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A Victorian Gentleman and his Microscope - Part 2

Herbert A. Gold

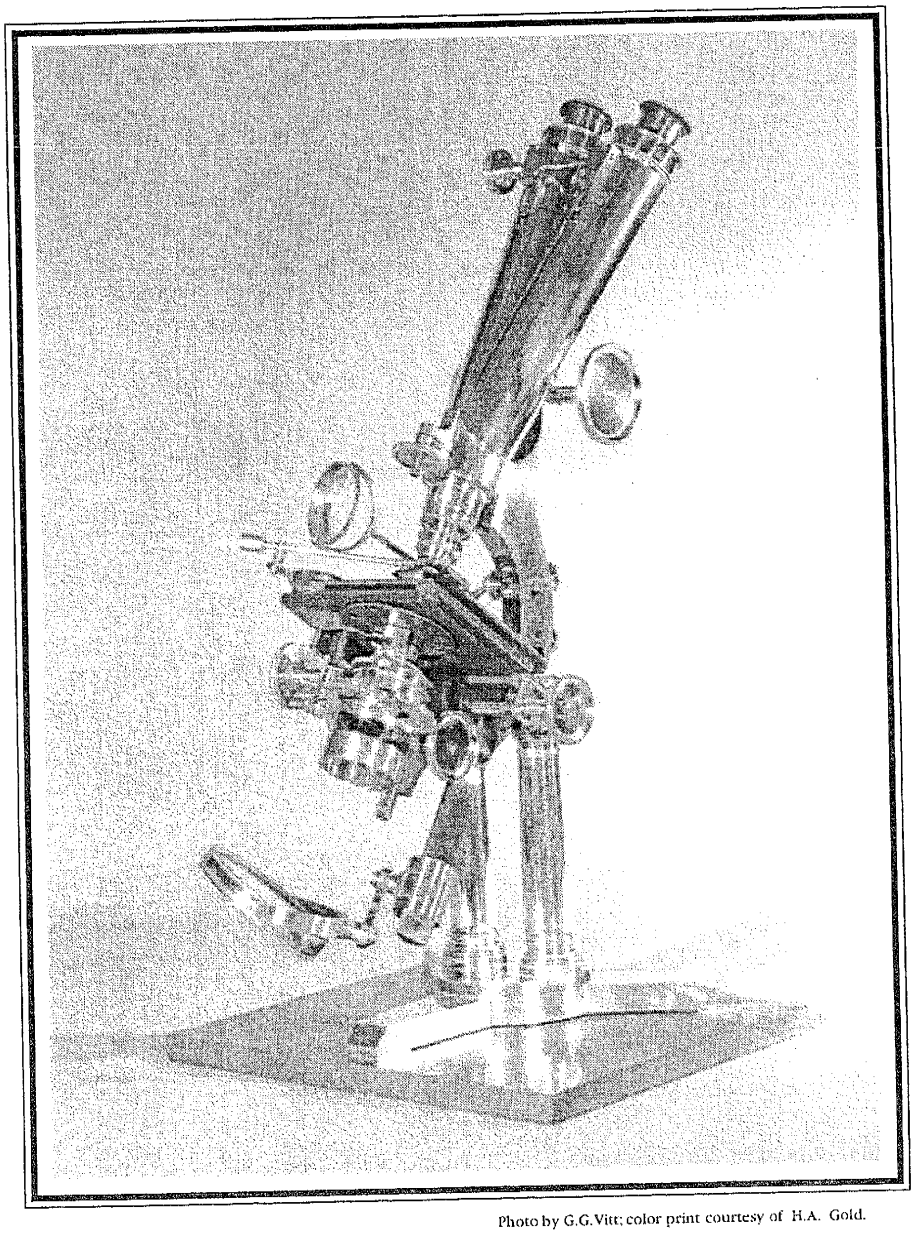

Photo by G.G.Vitt; color print courtesy of H.A. Gold.

Fig. 1 Smith & Beck Large Best No. 1

This is the second part of the article begun in last month's Journal. Part 1 introduced the 18th Century gentleman scientist,Thomas Glazebrook Rylands. Part 2 covers the microscope and Part 3 will investigate some of the more interesting accessories.

