. However, this particular instrument may have been made a bit later, perhaps in the 1750s or 1760s. On



September 20, 1744 a pamphlet describing this instrument was published by Cuff.

The design was inspired by Henry Baker, as he was not satisfied with the Culpeper type instrument in common use at the time. The microscope sits on a fine box-foot with a built-in accessory drawer having all the usual accessories. This includes the Bonanni spring stage, live box, fishplate, stage forceps, bullseye condenser and a number of ivory sliders. The main construction of the limb is two parallel pillars, one supporting the stage, and the other the arm that holds the bodytube. This design also featured an improved parallel fine focus screw. The stage is fixed to the non-movable pillar and has the cruciform shape typical of the period. The entire outfit was stored in a truncated pyramid case.

John Cuff (1708-1772) was a very well-known instrument maker working out of London. His best-known customers were Henry Baker and John Ellis. Before he went into his own business he was apprenticed to James Mann II, of Fleet St. (beginning around 1693). As mentioned above, his Double Microscope (side-pillar type) was made after a suggestion by Henry Baker. Baker described it as more serviceable as a working instrument than the tall tripod forms made by Culpeper and Scarlet - the fine adjustment has greater delicacy and the stage is more accessible (Baker, 1753, *Employment for the Microscope*). Cuff produced a twelve-page brochure on this model (1744) and sold it for seven guineas. The design was produced well into the 19th Century. John Cuff worked at the sign of "The Reflection Microscope" Fleet Street, London.

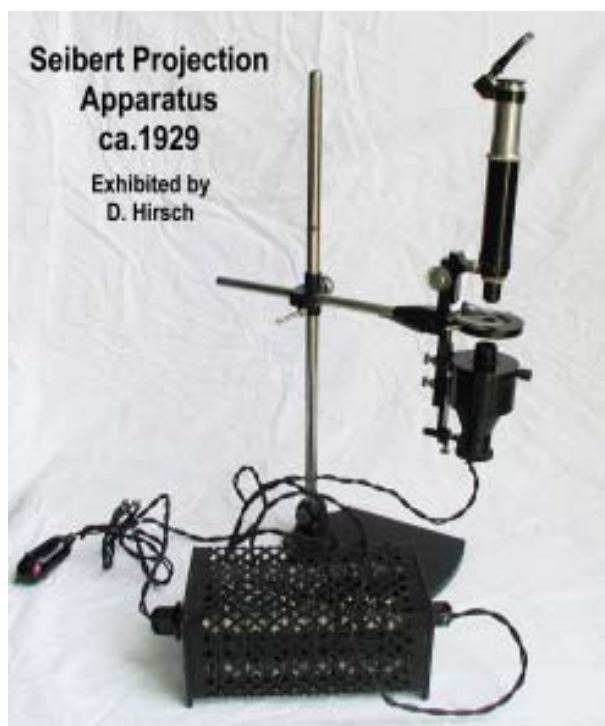
A German study, *Vollständige Lehrgebäude der ganzen Optik*, claims that the Cuff-type microscope was first made by the German optician Meyen for George Sterrop. This assertion was completely off, differing even from the original source of the confusion. The problem is that in 1747, Joachim F. Mayen, published his book on *Microscopes & Telescopes* (Dresden) and it was this book that was responsible for promoting



the misconception. "On the Continent, the invention of the Cuff microscope is very often attributed to Sterrop". This mistake originated from Mayen's book due to his reference "We have to thank the skill of a admirable English artisan of the name of George Sterrop for this." On the Continent, this mistake was copied from book to book. As mentioned above, Cuff's brochure was published at least three years before Mayen's book, proving the author was unaware of the true origin of the design. He did however, seem to have access to an instrument made later by Sterrop.

Going back a few years in Cuff's career, it was he who added a very important improvement to the Solar Microscope. In 1743, he included adjustments to the mirror making it more convenient to follow the path of the sun. Prior to that, the Solar Microscope was used in combination with the Scioptic Ball. Henry Baker attributed the invention of the Solar Microscope to Lieberkuhn but it was in fact an earlier invention by Fahrenheit. Among his other inventions, Cuff made his measuring or scale eyepiece (1750), featuring the use of silver wires at the focal plane of the eyepiece. It consisted

of 1/50-inch squares. In 1752, Ellis had his aquatic microscope made by J. Cuff and in 1758, Cuff issued a pamphlet entitled "*The Description of a Double and Single Microscope Very Convenient to View All Sorts of Objects*," illustrating an aquatic microscope on to which a compound body could be added. The above is only a few of the contributions Cuff made towards the improvement of the microscope. In fact his new Double Microscope was perhaps the single most important improvement in the microscope for the entire 18<sup>th</sup> Century.



