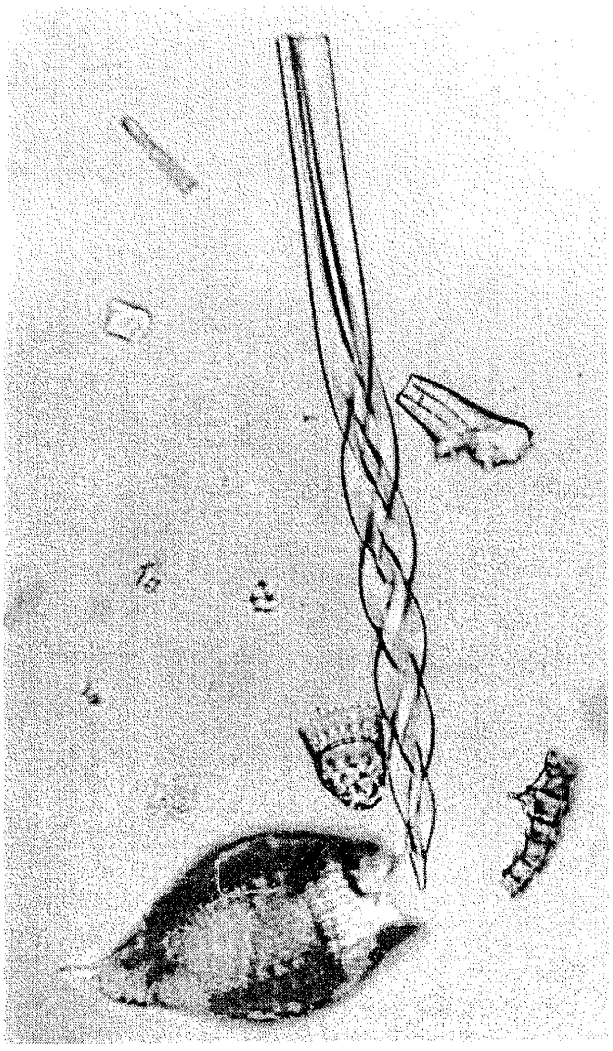
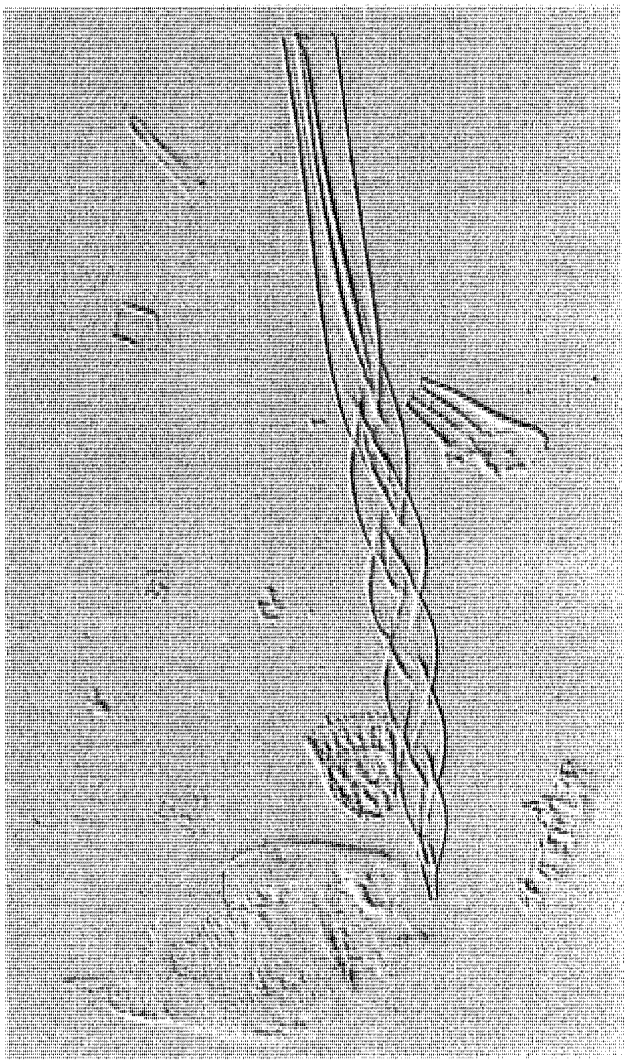
Journal of
THE MICROSCOPICAL SOCIETY OF SOUTHERN CALIFORNIA
Volume 3 Number 8 August 1998

Ser·en·dip·i·ty, n. ....

"...making fortunate discoveries accidentally."

Richard M. Jefts





An on-going project of pleasure and instruction has been the attempt to wrench high resolution from fine detailed material, primarily diatoms, using fine grain, 35mm B&W film, a vibration-free optical system, and lighting pushed well into the violet end of the spectrum.

Further work along these lines was made available a short while back when a series of prepared microscope slides passed through my hands, a number of which were made up of diatomaceous and radiolarian material of exceptional fine quality and mounted with great

skill and care. Some sixty or so photomicrographs were taken and a number of the negatives were shown at one of our Society's Workshops and seen by our President, Mr. George Vitt, Jr., and by our esteemed Editor, Mr. Gaylord Moss. Both gentlemen made an interesting suggestion; instead of my proceeding with the more conventional next step of using an enlarger, timed exposures, print development, and washing, drying and trimming, that we try generating finished B&W prints using their combined personal computer equipment and techniques. I say 'we' with reservation for, although long familiar with the ways of the darkroom, when it comes to computers, I am not not only the new kid on the block, I haven't yet even moved into the neighborhood.

It sounded interesting, and obviously reduced any further work on my part to just about zero. Knowing a cop-out when I see it, a few of my original negatives were duly passed onto, and processed by George, then transmitted to, and further processed by Gaylord, who then generated some large and very impressive B&W printed images.

One print, called by some a 'twist-drill,' a 'Christmas tree icicle ornament' or a 'unicorns horn,' was particularly striking. Not seen before by some, but suspected to be a radiolarian spicule, it was thought interesting enough to perhaps warrant a page in some up-coming issue of the Journal, with a few words to put it into context. With an elegant illustration of the unicorn horn-spicule now in hand, I proceeded to drag my feet for some reason and to procrastinate on the text ... and time passed.

A short while later, my wife and I spent a delightful evening with Meg and Gaylord, during which the subject of the spicule came up. Asking our host if he would run through some of the basics of his computer system, he called up on the screen the horn-like spicule, (Fig. I). Knowing my interest in artwork, Gaylord then proceeded (as I understand it) to interpose various filters into the system, producing varied spicule im-

MSSC Journal
Volume 3 Number 8 August 1998

CONTENTS

MICROSCOPICAL SOCIETY OF SOUTHERN CALIFORNIA

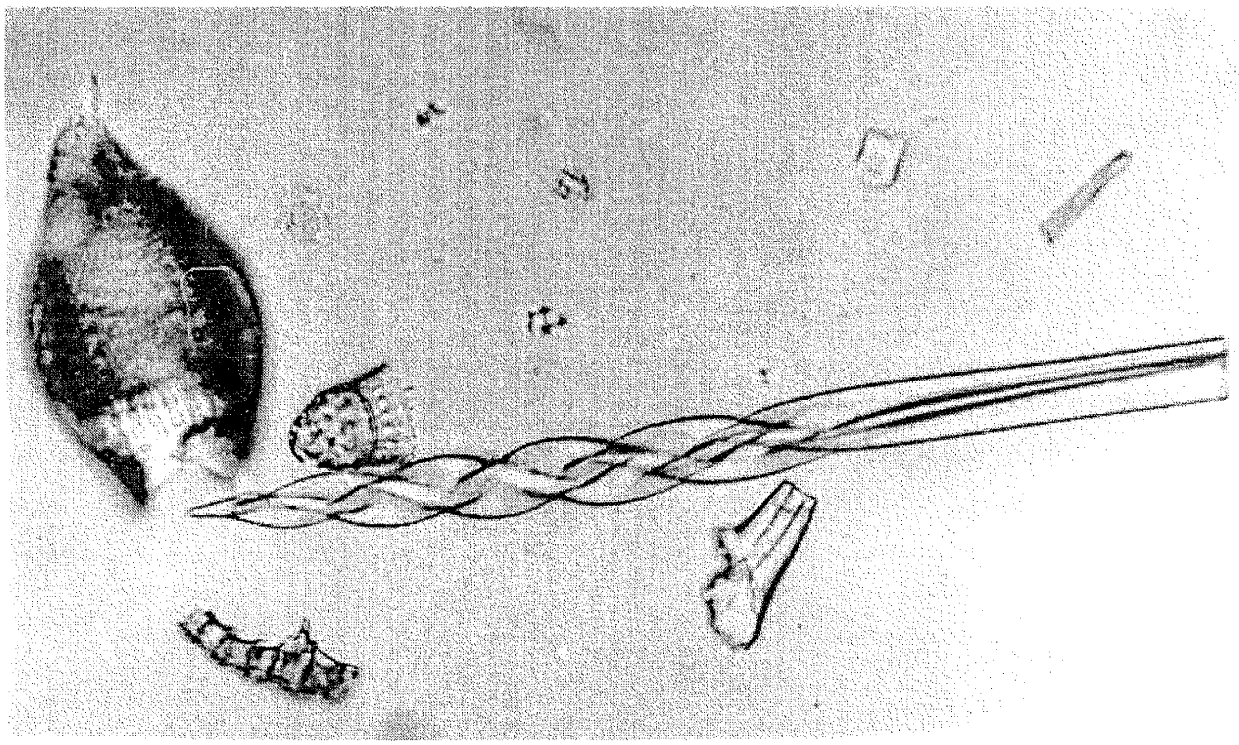


Fig. 1 Twist Drill "conventional" print.

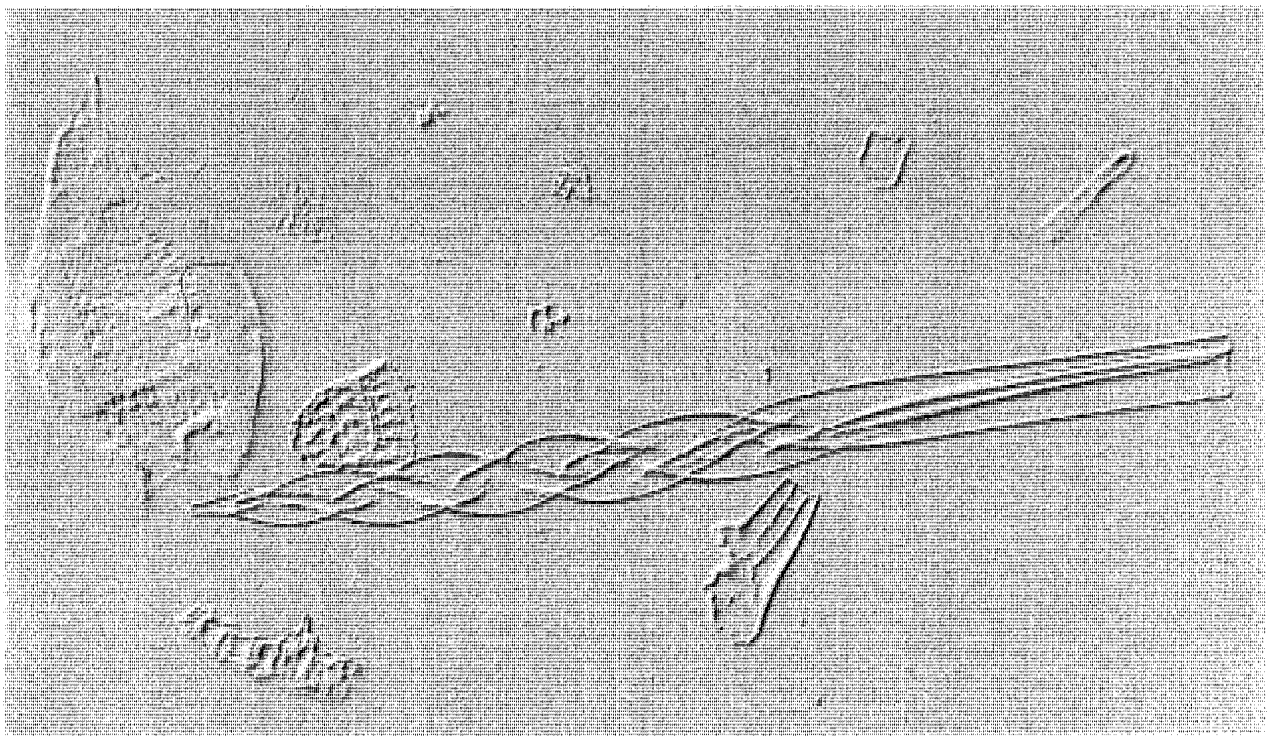


Fig. 2 Twist Drill Photoshop "emboss" print.