Part 2. The Microscope.

The readers of these pages need little introduction to the London optician, Richard Low Beck (born 1827, died 1866). Professor Turner[1] tells us that Beck became a partner in James Smith's firm in 1847. The company was renamed, Smith & Beck with premises at 6 Coleman Street in the City of London. Business continued under this name until 1857 when Richard's brother, Joseph, became a partner and the firm's name became, Smith, Beck & Beck. While they made a wide range of quality optical instruments they did not enjoy the exalted reputation of Andrew Ross or Powell & Leland. For the most part they did not command the high prices enjoyed by these other makers. They were amply able to correct this unfortunate situation with the introduction of the microscope outfit to be described in this article.[2]

Our Victorian scientist, Thomas Glazebrook Rylands, was not to be disappointed when he searched the Smith & Beck premises for an appropriate stand to serve his wide ranging needs. Their recently introduced instrument, named with an uncharacteristic lack of British reserve, "Large Best, or No. 1, Stand", apparently caught his eye.[3] With his large purse he was able to chose a vast array of accessories to support his particular scientific investigations. The microscope itself, outfitted with a few accouterments, is seen in Figure 1. The complete outfit, all boxed up, much as looked when it left the premises of Smith & Beck is illustrated in Figure 2. The two boxes of accessories are shown in Figures 3 and 4.

The inscription on the foot, Figure 5, "Smith & Beck 6 Coleman St., London 1538", should provide some clue as to it's date of manufacture. This was the firm name until 1856 after which it became Smith, Beck & Beck. From Dr. Bracegirdle's table of serial numbers and delivery dates,[4] the instrument with this number was manufactured sometime in 1857. For those who may be a bit agitated by the fact that Francis Wenham did not describe his canted tube binocular viewing arrangement until 1861,[5] you may calm down. Harold Malies,

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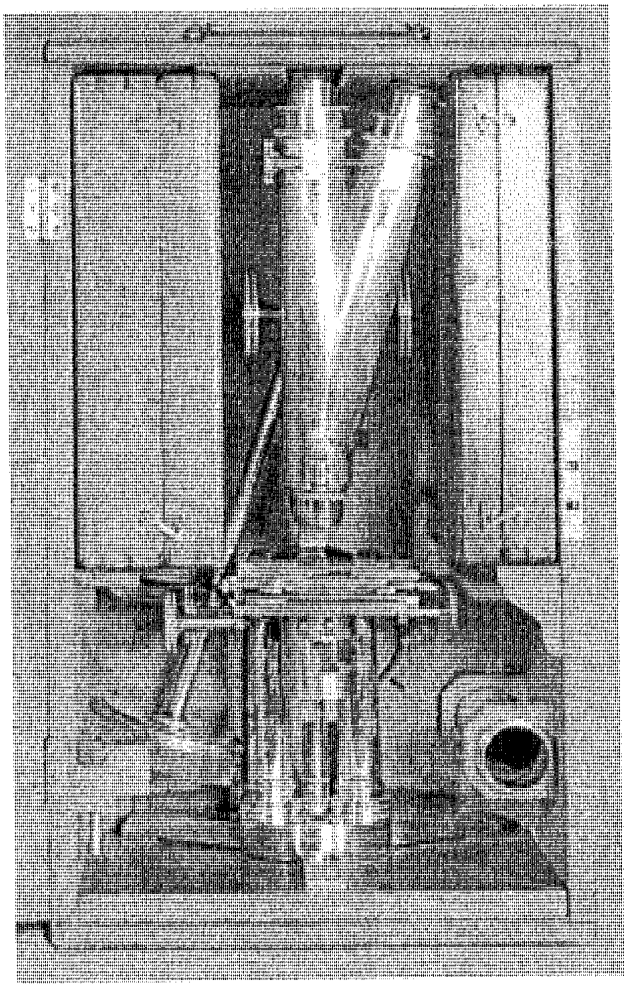

Fig. 2. Microscope and Accessories in their mahogany carrying case.