**Dave Hirsch** exhibited a Seibert lamp, which was coupled to a Seibert projection microscope having a heating stage. To enhance usability Dave constructed the large support stand. Alan deHaas mentioned that this sort of set up was often used for melting point experiments. This outfit was said to be from the mid 1920s (see illustration).

**Pete Teti** has been for some time the caretaker of our Society collections. This includes not only the slides but also a number of books as well as a few compound and stereomicroscopes. Pete informed the group that we have approximately 800 prepared slides in the collection. At this time

they are stored in boxes of about 100 each with some in cardboard trays of about 20. We are in the process of cataloguing this collection with many of them already identified. This work needs to be completed and a proper list published in the Journal. Members may borrow slides from the collection for a maximum of one month at a time. Contact Pete if you are interested, specifying what slide box he should bring to the meeting. The member must return the slide box to Pete at the next meeting (i.e.: 4 weeks later). Pete will maintain a checkout list and see that all slides and boxes are accounted for. This is just one more area in which our good friend, Pete Teti continues to serve our Society.

**Dr. Fred Kahn** talked to us about a physician whose name was Jacob da Silva Solis-Cohen (1838-1927). Dr. Cohen was active in the Civil War as both a general and a physician. He was probably the first surgeon to adopt laryngology as a specialty. He was to have cured cancer of the larynx and diagnosed patients by smelling their breath. Dr. Kahn confirmed that the odor from a patient's breath could often be of great help in identifying the problem. Fred also exhibited his father's "*Wappler*" otoscope, which was said to be from the 1920's. He also exhibited a collection of otoscopes representing examples from the 1920's to ones currently in use.





**Ellen Cohen** talked about becoming a bit more computer-savvy and stimulated a discussion on the MAC versus the PC. It was to be expected that the group represented advocates from both sides of the fence. Alan deHaas pointed out that the MAC continues to offer great convenience for users working with graphics. However, the PC continues to enjoy the greatest variety of software applications. There were a number of fellows in the group that offered Ellen any assistance appropriate that would help her make the best choice for her needs.

**Ken Miller** offered for sale an early example of an Olympus PM-6 photomicrographic camera. It included a Luna Pro light meter that was in very good working order. There are two important features of this camera. First, it has a very nice focusing telescope that utilizes a proper beam-splitter; second, it has a floating shutter that helps prevent vibration during exposure. The shutter sits on a foam bed and is operated manually with a cable shutter-release. Please contact Ken if you have any questions about this offer.



**John deHaas** proudly exhibited two of his oil paintings. The first featured a large tree nestled within a small European village with a vegetable garden in the foreground. The second was of a snowbound village with an alpine flavor. Both were nice representations of John's artistic talents. For sale, John offered a Nikon camera body in good working order.

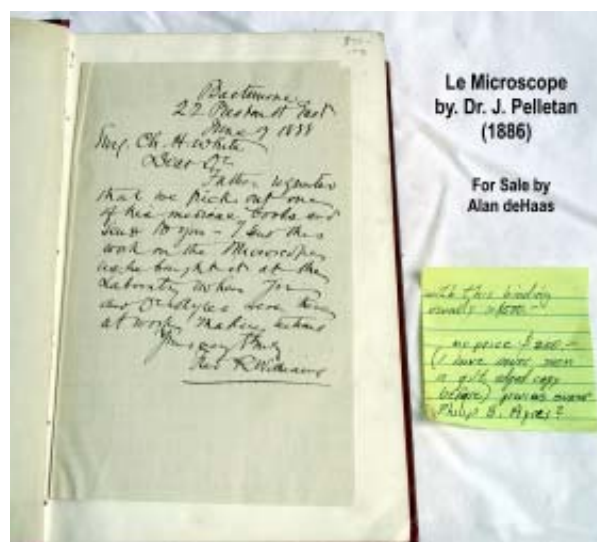
**John Fedel** brought up the continued need for advice on proper maintenance of the microscope. About a year and a half ago we had a very informative workshop given by Alan deHaas on this subject. All agreed that it would be helpful if Alan were available to continue his instructions on this subject. Alan said that he would indeed be available and would be happy to share his expertise. A few problems associated with microscope maintenance were discussed with suggestions coming from all sides of the group.

**Izzy Lieberman** talked about printers and the history of color cartridges. He compared the inks produced by a number of makers including HP

versus Epson. He provided examples of prints to illustrate his points. He again recommended the use of cartridges with a built-in injection-head, rather than ones that have to be filled with a hypodermic needle.