ages, but with each image depicted as though rendered by a different medium - as a B&W line drawing, as a wash or water-color, etc. And then, much to our surprise and wonder, our spicule appeared on the screen as seen through the eyes of the specialized filter called Emboss (Fig. 2). A close comparison between Figs. 1 and 2 revealed some startling added details in the latters printed image. Like the low angle lighting along the terminator on the rough-hewn surface of the moon, the 'lighting' in the Emboss treated photo brought out a certain three dimensionality, not only to the spicule itself with its twisting, rib-like structure, but also to

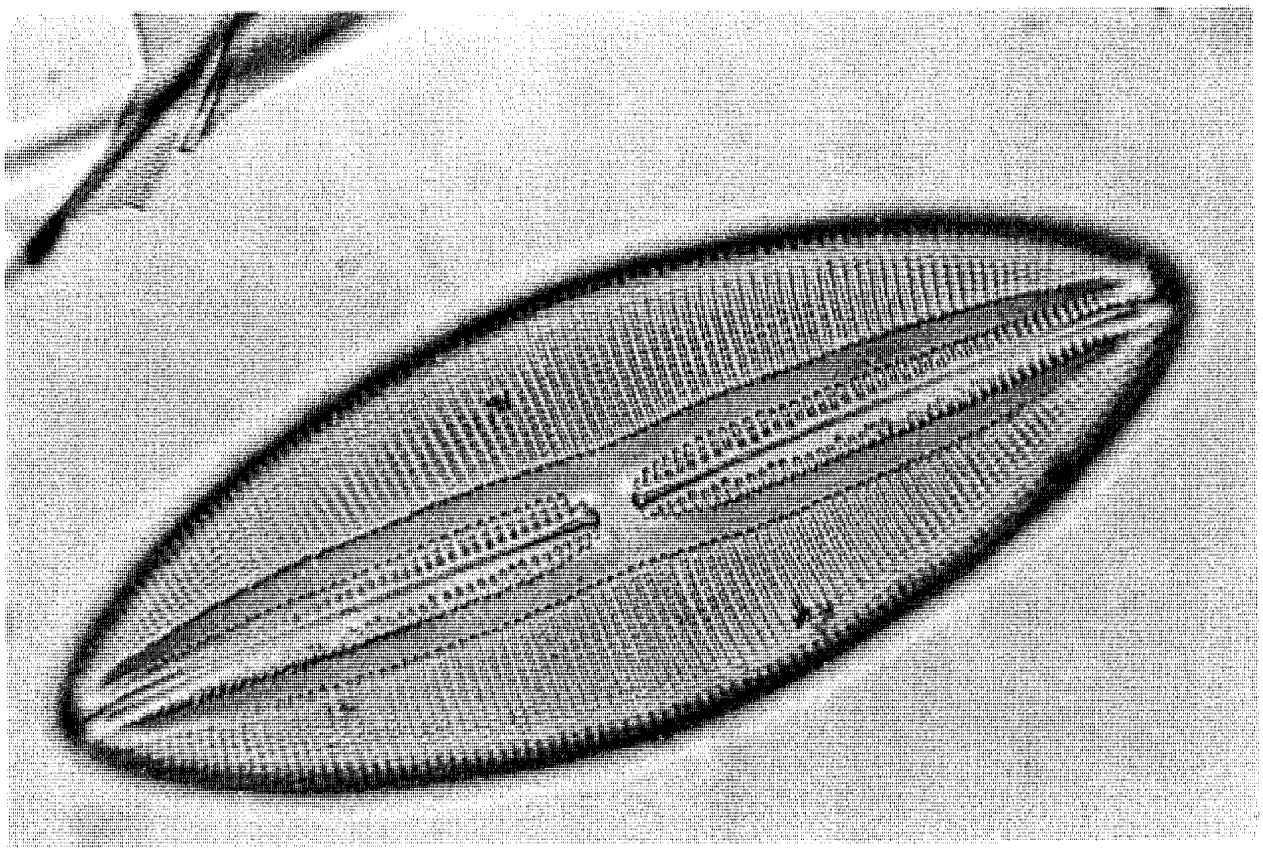


Fig. 3 Navicula lyra "conventional" print.

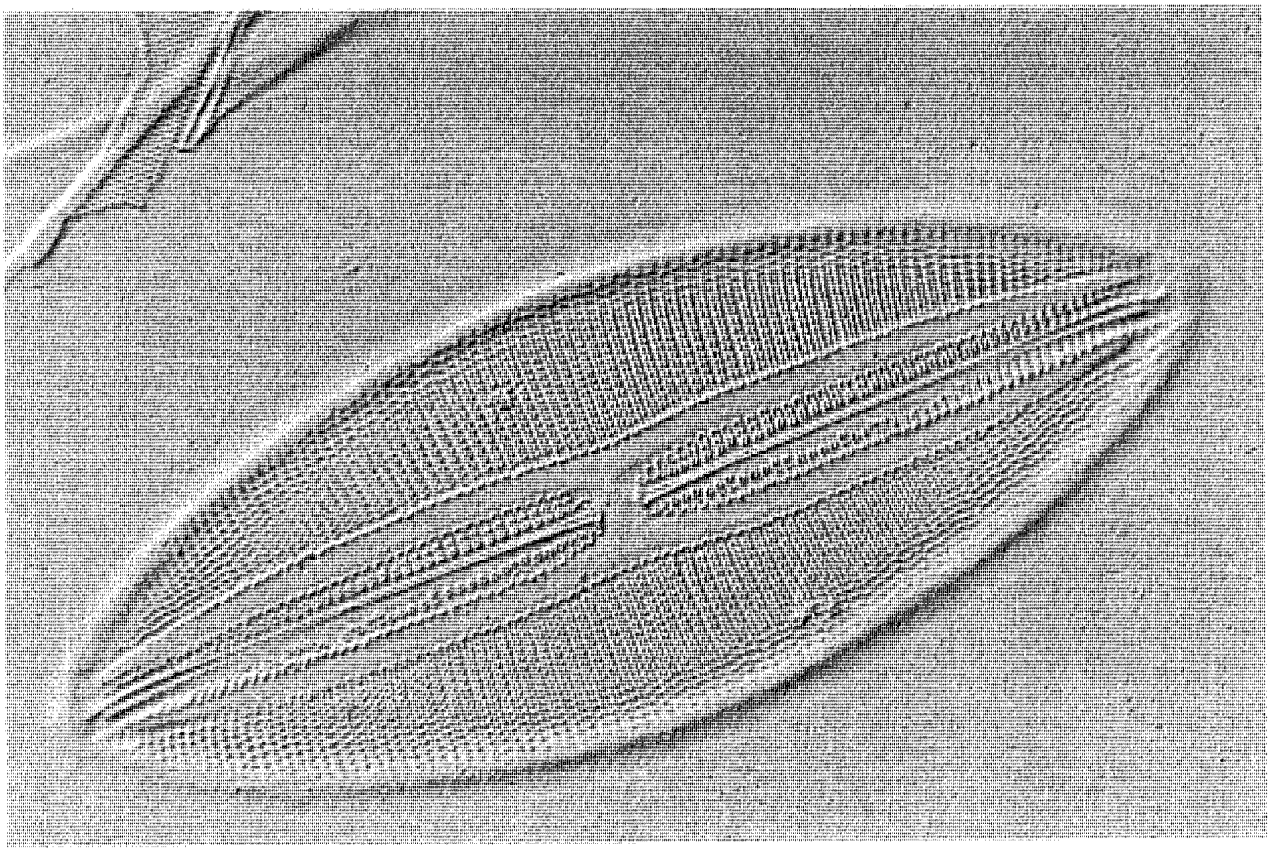


Fig. 4 Navicula lyra Photoshop "embossed" print.

small scattered scratches against a background of minute digs and pits. The small shell resting on the spicule and the larger radiolarian to the left have taken on an added bas-relief-like detail, as do some of the larger scattered pieces in the field. To see if this effect could be extended to other images with higher original magnifications (the spicule having been photographed originally at 156x), two other computer stored images from the negatives submitted to George and Gaylord were chosen, displayed and prints made, both with and without the Emboss filter system. These were the images of the diatoms Navicula lyra and Pleurosigma angulatum. Candidly, most of the larger structured features on N. lyra (original magnification 625x) in the Emboss photo (Fig. 4) do not show to any greater advantage over the 'conventional' computer image (Fig. 3) although some added longitudinal rib detail can be seen. It is, however, in the added delineation of a very fine background field of tiny pits and scrapes, with a few minor lumps, that the Emboss photo again contributes some marked detail differences. Note, too, that while the small, extraneous, broken bit of shell in the upper left hand corner shows moderate pore detail in the slightly soft-focused 'conventional' photo, that same pore detail is somewhat enhanced in the Emboss photo.

In the two final illustrations, P. angulatum (original magnification, 1406x) is shown in the 'conventional' computer print (Fig. 5), and with Emboss (Fig. 6). Again, with the latter, a background field of small details are brought into sharp relief, and the pores in the large, undamaged diatom are made to appear more three dimensional, with larger pits and hollows and a few scattered elevations or lumps on the surface of the diatom itself. Also striking is the 3-D effect of the pore-structured oval feature on the upper, broken, diatom fragment.

Even a cursory consideration of computer and printer generated 'conventional' versus Emboss treated images would be incomplete without comparing these same finished photos with the original 35mm B&W negatives. Using stereo zoom and transmitted light, the 35mm negative images can be enlarged and adjusted at the eyepiece to coincide, in approximate size, with hand held print images and a comparison of details thus easily made. Here, in almost every case, the more obvious elevations and depressions ultimately seen in an Emboss treated image, can be located on the original negatives. Quite frequently, however, they are seen only as an out of focus blur or a, more or less indistinguishable, smudge. And, in almost every case, the Emboss filter will accent that blur or smudge into a dramatic form with three dimensional boundaries of length, width, height or depth. Furthermore, in no cases (of the admittedly small sampling so far seen) do the original 35mm negatives show, with any detailed clarity, the multitude of minute, background pits, digs and scratches, again ultimately made so obvious on photos generated using the Emboss filter system.

Image enhancement in one form or another is, of course, not new. To make the obscure more obvious, we routinely use Darkfield, Polarized Lighting and Rheinberg illumination. For the more adventurous, there is Nomarski, Fluorescence microscopy and Phase, Differential Interference and Hoffman Modulation Contrast systems. Aluminum vapor can be vacuum deposited on siliceous diatoms for viewing the enhanced details with light microscopes and metal deposition on thin films is standard fare in preparing specimens for electron microscopy viewing. At lower magnifications, especially with lower power stereo systems, low angle incident lighting will throw grosser details into dramatic, shadowed high relief. With transmitted light, we can turn to staining of suitable specimens with organic and other dyes and reagents, and both stained and unstained specimens can oftentimes be further enhanced by the judicious use of special color filters. And subtle sub-stage manipulations can create Oblique Lighting to contour, and so enhance, many specimen materials. Even so brief a listing shows that specific and controlled conditions are created, so to speak, before hand; that is, the staining, the specialized optics and lighting techniques, etc., are all brought into play first, and then a photograph is taken showing the results, the effects, of these critically constructed conditions. With Emboss, the picture is initially a conventionally taken photo, from which a print is then generated using a standard computer printing and filter system.

These shadowed, 3-D effects are, indeed, reminiscent of subsequently enhanced photos taken of, among other things, portions of the Earths surface from high orbiting satellites. One of these, taken over two decades ago of sea ice off the coast of Spitzbergen shows real features, but in dramatic stark relief. The caption says, in part, "This computer-enhanced image shows detail that would otherwise be lost due to film saturation from the brightness of the light reflected from the ice and snow ...."