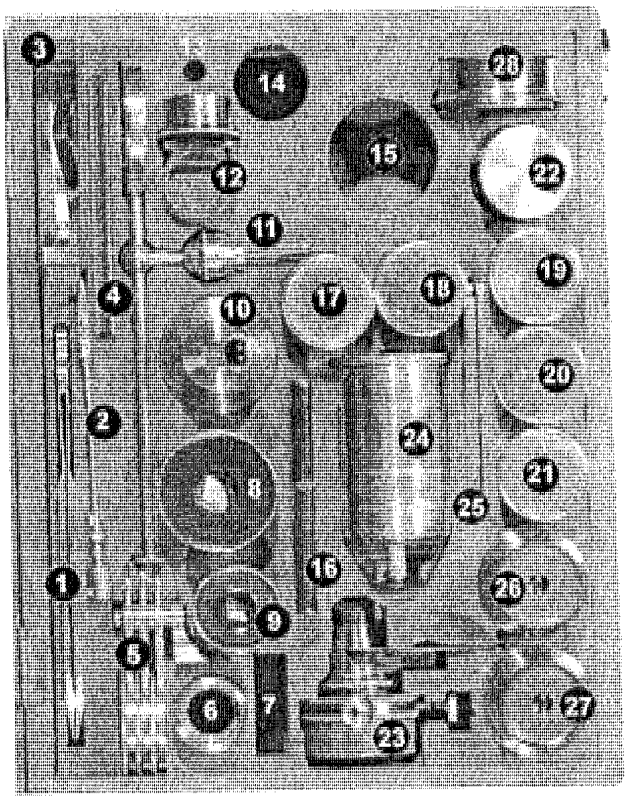

Fig. 3. Large box of accessories. See text.

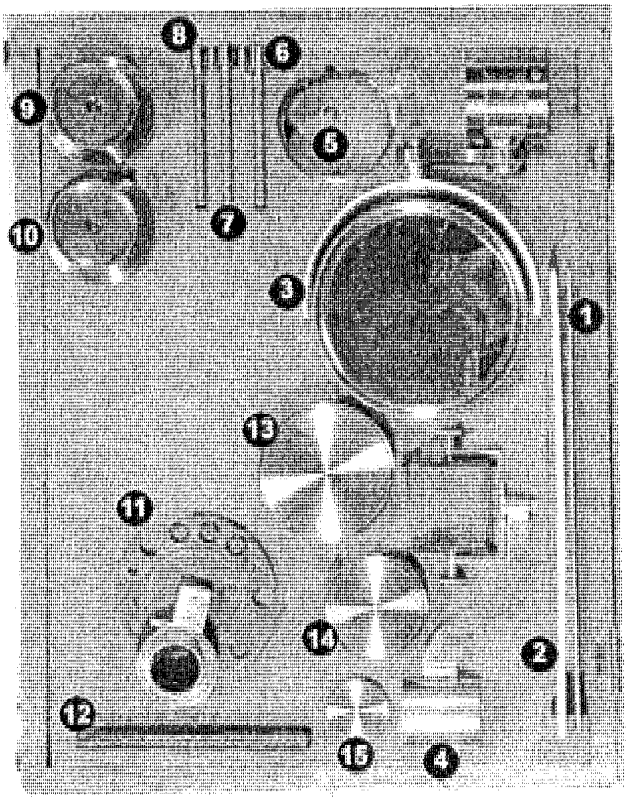

Fig. 4. Small box of accessories.

collector and researcher says,"Because large numbers of conversions from the monocular were made, it is not uncommon to come across microscopes made before 1860 which nevertheless have the Wenham binocular body."[6] I think we can be comfortable with the evidence that suggests a date of ca. 1857. The exact date that the L. B. No.1 model was introduced is unknown to this author but the observation that this specimen is an early example of the L.B.No.1 is based upon similar stands illustrated in the catalog of the Royal Microscopical Society's collection.[7] It must be left to further research to determine if it was delivered to Glazebrook as a binocular stand or returned at a later date for retrofitting and repackaging.