**Larry McDavid** talked about an Archimedes special on television featuring a “Palimpsest” manuscript for calculating the volume of solid figures. This was a NOVA program that suggested Archimedes was the original inventor of integral calculus. A discussion followed led by Larry.

**Alan deHaas** placed on the table and offered for sale a large collection of microscope objectives. This was an exceptional offer for those in the group who needed contemporary lenses. The makers represented were primarily Leitz and Zeiss, with some others including Olympus. Alan’s prices were reasonable and created excitement amongst the members. He told the group that a number of important objectives obtained in this lot were decemented and no longer usable. Those lenses had been set aside and were designated as possible projects for repair. Alan described some of the methods he intended to employ in his attempt to fix them. He talked about decementing, cleaning and reassembly. A discussion about optical cements ensued and how best to apply them.



Alan also offered for sale a rare book written by J. Pelletan, entitled *Le Microscope* (1886). See the illustration of the beautiful binding. This book was at one time in the laboratory of Dr. Philip B. Ayres as can be seen in the illustration of the letter that accompanied the book as it changed hands in 1888.





**Allen Bishop** exhibited a collection of Zeiss eyepieces of various diameters. It was thought that Zeiss manufactured a number of them for the English market though Allen could find no catalogue references. Allen revisited the earlier discussion on diagnosing diseases from odors given off by the patient. He recounted an occasion when Alan deHaas suggested that he had a bladder infection from the smell of his urine. As it turned out, Alan was correct and Allen has since completely recovered.

**Herb Gold** exhibited a leaflet illustrating a Leitz 6-point Integrating stage. This was in response to a discussion the group had last month when the stage itself was on exhibit. The leaflet describes the stage as follows: *"Leitz Gebrauchsanweisung zum Integrations-Tisch (Stativ CM mit Integrationstisch mil 6 Spindeln und Zusatztischchen)."*



**Reino Mascarino** began by talking about a number of experiences associated with eBay. On the subject of buying a new computer he recommended purchasing the service package, such as the "Gold" support package offered by Dell with its new computers. Reino spoke about the movie he has been working on lately, in which he will be playing the part of Uncle Nino; the movie is scheduled to open around December 5<sup>th</sup>. He mentioned that he would soon be taking a trip to Florida to work on a new project. While there, he intended to visit Sarasota, FL and see Howard Taylor, MSSC friend and Rotifer specialist. We look forward to hearing all about his visit and the time spent with Mr. Taylor.



The President brought the meeting to a close at 11:40am leaving plenty of time for photographing the exhibits. Appreciation was expressed to the members for their participation and continued support. □

# MSSC MONTHLY MEETING

Wednesday 15<sup>th</sup> October 2003

at New Roads School

reported by Leonie Fedel

At this meeting, Dr. Larry Ash, Department of Biological Sciences, UCLA, and a specialist in parasitology, gave a lecture on parasites common to Southern California titled "*Zoonotic Larval Nematode Infections and Childhood Diseases.*"

Dr. Ash explained how children, in particular toddler-age children, are especially vulnerable to infection by parasites, both those occurring in household pets (i.e., dogs and cats) and parasites of wild animals living in urban and peri-urban environments. Such infections, deriving from animals, are referred to as zoonoses or zoonotic infections.

He continued by discussing the syndrome, *visceral larval migrans*, first described in the early 1950s, in which young children acquired infection principally from ingestion of *Toxocara canis*, the common roundworm of dogs, but also from ingestion of *Toxocara cati*, a similar parasite infecting cats. With these infections, larval nematodes invaded a variety of tissues, particularly the liver, the central nervous system and the eye. Severity of infection was generally dependent upon the numbers of infective eggs ingested but fatalities were uncommon.



**Toxocara canis**  
(credit <http://nema.cap.ed.ac.uk>)



Beginning in the 1980s, a related ascarid parasite of raccoons, *Baylisascaris procyonis*, was found to cause severe, often fatal, disease in children. It is now recognized that this raccoon parasite is well established on the west coast of the U.S. and a number of cases have been reported in California.

Dr. Ash continued by discussing the interaction of animals and their parasitic infections, with the external environment such as where fecal material is deposited, the influence of weather, and the behavior of adults and children - all of which contribute to the public health problem associated with *B. procyonis* and other similar nematode infections. □





# MSSC MONTHLY SATURDAY WORKSHOP ANNOUNCEMENTS

The MSSC holds a workshop from:

**9:00am to 12:00pm on the first  
Saturday of every month**

Locations alternate between two members' houses, Izzy Lieberman's and Ken Gregory's.