That it may be premature, and therefore unwise, to attach un-due importance to Emboss influenced images without further critical work is not an unfair observation. The process would, certainly at best, only supplement already existing means of image manipulation or image enhancement. But the question, what do we have here? seems, also not unfairly, to beg an answer of some kind. Are the added details seen in Emboss treated images real but perhaps latent details that possibly exist in the negative film images but are somehow made more obscure, less obvious, by the conventional methods of B&W film lighting, exposure and processing? Or are these same detailed 3-D effects in actuality false images, spurious data or computer generated artifacts with no validity in the real world of imaging the microscopic?

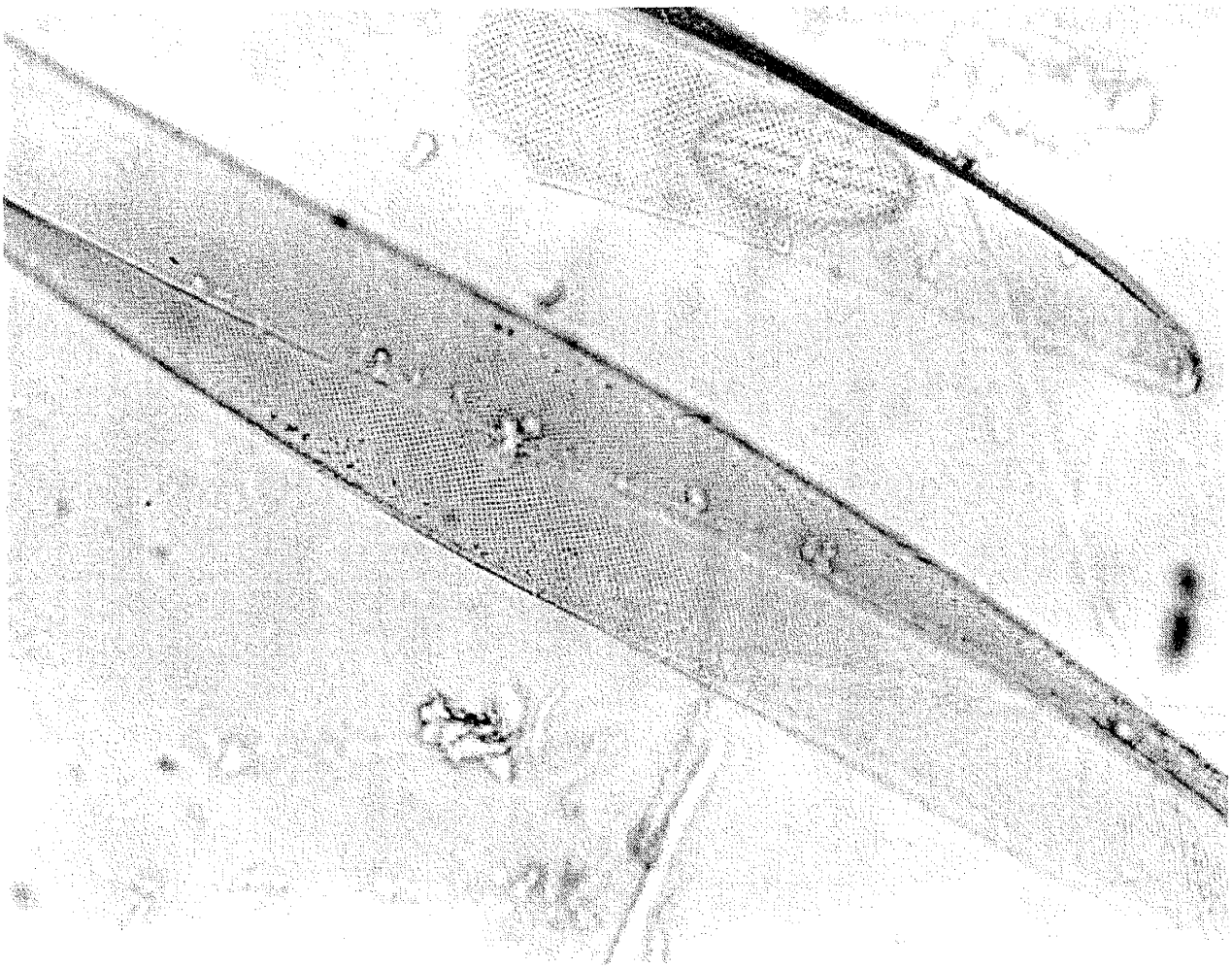


Fig. 5 Pleurosigma angulatum "conventional" print.

It should also be emphasized that it would be difficult to imagine, and presumptuous to assume, that the Emboss treatment of photomicrographic images has not been previously noted and explored and is an unknown, an untested and, thus, a new and valid information imaging technique. It is simply that the application of this technique and its resulting striking effects is new to these investigators.

And so, an answer or surmise to the question of wether the Emboss filter treatment might be a possible tool to further delineate valid and already existing photomicrographic image details, or is it simply a serendipitous curiosity and just another modest but interesting way to prepare and present illustrations of the photomicrographers' art, I will leave to others ...hopefully to those of you with the knowledge of both relevant computer techniques and comparable printing procedures. Your comments are solicited.

When serendipitous niceties loom suddenly on the horizon, it behooves one to recognize them for what they are, and for better or for worse, to try to make the most of them. They don't happen that often.

Notes: For the original photomicrography -

Microscope	Leitz Ortholux
Objectives	10x, Wild, Fluotar, 0.40 N.A. 40x, Leitz, Apo, 0.95 N.A., with correction collar- 90x, Leitz, Apo, oil, 1.32 N.A.
Eyepiece	12.5x, Leitz, Widefield, Periplan GF.
Camera	Olympus PM - 6
Film	Kodak 2415, 35mm, B&W.
Filters	Various experimental combinations. Specific wavelengths undetermined but well into the violet.
Computers	Both George and Gaylord use MacIntosh clone Power Tower Pro 200 MHz computers, made by Power Computing Corp. Both computers have: 136 megs of RAM and 13.4 gigs of hard drive .
Scanners	George uses a UMAX flatbed scanner with transparency adapter and a Nikon 35mm slide scanner. Gaylord uses an HP Scanjet IICX flatbed scanner.
Printer	Gaylord uses an HP model 6MP 600 dpi laser printer.
Software	The software program for the emboss filter is Adobe Photoshop 4.

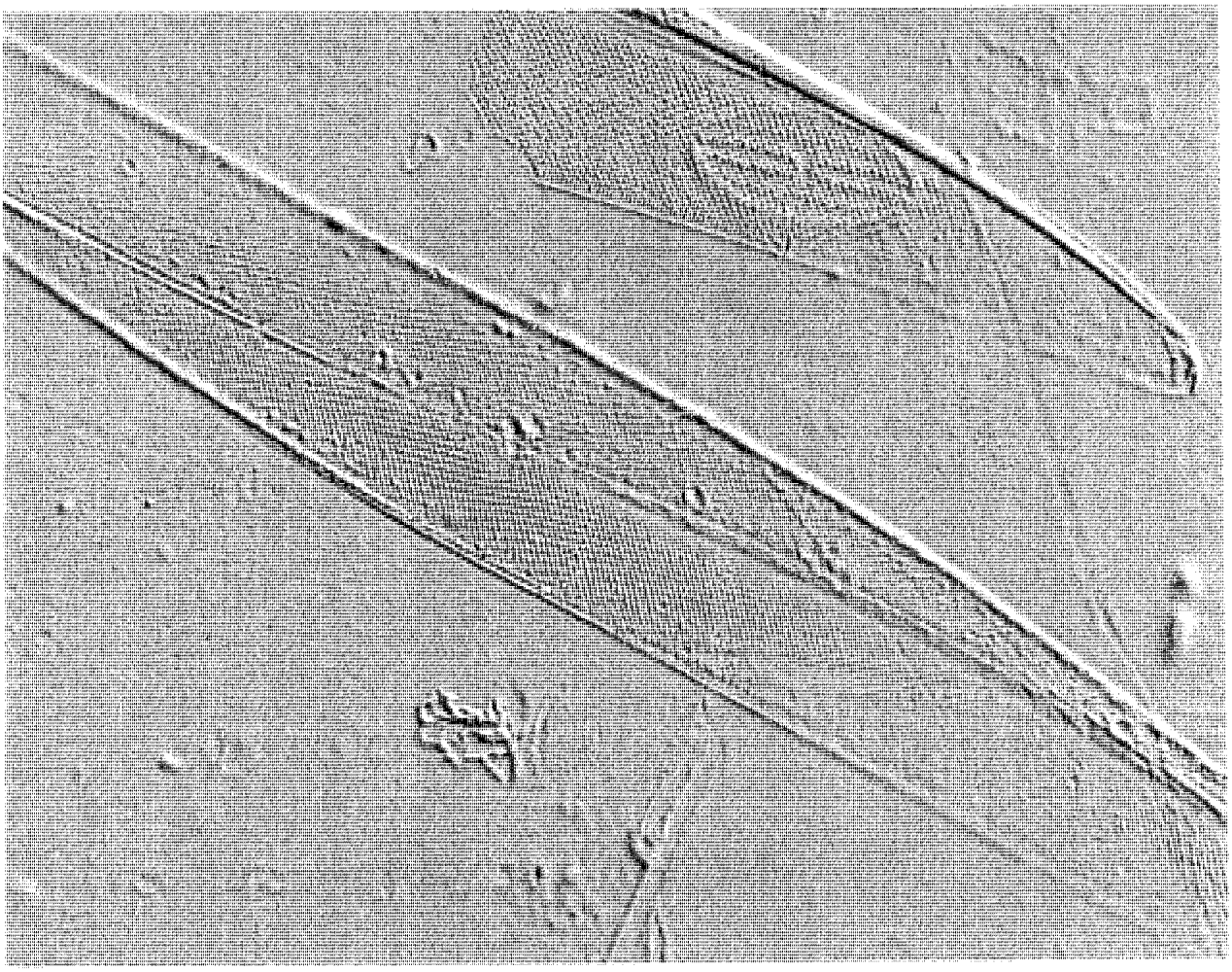


Fig. 6 Pleurosigma angulatum "embossed " print.

MBS-10 Lens Converter.

Arthur Burton - Postal Microscopical Society

Many of our members have bought the excellent Russian MBS-10 stereoscopic microscope. The lower power objectives give a good image, in particular the x2.This has a straight through light path from the common objective to the stereo head, with a minimum of intermediate lenses,and none in the objective changer drum.With the x4 and x7 objective settings, two extra sets of lenses are interpolated into the light path which, together with the increased magnification, substantially darkens the image.When using the x2 objective setting, excellent though it is, one wishes for just that little bit more magnification. Changing the eyepieces to x14 helps those with bad eyesight to some extent, but it is after all only empty magnification with no increase in resolution.As ever, the ingenious Russian designers have come up with the answer in the form of an extra x2 lens converter to be screwed on to the existing common objective.This doubles the magnification on all ranges.The improvement is startling, giving extra magnification with no noticeable loss of brilliance. It is particularly striking when used with the x2 objective setting.This gives a superior image to that obtained by the use of the x4 objective setting without the converter.The converter can beobtained from Lakeland Microscopes at £29.38.

We are again indebted to the Postal Microscopical Society for this article reprinted from the Balsam Post of January 1998. Mr. Arthur Burton has added to the pleasure of those of us, including myself who have acquired an MBS-10 for our own use. Ed.

e-mail address updates

Larry McDavid	lmcdavid@lmceng.com
Steve Craig	srcraig@mediaone.net
Anthony Harris	T4harris@aol.com
Kate McDonald	kate@ucla.edu
Alan de Haas	doemicro@earthlink.net
Gaylord Moss	gmoss@mediaone.net
Budd J. LaRue	bjlarue@worldnet.att.net
Ron Morris	ronmorris@wcis.com
John Fedel	jfedel@pacbell.net

Member Profile

Myron Lind, M.D.

1969

Family, Myron aged 6 months.

Age 11

As requested by Mr. Moss, I am submitting this member profile of which I accept only half the responsibility.

I was born on July 5, 1939 in an area of Brooklyn known as Brownsville, home of Mike Tyson and the ever-popular Mafia. Two blocks away was a fire station. As the neighborhood was constructed of wood, fires could be, and often were, quite devastating. At about age five, I was scared every time the fire engines passed by our home, responding to a call. I didn't know if the neighborhood might go up in flames and was relieved as the fire truck passed by my window.

My father was a house painter, work that he did until age 62 when he fell from a scaffold and broke his hip. My mother was a homemaker and I have one brother a year older than me. Our summers were spent in the Catskills, up state New York. As a youngster I would pick blueberries for my Aunt. She fermented them and made blueberry brandy. When I was eleven, I went on my first date accompanied by my mother. I attended Thomas Jefferson High School in Brooklyn, graduating in 1957. I pushed myself and did well academically. I recall making an incubator with a glass tube thermostat using mercury. I probably poisoned half the bioscience lab staff in the process. What the attraction was to science, I don't know. Later in life, my daughter, Courtney, very astutely commented on the high regard that people held for me as a doctor, very similar to my family's regard for our family physician.

I attended Brooklyn College for my undergraduate studies, and graduated in 1961. I began my premedical studies at the State University of New York (SUNY) Kings County Hospital, completing four years later in 1965. I married my first wife Karen, mother of my son, Mark, and daughter, Lisa. I decided it was time to move away from the cold winters of New York and accepted a one-year medical internship at the University of Florida in Gainesville. At the end of my internship we moved to Torrance, California where I completed a year of residency in medicine at Harbor General Hospital. Working long hours and facing the pressures of life and death situations were extreme and contributed, in part, to the break up of my first marriage.

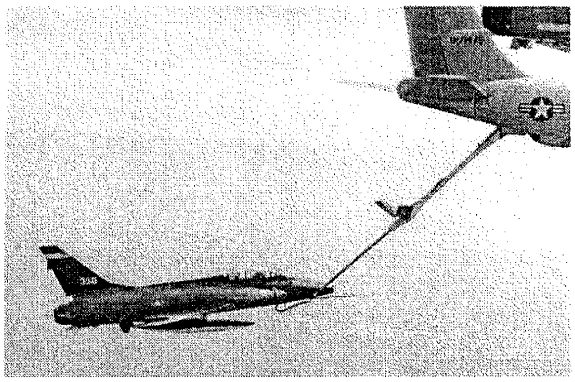
I married my second wife, Barbara, mother of my daughter, Courtney. Upon completion of my residency at Harbor General Hospital in 1968, I entered the USAF as a flight surgeon and moved to Alamogordo, New Mexico compliments and courtesy of Uncle Sam. I made a great impression on the hospital Commander when, at a welcome gathering for new flight surgeons, I mistook his young wife for his daughter. Things deteriorated further when I hung a playmate of the month centerfold on the ceiling of my office to help the pilots relax sufficiently for me to perform on them the eye part of the exam . An offense, I was told, that was punishable by court martial. To relax, I took up horseback riding and pretended to be Clint Eastwood. Other times, I flew as a co-pilot in the F4. The highlight was air-to-air refueling.

Considering this was the time of the Vietnam War, I was very fortunate to have been stationed in Germany for three months. My wife Barbara and I would visit nearby farms and villages on my days off; this was my first introduction to antique collecting. Barbara pointed out a piece of farm equipment she thought could be a nice decorative piece for our apartment on base housing. When I objected, she told me to just carry the butter churn back to our apartment. I still have that butter churn.

In 1970 we returned to Los Angeles and I resumed my studies at UCLA/VA. While on call at the hospital, I would be awakened by nurses to deliver babies in the middle of the night. When I realized that these babies would not wait until morning, I decided to change my specialty to Psychiatry. I spent the next four years in study and analysis. I began to build up a practice of my own while at UCLA. Upon completion of my studies in 1973, I opened an office on Van Nuys Boulevard in Van Nuys. My main interest was insight-oriented therapy and a secondary interest was Workers Compensation. My practice continued to expand over the next twenty years until I found myself unable to continue my work.

Skiing in Austria with daughter Courtney 1984.

Courtney, Myron, Mark, Lisa, April 1995.



Fill it Sam - diesel.

I was diagnosed with Parkinson's Disease in 1980, at age 41. Feelings of loneliness and despair, which had previously been just terms/semantics, became a painful reality for me. My brother was also diagnosed with Parkinson's Disease about a year later. My mother had been diagnosed with Parkinson's Disease several years earlier, around age 70. The illness, for the first twelve years or so, was manageable and my practice was something that I enjoyed and looked forward to daily. Eventually, it became more difficult, then impossible for me to continue my work. I sold my practice on December 31, 1993; fourteen days before the Northridge earthquake destroyed the building that my office had been in for so many years.

Barbara and I divorced in 1991. I met Anita in 1993; we were married on April 1, 1995. A date that I selected so that I would be able to easily remember the date of our anniversary.

I enjoy traveling and antique collecting. I collect anything that might be old such as books, an out of date love letter from a traveling salesman to his wife in 1882, eyeglasses, meerschaum pipes, cigar boxes, medical accessories, Victorian puzzles and games, feeding tubes, stethoscopes, microscope slides, etc.

My interest in microscopy began in high school and continues to the present. I find the slides graphically beautiful and collected them over a twenty-year period on my travels to London. My first purchase occurred on my way to Heathrow to catch a flight home. I had stopped in an antique store, curious about a small wooden cabinet about one foot square. The owner did not appear to be very interested in the box itself and casually showed it to me. Inside was an array of microscope slides, some wrapped in papers, some not, but all very beautiful and mesmerizing. She told me I could have the box of slides for £ 25. For some reason, I felt obliged to bargain with her. I counter offered £ 20, which she accepted. That was the beginning of my collecting fever which continues today in various degrees and intensity

I remember sitting with my daughter Courtney looking at slides for hours. I don't really know much about what I have. I just know I like what I see and the slides give me a great deal of pleasure. My enrollment in the Microscopical Society of Southern California about a year ago has renewed my interest in my collection of microscope slides.

I am very happy with all my children who seem to be doing well in their respective endeavors. My son, Mark Jaffe, M.D., is a psychiatrist, specializing in forensics. He recently published a paper on the "Three Strike Law and Malingering." My daughter, Lisa Jaffe, is a student at the Pasadena Art Institute. She is studying Industrial Design; it is her goal to design furniture. My daughter, Courtney Lind, has spent the last several years working in animation doing production work. She is currently working for Sony Animation as the Production Coordinator for a new prime time television pilot.

Pocket Microscopes and Beyond

David L. Hirsch

Among the myriad magnifying devices, the so-called pocket microscope has been in use since the microscope was first innovated. Essentially, the pocket microscope is a hand-held instrument going back to the time of Leeuwenhoek and his crude high power, short focal length instrument. Like Antoni's microscope, the in-focus clarity of the object depends to a large extent on the ability of the user to hold the instrument steady while examining a specimen. In time, some early genius, grown weary of aching neck and arm muscles, fitted his hand held instrument with legs or a support post. The microscope was on its way! On the market today, there are a number of pocket microscopes of various makes.

Five types will be discussed here, from inexpensive single and dual purpose instruments to a compendium featuring an ingeniously engineered pocket microscope which can be converted into a novel, multi-featured stand capable of magnifying to over 1000X. Three of the subject instruments, characterized as scientific toys, were produced in Pacific Rim factories.

The 'PENSCOPE'. This Japanese made, two section instrument is a combined 10X telescope and a 50X microscope. (Fig.1) The rear section, containing three lens elements, comprises the microscope. The image is fully color corrected. The front of the microscope tube section is cut at an angle. Focus is obtained by placing the tube end on a surface and tilting the tube until the object is clearly presented. The front and rear sections assemble to form the telescope. The plano-convex lens in front of the telescope tube is of a long focal length. An enlarged, erect image results by sliding the rear tube assembly in or out of the front tube section until the image is in focus. The body portions of the instrument are made of brass, nickel plated. The fully assembled instrument is 5.88" lg x 0.56" dia.

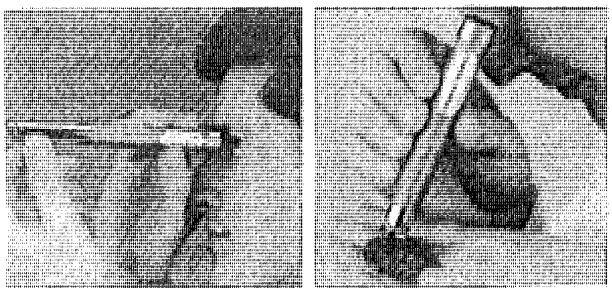


Fig. 1 Micro Tel Penscope

The TELE-MICROSCOPE. Made in Hong Kong, this Waltex designed instrument is a combined 8x telescope and a 15x microscope. (Fig.2) The objective end of the microscope has a transparent tubular tip for admitting light. The tip is placed vertically on the object. The user looks through the eyepiece and rotates the focussing wheel to bring the object into focus. To use as a telescope, the front section adapter is inserted and locked into the rear, or microscope portion. The focussing wheel is rotated to bring the image into focus. Glass lenses are used throughout. The black plastic sections of the instrument cannot be disassembled. The fully assembled instrument is 8.25 lg x 0,88" dia. A plastic carrying case is included.

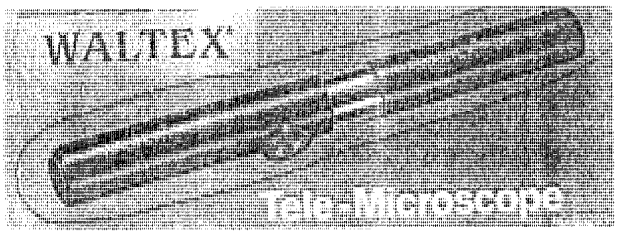


Fig. 2 Waltex Tele-Microscope

ILLUMINATED MICROSCOPE. Figs. 3a and 3b show two versions of hand microscopes illuminated by either daylight or by a 3 volt incandescent lamp. The scope in Fig. 3a has a rotary focussing knob. The cheap plastics construction precludes smooth, accurate focussing action or optically acceptable images, especially at the stated 100X. Fig. 3b is also illuminated, and of simpler construction.

The POCKET MICROSCOPE. Considered "top-of-the-line," this instrument, made circa 1930 in England, is signed: "STANLEY LONDON." A later, German made version is shown in Fig.4. The Stanley instrument

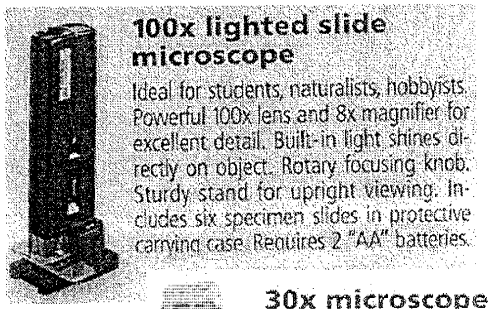


Fig. 3a

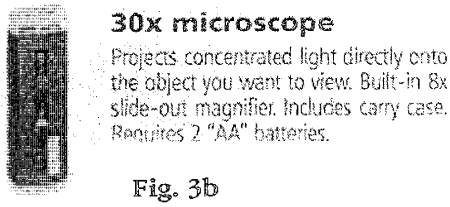


Fig. 3b

comes equipped with a three element, achromatic lens system and a fixed, light reflecting mirror adjacent to the objective. Adjustable magnifications of 40X, 50X and 60X are made by sliding the body tube into the respective graduated indicator slots. On the Stanley microscope, intermediate magnifications can be interpolated by moving the adjustment button to the desired position between the marked graduations. Correct focus on the Stanley instrument is obtained through 0.38" of travel, by raising or lowering the objective by means of a button fastened to the objective through a slot in the lower part of the body tube. All metal parts are made of brass. The body tube is enamelled gloss black and the sliding tube is nickel plated. The overall length of the instrument is: 5 1/2" closed and 6 1/2" extended. A leather case is supplied with the microscope.