The workshops provide a chance for fellow microscopists to talk about our favorite subject. You are invited to bring any manner of items related to microscopy to share it with the fellowship. If you have something you would like to sell, please feel free to bring it and set it up at the sales table. All are encouraged to participate and join in the fun.

An optional lunch after each workshop will be held at the local Coco's.

## Remaining schedule for 2003 is as follows:

Nov. 1, 2003 at Izzy Lieberman's

Dec. 6, 2003 at Ken Gregory's

## The schedule for 2004 is as follows:

January 3, 2004, Izzy Lieberman's

February 7, 2004, Izzy Lieberman's

March 6, 2004, Izzy Lieberman's

April 3, 2004, Ken Gregory's

May 1, 2004, Ken Gregory's

June 5, 2004, Ken Gregory's

July 3, 2004, Izzy Lieberman's

August 7, 2004, Izzy Lieberman's

September 4, 2004, Ken Gregory's

October 2, 2004, Izzy Lieberman's

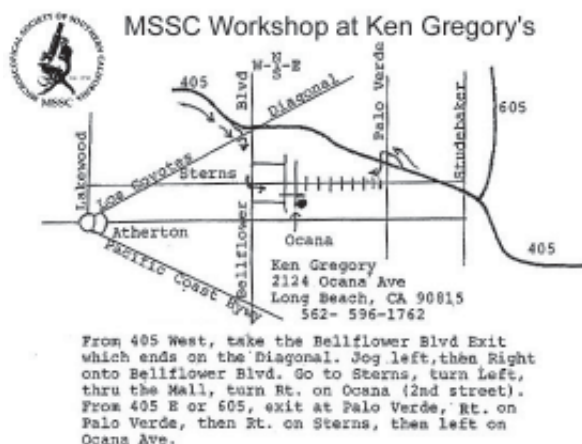
November 6, 2004, Izzy Lieberman's

December 4, 2004, Ken Gregory's

**Izzy Lieberman's Residence:**  
3300 Corinth Avenue  
Los Angeles CA 90066  
310-391-6076



**Ken Gregory's Residence:**  
2124 Ocana Avenue  
Long Beach, CA 90815  
562-596-1762



# MSSC MONTHLY MEETING ANNOUNCEMENTS

## 7:00pm, November 19<sup>th</sup>, 2003

This is the annual Exhibition Meeting of the Society. Each year a wealth of wonderful displays and projects are presented during this meeting. This is an appropriate meeting to which to bring the kids or a guest. All types of exhibits are welcome and anything from an elaborate poster display to a simple microscope with your favorite slide is appropriate. Participation is the main thing and the more members that add to the effort the better the event will be.

A projector will be provided for those bringing 35mm slides. Posters and display boards are also encouraged, along with the usual sales table. Please remember to bring a label or piece of paper with a brief description of your exhibit.

## 4:00pm, December 14<sup>th</sup>, 2003

No meeting this month, instead the annual MSSC Holiday Banquet:

Hollywood Hills Restaurant,  
1745 North Vermont Avenue,  
Los Angeles, CA 90027  
phone: (323) 661-3319.

The cost for each person is \$22.70 (\$45.00 per couple), please make your checks payable to our Treasurer Dave Hirsch. Send checks and your choice of meal (grilled chicken breast, grilled salmon or vegetable lasagna) to Pete Teti. After the dinner a slide show with music will be presented on the topic "*Exploring crystals through the microscope.*" This show will be our third in the series recognizing the contribution of MSSC member John Chesluk.

Meeting location for MSSC  
New Roads High School  
3131 Olympic Boulevard  
Santa Monica, CA 90404



All meetings are held at New Roads School  
(see map above).

Optional dinner beforehand at Coco's restaurant  
at 5:30pm (near Ocean Park and Bundy, Santa  
Monica).

## EDITOR'S NOTE

Please send any articles, photos, member profiles, notifications of forthcoming events and website summaries to me at:

Leonie Fedel  
3273 Provon Lane  
Los Angeles CA 90034-2714  
(310) 839-9881,  
email: [editor@msscweb.org](mailto:editor@msscweb.org)



The preferred route is via email, with text and graphics as attachments. Text in the following formats: plain/rich text format/word documents, graphics in the form of jpps. If you need any help in converting information to these formats, please contact the Editor, who would be happy to help.

**Don't forget to visit the MSSC website, [www.msscweb.org](http://www.msscweb.org)**