Das 'ULTRA-LOMARA' MIKROSKOPE. (Figs. 5a through 5e) This circa 1925 stand is the ne plus ultra among instruments of its type, representing the highest level of perfection attainable in relation to pocket microscopes. Although this newly acquired 'shining star' is

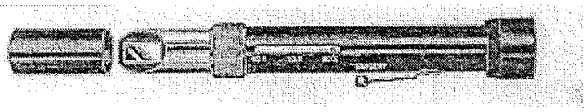


Fig. 4 German made Stanley type

a modern instrument in working order, it holds a place of honor among my meager collection of vintage microscopes. At first glance, it seemed like a toy, and was almost overlooked among the many hundreds of items displayed at the April, 1998 Scientific Instrument Fair in London. The comprehensive instruction and specification sheets are printed in Scientific German, the technical nature, of which, indicates that the instrument is meant for serious use. The assembled stand is 9.88" high without the extension tube and 12.38" high with the extension tube in place. The 6" tall brown leather covered case (Fig. 5a), complete with shoulder strap, is identical to the cases once furnished with field glasses. The blue plush lined case interior is compartmented to hold the microscope, stand and accessories. The complete package weighs 2.50 pounds. Three objectives and three oculars are included, along with the stand, an extension tube, 2 reflectors, the illuminator, adapter, and three slides, as shown in Fig. 5b. Fine tipped, stainless steel forceps were added. The table in Figure 5c shows the magnifications obtained by using the indicated combinations of furnished optics, both with and without the extension tube.

Assembly of the Stand. The hand microscope may be used as such, but for ease of handling and better control of the illumination, the instrument is assembled to the stand. The truncated end of a reflector fits into the slit ring on the top of the stand and is clamped in

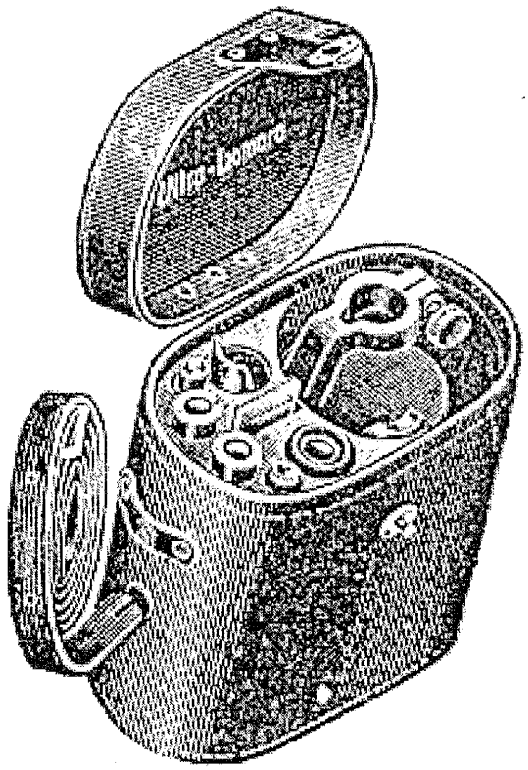
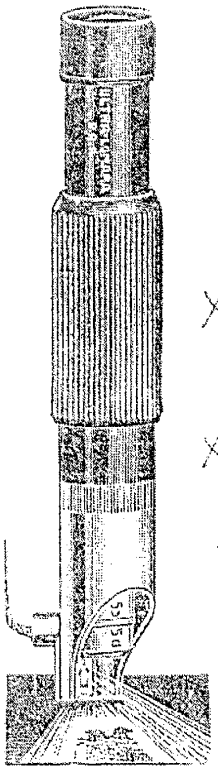


Fig. 5a Lomara in binocular type fitted case

Fig. 5b Ultra Lomara fitted case and accessories.



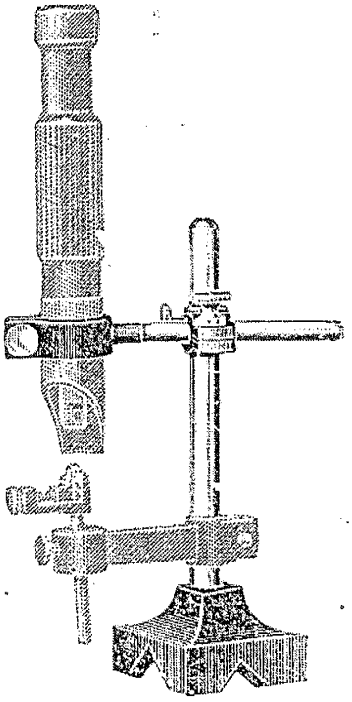
Nr. 55a

Vergrößerungstabelle

(Die Objektivteile 3b und 5a sind Abstandsregeler, enthalten also keine Linsen).

Objektiv	Ohne Verläng.-Tubus Okulare III	IV	V	VI	Mit Verläng.-Tubus Okulare III	V	VI
3a	20	35	45		45	75	95×
3c	35	65	80		75	120	155×
3a bc	45	80	100		85	145	195×
3b a c	60	105	140		120	195	255×
5a b	35	70	85		75	125	165×
5a bc	75	130	190		140	230	300×
5a bcd	120	205	270		220	355	460×
7	260	450	580		480	780	1020×
9	350	620	800		660	1110	1410×

Nebenstehendes Werkstatt-Stativ Nr. 40a kann auf Wunsch mit den Teilen Nr. 40a 1, 40a 3, 40a 4 und 40a 5 ausgestattet werden.



Nr. 40a

Fig.5c Magnification table for various configurations and stand illustrations.

place with the knurled thumbscrew located at the end of the upper arm. The arm can be tilted 90 degrees.

Focussing. For course focus, a knurled sleeve surrounding the body tube is rotated, causing the objective lens to move up or down. Fine focus is effected by tilting the upper stage, using the knurled adjusting knob located beneath the lower portion of the stage. Fine focus, achieved by tilting the stage, was a feature sometimes used in vintage microscopes, such as the circa 1835 portable microscope by J.Amadio. (ref: TESSERACT Catalog C, Item 16, winter, 1983). When the (slide mounted) specimen is tilted, the plane of the specimen will no longer be perpendicular to the optical axis. As will be shown, thefield of view will not be uniformly in focus.

Analysis of the Tilting Stage Focussing Method. In some microscope designs, a two part stage is used. Secured on one side, the upper stage portion is attached to the lower stage by a hinge-like arrangement. On the side opposite to the constraint, a single screw is threaded into the lower stage, bearing beneath, and perpendicular to the upper stage when in the retracted position. At its lowest part, the screw terminates in a knurled knob which is rotated to raise or lower the hinged upper stage. How does the tilting stage method of focussing differ from that of conventional microscopes? In the latter, either the stage or the body tube are raised or lowered uniformly to bring the object into focus. The plane of the field remains perpendicular to the optical axis, and all details in the plane will be in focus. Such is not the case with the tilting stage focussing method. When fine focussing by tilting the stage applies, (assuming that the lens system is optically correct), the image will be in focus along a line running fore and aft, and intersecting the optical axis. To the left and the right of this reference line, the object will be increasingly out of focus as the (lateral) distance to the left and right from the center line increases. This out-of-focus condition becomes more apparent as the stage edge rises and the elevation angle of the stage increases.

Other Features of the Ultra-Lomara Mikroskop. (Fig. 5d)

Stage The stage assembly consists of an upper and a lower section. The stage clips are mounted on the upper section and are not removable. The iris diaphragm is sandwiched between the two stage sections. The upper section of the stage is tiltable to provide fine focus. The upper arm assembly is joined to the base by a friction joint and can be tilted through 90 degrees.

Mirror. The 1.125" dia. mirror assembly is gimbal

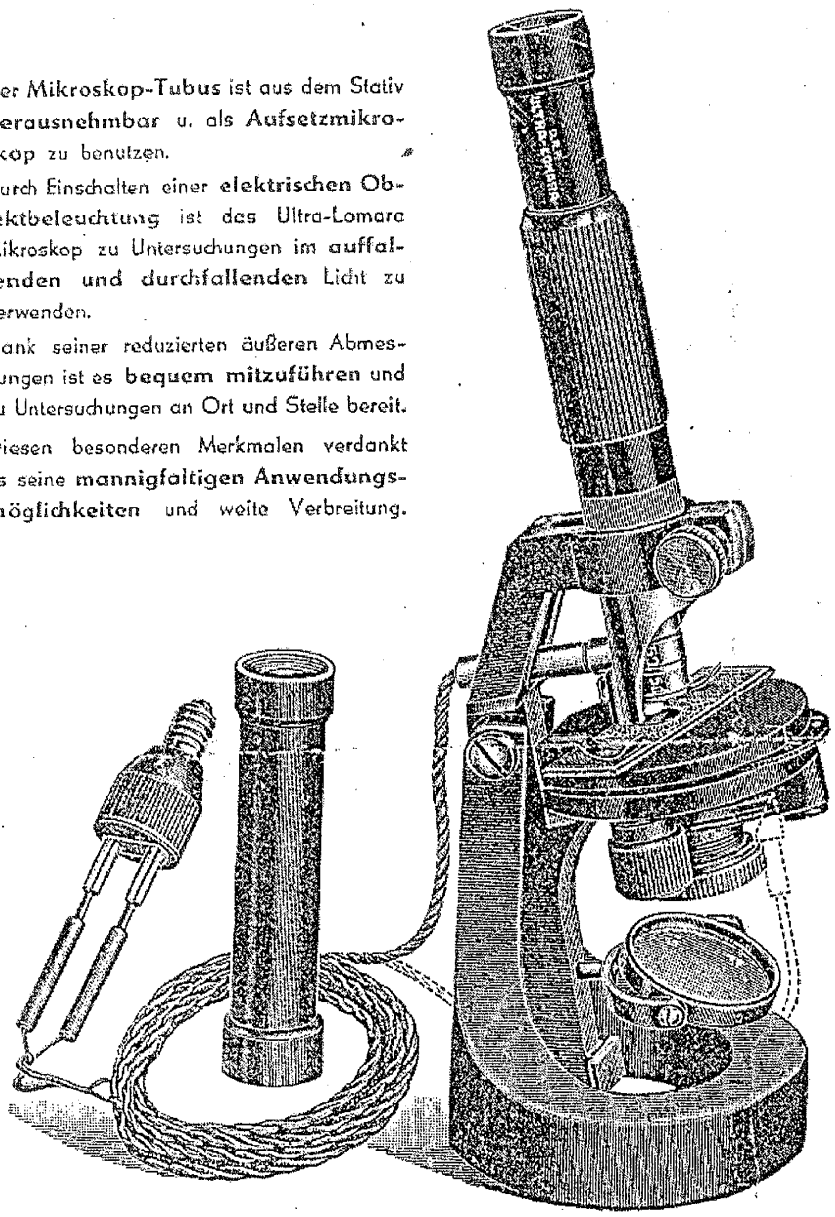


Fig. 5d Ultra Lomara with extension tube and illuminator.

mounted, and features plane and convex reflecting surfaces. The mirror shaft fits into an extension of the arm and is adjustable 0.25" inch, in and out.

Iris Diaphram. The iris has 6 stops, marked 1 through 6 respectively and ranging from 0.063" dia., through 0.250" dia. Each stop position is numbered and marked to enable alignment with a mark on the upper front edge of the stage surface.

Substage Condenser. The threaded barrel of the condenser allows vertical adjustment of the condenser body. The condenser is secured beneath the stage and can swing out to clear the stage hole. A leaf spring, integral with the condenser mount, acts as a detent, holding the condenser in operating position.

Reflector. The lower end of the microscope tube is threaded to accept the truncated end of the nickel plated reflector, two of which are supplied. One of the reflectors has a cut-out opposite to the truncated edge for mounting the illuminator body from the rear of the arm.

Illuminator. The illuminator unit contains a 'grain-of-wheat' incandescent lamp rated at 4 volts. The yellow, cloth braid covered wires terminate in prongs which connect into an adapter, the opposite end of which terminates in a threaded plug for insertion into a flashlight.

Extension Tube. Fig. 5e shows the microscope with the extension tube installed. The hard rubber tube is 2.50" long, threaded externally at the top and internally at the bottom. Depending on the combination of oculars and objectives, use of the extension tube can increase the magnification up to 95%. The makers of the Ultra-Lomara Microskop are to be commended for producing an instrument which has so many notable features in so small a package. The user will note the ease of handling the microscope and the integrity of the images produced at all magnifications. Besides being a viable working instrument, the Ultra-Lomara Mikroskop is a noteworthy addition to any scientific instrument collection.

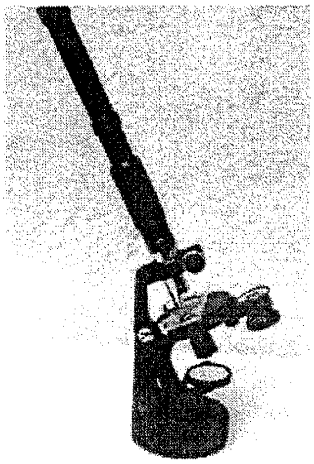


Fig. 5e Ultra Lomara with extension tube in place.

Note Lomo microscope advertisement from 1934 Popular Science on page 167.

WORKSHOP of the Microscopical Society of Southern California

by: George G. Vitt, Jr.
Date: Saturday, 10 July 1998
Location: Steve Craig's Lab.

1. **Steve Craig** passed around a copy of the magazine *Microscopy Today*, which is obtainable on a free subscription, and noted that interesting information and imagery can be obtained from its Web Page, <http://www.microscopy-today.com>.

2. **Alan de Haas** announced the news that the UCLA Medical School will, in the near future, stop using light microscopes in their student courses - and that many of these will become available at, probably, very reasonable prices. Allen then described the 'piece de resistance' that he had brought: a pristine (i.e., unused!) Zeiss W-L binocular biological style microscope, c.1955, with every conceivable accessory available for this model, everything being cased individually. A sampling: rotary stage; plan-achromats; plan apo-neos with correction collars; drawing tube which uses adjustable polaroids to balance the light; a very rare 'photo changer' to direct the primary image through three outgoing ports to any one of several 'receivers' - such as another observer, cameras, projection, etc.; a special stage attachment for the direct measurement of refractive index to an accuracy of 3 significant figures as a direct reading (!); Optovar; 3 individually centerable nosepieces; a dark field turret with 5 phase discs; phase objectives; a mirror on a rod which fits on the monocular tube for projection. This entire unique outfit now has a new home!

3. **Larry McDavid** had put together 5 kits of materials needed for lacquering brass in the restoration of microscopes, and offered these kits, at cost, for $15. He then showed a stereo microscope that he had put together for his daughter's use - by making a fine stand for an existing binocular head with 1X and 2X objectives. He then showed a rare scientific topological curiosity: a Klein bottle made by some expert glass blower. This bottle has the unique property of having only ONE surface.

4. **Gaylord Moss** announced that he has changed his Internet server from ATT to MediaOne, a cable company, and now has Internet access with a download speed capability of 1.5 Mb/sec! Since he is connected to the Internet at all times, there is no need for him to call upon and wait for connections to be made - as previously.The new address is <gmoss@mediaone.net. He later reported that images downloaded practically instantaneously! The installation was performed by 2 server technicians at a one-time cost of $49. The necessary Ethernet card was already a part of his PowerComputing Power PC. There followed a general discussion on patent search via Internet, with the information that the L.A. Public Library has all US patents on microfilm.

5. **Allen Bishop** passed out membership application forms for the Microscopical Historical Society, which had been obtained from MSSC and PMS member Dr.Manuel del Cerro.

6. **Bill Davies** brought, for sale, a Japanese measurement mic. using incident illumination and a digital depth display. Ron Morris stated that such microscopes had been used by microcircuit fabrication labs. for measuring the thickness of early metallization layers, and for plated metals.

7. **Dario Solares** passed around a current edition of a thick textbook on the use of machine tools, *Advanced Machine Work*, by Robert H. Smith, Lindsay Publications, Inc, 1984. George Vitt recognized this as a later edition of the original text that had been used in the 1940s in the MIT Machine Tool Lab courses that he had taken.

8. **Larry Albright** displayed a cased binocular microscope by Browning, c.1885. He then showed some items he had gotten at the ebay Internet auctions: a Browning pocket spectroscope; a genuine 58 caliber 'Minie Ball' lead bullet (with cavity base), from a civil war battlefield, into which had been fitted a lens to transform it into a Stanhope which showed the 1860 painting of the battle of Lookout Mountain, titled 'Battle Above the Clouds'; and a cased set of microslides of sections of the human eye, showing stained retinas. **Alan de Haas** identified these as probably being celloidin sections.

9. **Don Battle** showed several pages copied from an old book devoted to the coloring of metals. **George Vitt** borrowed this to scan for possible publication in the MSSC Journal.

10. **Ed Jones** described his methods of cleaning diatoms using sulfuric acid (to char the organics) and then the use of sodium hypochlorite bleach to get rid of the charred material. Ed then gave away microparticle slides and samples of woven cloth

where fiber intersections of different colors make interesting subjects for the stereo microscope.

11. **John de Haas** brought a Siebert microscope for sale ($400), and showed a, c.1920s, Spencer No.40 microscope that he had 'cleaned up' and restored.

12. **Leo Milan** showed the book *The Fascinating World of Spiders*, Barron's Educational Series, which he had gotten at the L.A. Science Museum (formerly called The Museum of Science & Industry). He then showed a remarkable structure he had also gotten there, the 'Haberman Sphere'. It consists of interconnected, specially shaped, plastic struts which, when collapsed, looks like a 1-ft. diameter sea urchin. When manually pulled open, it expands into a 50-inch spherical structure reminiscent of Buckminster-Fuller. When one releases the sphere, it collapses spontaneously. There was a general discussion concerning the new museum.

13. **Stuart Warter** showed, for comparison, dissecting microscopes by B&L and Zentmayer, c.1895. It was pointed out that they were quite similar except that the latter has its focus knob on the left, presumably to allow the free use of the right hand for specimen manipulation.

14. **Ken Gregory** showed a cased Zeiss microspectroscope, a Zeiss eyepiece micrometer (filar micrometer), and a Zeiss cased dissecting microscope, c.1891 with 2 extra eyepieces and a blue glass plate. All Items has been obtained from the ebay auction. Then, in keeping with his sometimes whimsical approach to things scientific, Ken held up and demonstrated some wind chimes, which rang nicely, that he had made using several metal uterine sounds!

15. **Richard Jefts** showed an article from *Microscopy Today*, 'Were the First Microscopes Really that Good?', and also articles on paranormal hoaxes and the Shroud of Turin.

16. **Dave Hirsch** announced that he is now on the Internet and can receive e-mail.

17. **Leon Stabinsky** showed the small "Acorn" microscope, c.1860-70, which he had recently obtained from Mr.Dingley of the Australian PMS. Leon then showed several small instruments: a max-min thermometer with original magnet; a cased traveling thermometer; a brass inclinometer having a spirit level on a pivotable protractor arm and a scale graduated in degrees; a cased, pocket-sized, c.1850, traveling microscope invented by Queckett - the box sides fold down to become legs and a lever moves the vertical staff up and down for focus, much like a dissecting microscope.

18. **Barry Sobel** gave a brief biography of Mr. Browning who was famous for his spectroscopes starting c.1860. He then showed and described a portable microscope by John Browning, c.1890, contained in the original purple-plush lined red leather covered case. The microscope is about 6 3/4 inches high, signed "J. Browning 63 Strand London 635." It has sliding tube coarse adjustment and fine focusing via a fine screw in the limb to the sprung stage. The limb forms one of the three legs of the tripod support.

Barry also showed some spectroscopes including the first type of direct (straight through) vision spectroscope first introduced by Hofmann of Paris in the 1863 exhibition. This instrument is identical to the one in the catalog of the Whipple Museum catalog of Spectroscopes (item number 4). His invention was popularized by Browning who specialized in all kinds of optical and other instruments, but especially spectroscopes. He was the first to manufacture the Sorby-Browning Microspectroscope, a fine example of which Barry also displayed. The latter was said to be able to resolve the spectrum of a single red blood cell.

19. **Ron Morris** reported that Roy Winsby, who had sent him foram samples, uses quick-setting "Glass Bond" cement (English made) for mounting cover glasses. **Alan de Haas** commented that one should use slow setting cement to prevent the cover glass from distorting. Ron then reported that his newly acquired hires video camera and video capture board were giving him good images through the microscope, and that he was recording these in Super-VHS format.

20. **Jerry Bernstein** described how, in his experience, video color cameras with composite video output (BNC output) display some jitter in the imagery, while the "S" type video output does not.

21. **Alan de Haas** offered for sale three new B&L photo eyepieces. These are negative optical designs used for photographing on 4x5" film (or larger) and for projection. There was a general discussion on projection eyepieces (periplan, etc).

22. **Herb Gold** described his recent trip to Portland, Oregon and the present state of the Howard Hughes 'Spruce Goose' wooden aircraft that is exhibited there along with much Hughes' memorabilia.

23. **Tom McCormick** described some most unusual, extremely high sensitivity, relative thermometers that he recently acquired in New Mexico. The units are about 3-ft. long. The main body is graduated between -30 and +200 deg.C, while the very fine mercury capillary portion has a range of some 0-3 to 0-5 deg.C, with 1/100 deg.C. graduations!! Anyone have any ideas as to how these were used?

24. **George Vitt** brought the R-type 9x12 prints of photomicrographs, taken by MSSC members, that are to be put on exhibit at the Palos Verdes Art Museum. These had been received recently from **Maurice Greeson** who had them professionally printed at a good price. Thanks, Maurice! After the photographers had identified their work, the prints were turned over to **Ron Morris.** There will be a 'print framing' workshop at the residence of **Ernie Meadows** after the glass and framing have been ordered and received. George then suggested that it would be a good idea to incorporate into the regular meeting of August, a small "Appreciation Day" celebration, commemorating not only the 2nd anniversary of MSSC's rebirth but, especially, the fine membership, spirit and accomplishments we have exhibited during this period. Everyone thought this was a great idea. (It was **Dave Hirsch** who originally suggested this possibility).

OTHER VOICES

Herb Gold

The *Balsam Post*, newsletter of the Britain-based Postal Microscopical Society, is the subject of this month's review. The issue for July, 1998 is chock full of interesting material. This year the society is celebrating their 125th anniversary. That's quite an achievement.

Ernie Ives of Ipswich is a wood collector and he shares his experiences in dealing with fire ants and alligators when he traveled to Florida for a collector's gathering. Actually a wood gathering; no, more properly, a gathering of wood. His article details the intricate operations involved with the wax impregnation of wood samples in preparation for microscopic examination.

For moss lovers, not those whose adoration is directed toward our revered editor, the other moss lovers, will find a handy guide in *Getting to Grips with Sphagnum*. This piece is a continuation of a series to help one identify the various mosses found hanging about England. It's quite an art to grip moss and with the author's help you'll be expert in no time.

Characteristic of the many delightful little pieces to be found in this journal is *The Spider's Secret - Explained*. There has always been a great deal of speculation on how the common garden spider was able to extrude such a strong light filament. John Dale looks at some early theories and offers a very credible solution to the mystery. The spider's mechanism is similar to the process developed by Allied Signal Corp. for the production of their synthetic fibers called *Spectra*. The polymer is based on the very "simple" polyethylene molecule. The spider uses a protein molecule. The secret for both filament producers is in the extruding. When a very small amount of material is pulled through a very tiny hole, the resultant crystal structure gives both the artificial and natural materials their exceptional strength-to-weight ratios.

Members of the Society who receive slides through he mail were treated to a set of diatoms sputtered with a coating of aluminum. The slides were prepared by the author of *Cataracts, Contrast, Aluminum and Diatoms*, again, John Dale. He opens with the intriguing observations that "resolution neither increases nor decreases visibility" and "visibility is a function of contrast". "Think about", he says, "how difficult it is to see a black patch of paint on a black fence at night - no matter how good your eyesight!". Too better see the details in a diatom, increase the contrast between the specimen and the mounting media. By coating the diatom strews with a high refractive index medium such as a metal, the visibility of detail increases dramatically. He describes the process of evaporating a film of aluminum over the slide placed in a vacuum evaporator chamber. The result is a slide with a mirror-like finish that viewed with transmitted light, presents a "VERY spectacular" dark field display of "fantastic" resolution. It sounds like these slides are truly something to behold.

There are many other short but informative items, too numerous to detail here. The "long" article is the first part in a series by Stanley Warren, titled, *The Age of Smith*. It begins in 1839 when James Smith began making microscopes and follows him and his successor companies to about 1851. There is a lot of original material here that one won't find in Dr. Bracegirdle's informative works on the subject. It's must reading for collectors of Victorian microscopes.

Every microscopist whatever their persuasion should consider a membership in this society. Overseas members can get the Newsletter and the slides for only £20. Contact Colin G. Lamb, 32 Clement Avenue, Balderton, Newark, Notts. NG24 3NT, England.

MINUTES FOR THE MSSC REGULAR MEETING OF 15 July 1998

David L. Hirsch

"HOW OFTEN AT NIGHT—"There are more than 150 million stars, give or take the ones hiding behind those which are visible. Barry Sobel showed pictures of various sections of the sky, replete with galaxies that included stars, nebulae, star clusters, globular clusters and interstellar matter that make up the universe. A dramatic and ethereal musical background added a touch of mystery and awe to his presentation.

Don't expect to see stars here in Los Angeles. On most nights, the glare from hundreds of thousands of city lights reflects from the omnipresent clouds, resulting in brightness after dark. In search of clear night skies, Barry does his stellar observations in localities such as Mt. Pinos and the high desert, where nights are crystal clear. He makes photographs with a box camera arrangement, with exposure times ranging from 15 minutes to two hours. For optimum photographic results, he uses Kodak 1600/3200 hypersensitized print film and other similar products

Some of us city dwellers, who spent parts of our youth scanning the heavens in search of astronomical knowledge, may also have had the opportunity to observe projected firmaments at the Adler Planetarium in Chicago or at the Hayden Planetarium in New York, and in other cities. Who can forget the massive, complex, dumb bell-like Zeiss star projectors under the huge dome with the city skyline silhouetted on the 'horizon'? The presentation created the illusion of being out-of-doors, watching the stars and planets 'moving' through the night skies, with an occasional meteor streaking past.

Astute scientific observation seems to confirm the notion that the depletion rate of coffee and comestibles is directly proportional to the level of interest generated by the speaker and the topic. It was evident this evening after Barry's' lecture. Following the break, he showed slides taken during his trip last April to the United Kingdom. As mentioned in past journals, Barry teamed up with DAVE HIRSCH and LEON STABINSKY to buy up all the scientific instrument goodies at the Portman Hotel show in London. Some photos were taken at the show, but the bulk of Barry's' pictures showed the impressive instrument collections in the Science Museum in London, the Historical Technology Museum in Oxford, the York Castle and other pertinent sites.

Often overlooked, is the Wellcome exhibit on the fourth floor of the Science Museum. Although oriented toward the medical profession, the exhibit has many interesting displays, such as mock-ups of 18th century surgeries, dioramas, vintage medical equipment and a wealth of preserved anatomical specimens.

SHOW AND TELL. The piece de resistance among this evening's displays, was the preliminary showing of photomicrographic color prints which will appear in the forthcoming MSSC exhibition in Palos Verdes. Each print will be mounted in glazed, metal frames and tastefully arranged for proper viewing. Many thanks to MAURICE GREESON for assuring that the prints were of the fine quality as received. Kudos also, to PHIL LOHMANN and JIM SOLLIDAY for their continuing efforts on behalf of the exhibition.

Guest ROY GREGOR showed an unusual clock. It was encased in a brass cylindrical body, about 6" dia. and 8" long. It has 4 separate dials and serves as a timer. This rare timepiece was labeled "Pigeon Racing Timer Clock." Although we are a society devoted to microscopes and microscopy, members and guests may show artifacts and instruments non-microscopical in nature. MSSC accepts and encourages this, provided the displayed item has scientific significance.

KEN GREGORY showed two interesting microscopical accessories. The first was a filar micrometer by Zeiss, circa 1910. This accurate micrometer eyepiece consists of a fixed millimeter scale and a traversing cross line operated by a micrometer screw. The drum divisions of the micrometer screw are 0.01 mm; one complete revolution moving the cross line 1 mm. Measurements of much higher accuracy can be made than with the standard eyepiece micrometer. The micrometer clamps securely to the eyepiece sleeve of the microscope. Ken's second item was a mahogany cased, circa 1930, Abbe spectroscopic eyepiece by Zeiss. This micro-spectroscope eyepiece is intended for observing the absorption spectra of microscopic objects. It is, however, equally suitable for the spectroscopic examination of larger objects such as light filters and the emission spectra of sources of light. It is inserted into the eyepiece tube in place of the regular eyepiece.

FORAMINIFERA. For a coming workshop. JOHN DE HAAS suggested the preparation of slides displaying foraminifera. The time and venue will be announced.

QUIZ. What marine protozoans have siliceous skeletons of spicules and radiating threadlike pseudopodia? You are right! We are talking about that large order, Radiolaria. JIM SOLLIDAY showed a book on radiolaria titled, *Artforms in Nature*, by Ernst Haekel. This fascinating book consists of pictures showing the remarkable geometric forms of various classes of radiolaria. The book would be an excellent addition to your library.

THE MICROSCOPE.*

If there be a philosophical instrument before any other that has exercised a beneficial influence upon modern society, it is the Microscope. It has lent an impulse to the study of Natural History, of which the results have been more striking than any recorded previous to its invention; and through its employment, man's acquaintance with the laws and operations of nature has in a very brief period increased in a degree almost miraculous. It has taught him to observe with greater care; to calculate with more accuracy; has opened out new fields for the exercise of the mental faculties, raising the sense of wonder and admiration whilst at the same time it cultivated the reason. To the artist and poet it has offered new scenes and themes in Nature; and, in other walks of life, has employed thousands of busy hands and brains. In its simplest form the manufacturer carries it in his waistcoat-pocket to examine the texture of his fabrics, the seedsman to inspect his seeds, and so in many trades; whilst the more complicated instrument has become almost indispensable to the higher professions—the surgeon, physician, and analytical chemist having recourse almost daily to its defining powers. Indeed, there is hardly a home where, in one form or another, the magnifying lens is not to be found; scarcely a cultivated family circle in which at least one member does not avail himself of its use.

And how is it that even as a mere means of recreation, the microscope should have acquired a position in the homes of men which no other instrument has been able to command? The revelations of the Telescope are certainly far grander, and the performances of the Magic-lantern more amusing; and yet, for every one of these instruments, we may count in the houses of the intelligent classes at least twenty microscopes. It is because the last-named instrument brings us into nearer relations with that mysterious influence which we call Life—an influence which human curiosity has endeavoured from time immemorial to fathom, revealing to our gaze the hidden springs of vital action in living objects with which our acquaintance was previously but superficial; and exhibiting new scenes from animated nature, where we were before accustomed to believe only in the existence of inorganic substances influenced by physical forces. For a long period indeed, whilst the possession of a microscope was a privilege accorded only to a few professional men, and was often employed by these rather as a means to mystify than to enlighten, the doings of the microscopical world were regarded as being beyond the ken of ordinary mortals; and even within the last few months we were informed by a friend, who had deputed us to select a microscope for the use of his family, that his gentler half entertained conscientious scruples with respect to the ad-

* 'An Elementary Text-book of the Microscope; including a Description of the Methods of Preparing and Mounting Objects,' &c. By J. W. Griffith, M.D., F.L.S., M.R.C.P., conjoint author of the 'Micrographic Dictionary.' J. Van Voorst.

'The Preparation and Mounting of Microscopic Objects.' By Thomas Davies. R. Hardwicke.

mission of such an instrument into her house, as she believed it was not the intention of the Creator that we should see the things it revealed, or He would have enabled us to do so with the naked eye!

It may be considered ungallant to criticize the views of a lady, but we cannot help saying that such a remark exhibits a great want of confidence in the Creator, who has not only enlightened us by means of the microscope on many obscure points in Natural History, instructed us how to detect that adulteration which, like a false balance, must be "abomination to the Lord," and enabled man to prolong the precious gift of life; but has taught us through this medium that His relations are as intimate with the minutest objects of His creation as with the highest; for, as the telescope has revealed to us His power in the distant worlds, so has the microscope proclaimed his goodness in the water-drop!

From the 1864 Edition of the Quarterly Journal of Science. Edited by James Samuelson and William Crookes, F.R.S. Volume 1. London.

Courtesy of Alan deHaas

Notes on the Making of Permanent Slides of Transparent Foraminifera

John de Haas

The opaque shells of foraminifera are usually viewed with the stereo microscope or epi condensor (objectives), however, when made transparent, the delicate structure of some can be demonstrated. When looked at with polarized light, even more detail is seen. The method outlined below will show how they can be made transparent.

Equipment needed: a warming table of aluminum, 1/8 to 1/16 of an inch thick and about 3 to 4 inches in size. The legs must be long enough to fit over an alcohol lamp. Wide nosed forceps or other, cover glasses, round preferred, but square ones will do. Mounting medium: Permount, Clearmount or Histoclad. Protex will not do. Slides.

On a piece of cardboard, white is best, mark the outline of a slide with a cross exactly at its center.

Take some Foraminifera, or material containing them and put it on a slide. Cover it completely with mounting medium.
Then put the slide on the warming table, letting it hang over the edge of the table about 1/4 to 1/2 an inch. Gently warm the slide until the mounting medium begins to bubble. After a few seconds, check under the microscope to see if the air in the chambers of the Forams has been replaced by the mounting medium. If not, put the slide back on the table and repeat the process. You may have to add some more medium. Make sure that the preparation does not dry out. The toluene or xylene evaporates fast, so watch it!

When the Forams have become transparent (not all will be) carefully grab the slide and put it on the marked cardboard. Then add the cover glass, gently press it down and put the slide away to cool and dry. Any medium that has been squeezed out from under the cover glass can be removed later with a sharp knife or razor blade.

Look at the slide with polarized light. Some forms will show the cross of oriented calcium carbonate. Do not expect the first few slides to come out perfect. Like everything else, it takes some practice.
Good luck.

Notes on the LOMO MBC-10 Microscope

by Daniel Moore as sent to Ron Morris

Preface

As your secretary, I am constantly corresponding with other microscopists around the world. Daniel Moore is one such person, and one who owns and shares an interest in the Lomo MBC-10 stereoscope that many of us have. What follows is his listing of Internet web sites with information on the MBC-10. This is concluded with his review of this Russian microscope that has become a favorite of not only our Society, but the Manchester and Postal Microscopical Societies as well.

Ron Morris

From: Daniel Moore <djmoor1@pop.uky.edu> Subject: Re: MBC-10 scope information Ronald,

Here is my list of websites concerning the MBC-10. I am working on my own pages (when I have time) that will include stereo pairs of mineral specimens taken with the MBC-10. Don't hold your breath though. Prices vary widely and change with exchange rates so you will have to check with each site for the best deal. As I state below, be sure the scope you order has the correct type of power supply for your area.

Places that sell the MBC-10:

http://www.meteorite.com/Michael_Blood/microscope.htm - Michael L. Blood

http://www.spectraservices.com/ - Spectra Services Inc. Low prices, good service

http://www.comet.net/gek/catmica.htm - GEK Microscope Catalog. Most informative site on MBC-10. Prices are high and some reports of delivery problems, search Deja News for details.

http://www.swiftsite.com:80/RussianFleaMarket/page399opticsmbccatalog.html - Russian Flea Market Low prices

http://www.bestweb.net/~excalmin/MICROSCP.HTM - Excaliber Mineral Co.

http://www.bmtproducts.com/microscope.htm - MBC-10 sales

http://www.tiac.net/users/lanint/page8.html - Stereo Microscope Also sells long arm model of MBC-10

http://www.labx.com/ - LABX Online Auction house for laboratory equipment, sometimes has MBC-10s

http://www.cgsmule.com/ct400850.html - Hand Lenses and Microscopes

Accessories for the MBC-10:

http://www.meteorite.com/Michael_Blood/microscope.htm - Michael L. Blood polariscope

http://www.teleport.com/~guyh/mbc-10.htm - MBC-10 video outfit not sales, but a how-to page

http://www.omgems.com/gemolog/mscopes/mscopes.htm - Olympic Mountain Gems, Inc. Stone holder may work with MBC-10

http://www.diaginc.com/pa1.htm - PA1 Microscope / 35mm SLR Camera Adapter Camera and video adapters for MBC-10

Images taken with MBC-10:

http://www.theimage.com/ - TheImage.com HomePage Lots of images of minerals plus a good how-to section.

Images of oolitic banded iron formation:

http://sac.uky.edu/~djmoor1/gif/BIF1.JPG http://sac.uky.edu/~djmoor1/gif/BIF2.JPG http://sac.uky.edu/~djmoor1/gif/BIF3.JPG

http://www.iea.com/~lream/ - LR Ream Publishing Site has some nice mineral pictures taken with MBC-10, you have to hunt around for them though.

Other good microscopy sites:

http://www.mindspring.com/~smskjc/index.htm - Southern Microscope Service Good primer on light microscopes

http://www.microscopy-uk.org.uk/forum.html - Mic-UK Public Forum web based discussion group for microscopy, hobby oriented

http://www.microscopy-uk.org.uk/ - microscopy-uk.org.uk : Home of microscopy and biology in the UK Extensive site on microscopy

http://www.ou.edu/research/electron/www-vl/ - The World-Wide Web Virtual Library: Microscopy microscopy resources

Usenet: sci.techniques.microscopy Discussions run from beginner questions through the highly technical.

Listserv: Microscopy list, Microscopy Society of America. Very active list for professional microscopists. Mostly electron microscope stuff but fair amount of light microscope info. Send message to <ListServer@MSA.Microscopy.Com> with: subscribe microscopy in body of message with no other text; no subject needed.

This is a review of the MBC-10 that I wrote for the sci.techniques.microscopy Internet Newsgroup when I first purchased my scope. Any new thoughts are inserted with >s.

HowdyAll,

I just bought a new MBC-10 stereo microscope and thought that I would give a brief review of the instrument for anyone who might be interested in a low cost stereo micro- scope. I've only had the scope for a few days so this is definitely a list of first impres-

sions. I bought the scope from Spectra Services (http://www.frontiernet.net/~mspecht/). The scope is also sold by GEK at http://www.comet.com/ gek/catmica.htm and by Excalibur Minerals who are also on the web but I can't find them again today.

The MBC-10 is a Russian made stereo microscope utilizing Galilei type optics. It is not a zoom scope but uses a drum style objective changer that makes changing magnification very simple. There are five objective pairs (.57x,1x,2x,4x,7x) and it comes with 8x and 14x eyepieces. The working distance is 95mm. It comes with an illuminator that rides on the body or can be inserted behind the base for transmitted light work with the substage mirror. The substage mirror base is removable if you want to lower the height of the scope. The scope also comes with an eyepiece reticule for measuring length.

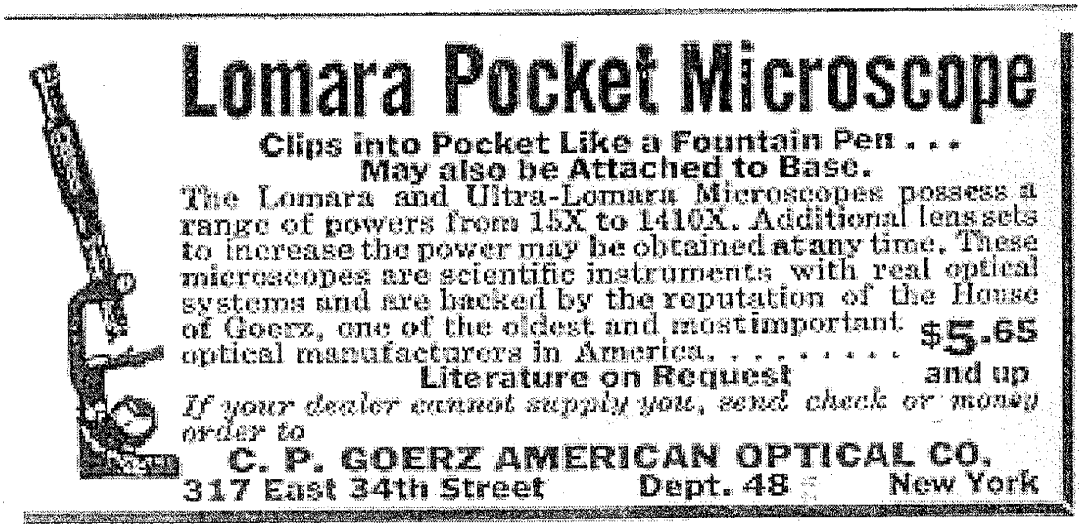
I found the optical quality to be quite good with no halos or rainbows apparent on any samples at any magnifications tried. The objective changer is trouble free as is the diopter adjustment. The unit appears to be solidly built though it lacks the heavy viscous feel of Japanese or German scopes.
>The 14x eye pieces are a pain to use. For high resolution >viewing, the optional 2x front lens works much better >though the working distance drops to about 20mm.

The illuminator is a weak point with this scope. It is not bright enough to adequately illuminate samples under high magnification. In addition the illuminator holder is alternately too stiff or too loose. The fit between the illuminator and substage holder is loose and the illuminator wobbles a bit while using for transmitted light. The addition of a second light source is a must.
>I found that I had to play with many different types >of lights to get the best results, particularly with >photography. An external halogen light on a flexible >stand is a must. I found one at Walmart for about >$15. It had a little statue of Bugs Bunny on it but >once I cut that off it was a very good light. If you >can find an old microscope illuminator these are also >very handy, particularly for illuminating single crystals >or gems where illumination from the side is desirable.

The stand provides for samples up to about six inches thick. This is very useful for looking at geological hand specimens (the primary use I have for the scope).

The assembly of the unit was very simple, about ten minutes, though the instruction booklet could be more thorough.
Spectra Services provided the scope with a 110V power source though it is also available with a 220V source. Excalibur ships the scope with a 220V power source but will provide a 110 to 220 converter for US$38. I don't recall which power source GEK ships their units with.

Overall, I found the scope to be a good value and I am very pleased with its performance.
>The camera attachment works okay. It uses beam splitter >cubes to direct light from the right eyepiece to a camera >tube. Focusing is tricky as the camera focuses at a >different point than the scope so that you must focus through >the camera's viewfinder. If you wear glasses, this can >be a pain. I found that 800 or 100 ASA film is needed for > good color reproduction.



Lomara microscope advertisement
from Popular Science Magazine December 1934

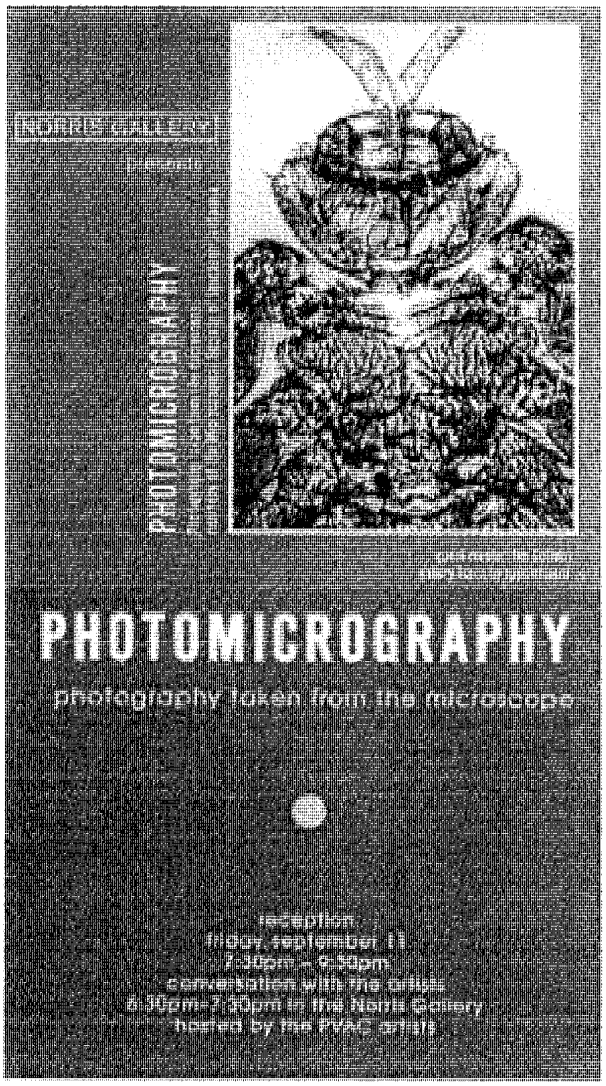
August Meeting

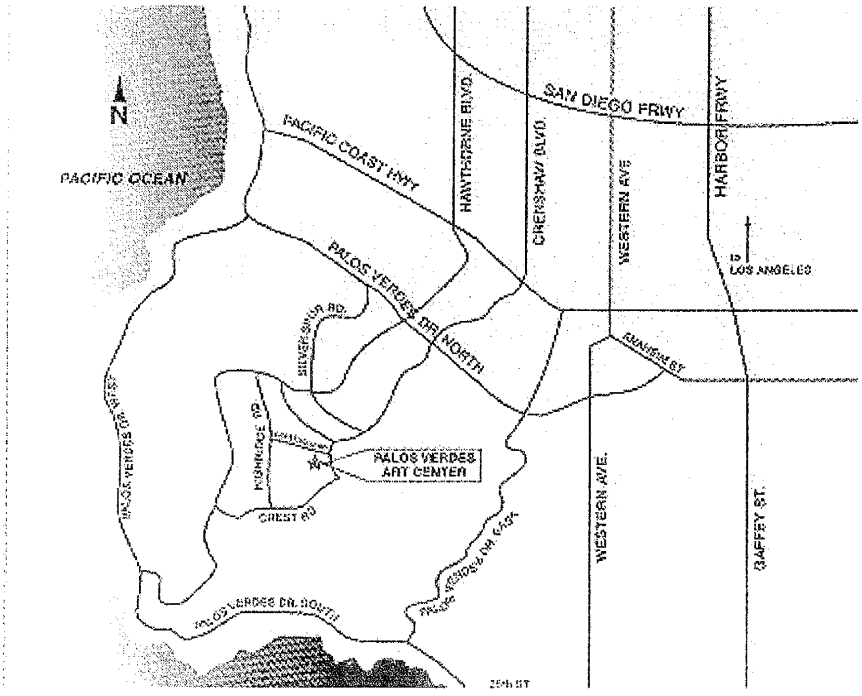
Wednesday, August 19 at 7 PM
Crossroads School
1714 21st Street
Santa Monica, CA

Wayne Moorehead on James Dana (1813-1895) American geologist, mineralogist and zoologist.

Wayne Moorehead is a forensic scientist with the Orange County Crime Lab and an expert in explosive identification.

He will give an illustrated lecture on the remarkable life and accomplishments of James Dwight Dana whose list of writings includes 214 books and papers. He began in 1835 with a paper on the conditions of Vesuvius in1834 and ended with the fourth revised edition of his *Manual of Geology.*
He was a teacher of mathematics, sailed on exploration expeditions, was Professor of Natural History at Yale, was chief editor of *The American Journal of Science and the Arts* and, at the age of 82, was occupied with preparing a new edition of his *Manual of Geology.* He was also a great microscopist.





MSSC Photomicrography Show at the Palos Verdes Art Center

Our member art show of photomicrographs will be available for viewing after Sunday, August 16 at the Norris Gallery of the Palos Verdes Art Center. There will be 34 framed pictures on exhibit. A reception will be held at the Gallery on Friday, September 11 from 7:30 to 9:30 PM following a conversation with the artists at 6:30 PM. See map to the left.

The gallery hours are:

Monday-Friday	9:00am-5:00pm.
Saturday-	10:00am-4:00pm
Sunday	1:00pm-4:00pm

Since the Norris gallery is sometimes used for other events, please call for an appointment to ensure that the room is open.
Information 310-541-2479