Standing on a cast brass base in the shape of a 3-pointed star, which anticipated Mercedes-Benz by several years, twin Ionic-like columns on a rotating (ungraduated) disk support the limb in trunnions.[8] When fully retracted the instrument towers 18" above the microscopist's laboratory table. When fully extended with the auxiliary draw-tube in place even the tallest National Basketball Association center peering at a specimen would suffer severe neck strain. The mahogany board upon which it sits in the photograph has cutouts to receive the "toes" on the feet of the stand. This board facilitates sliding the instrument into it's mahogany[9] carrying case.

Fig. 5. Foot signature.

Coarse focusing is accomplished by moving the body tubes with rackwork cut into the limb.A milled wheel on the nosepiece actives a small lever to deal with the fine focus. This is the so-called Ross-Jackson system. Rackwork at the ocular end of the body tubes provides for interocular adjustment and the opportunity to vitiate any magnification measurements one has made. It's not the most sophisticated of configurations by later day standards, but for the day, it was near to the state of the art.

The limb is pierced between the trunnions and body tubes with two square holes. They will accept accessories to aid with oblique illumination such as the bullseye (selected by Glazebrook) or the silvered side reflector (not selected).

As noted, the stand now incorporates Wenham's binocular viewing arrangement. See Figure 6. There is a small prism mounted in a brass box which slides into an opening immediately above the objective. The prism reflects one-half of the image forming light rays up the canted tube and double reflects the balance of the light up the straight tube. When the prism is drawn out until stopped by a catch, the field of view in the inclined tube is darkened and all of the light from the objective is passed up the main tube.

It is claimed that there is no loss of light or definition, worthy of note, with a properly designed prism. Considering the large number of instruments so configured, one must assume this claim is close to the truth. Even so, the microscopical journals of the day carried objections to binocular microscopy by a small, but vocal few.

The stage is a mechanical delight. It is rectangular in shape and permanently attached to the limb. A screw drive moves it side-to-side with milled wheels on the left and right. Rackwork moves it front-to-back with a wheel on the operator's right. There is a separate rectangular top stage to support the slide and it is able to rotate 360°. It is fitted with a socket to hold a pair of

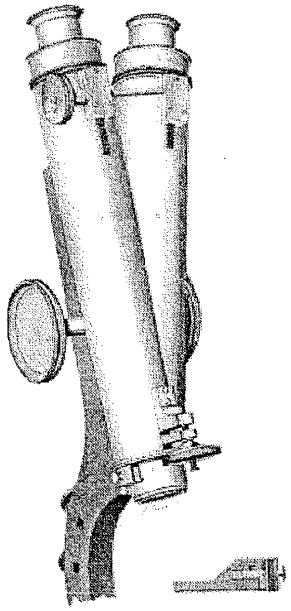

Fig. 6. Wenham's binocular assembly showing the image-splitting prism in a pullout drawer.

stage forceps. A brass bracket slides on the top stage and is fitted with springs to hold the specimen slide in place. A stop on the top stage allows the slide to be registered for alignment when a location on the specimen is to be referenced by a Maltwood finder slide. More about that later.

The substage is a large brass tube designed to accept a wide variety of accessories. A pair of milled wheels move it on Jackson-type rackwork.

The plano-concave mirror, 3" (76mm) in diameter, is large enough to comfortably use when shaving. It is mounted in a gimbal connected to a short swinging arm. This in turn is fastened to a collar which slides on a long triangular column which extends below the stage.

We are fortunate to have what amounts to an instruction manual for this outfit. In 1865 Richard Beck authored, *A Treatise on the Construction, Proper Use, and Capabilities of Smith, Beck, and Beck's Achromatic Microscopes.* [10] He describes and illustrates in this volume every feature of this microscope and nearly all of its accessories. For this article we are doubly fortunate to be able to refer to the volume that is purported to have been Glazebrook's personal copy. It will be hereinafter referred to as "Beck's book".

The Lenses and Some Accessories.

They are packed in two fitted mahogany boxes that slip into the carry case on blue velvet lined slides. One box measures 10-5/16" x 8-1/16" x 3". This is substantially larger than many traveling microscope compendia. The second box of accessories is 10-5/16" x 8-1/

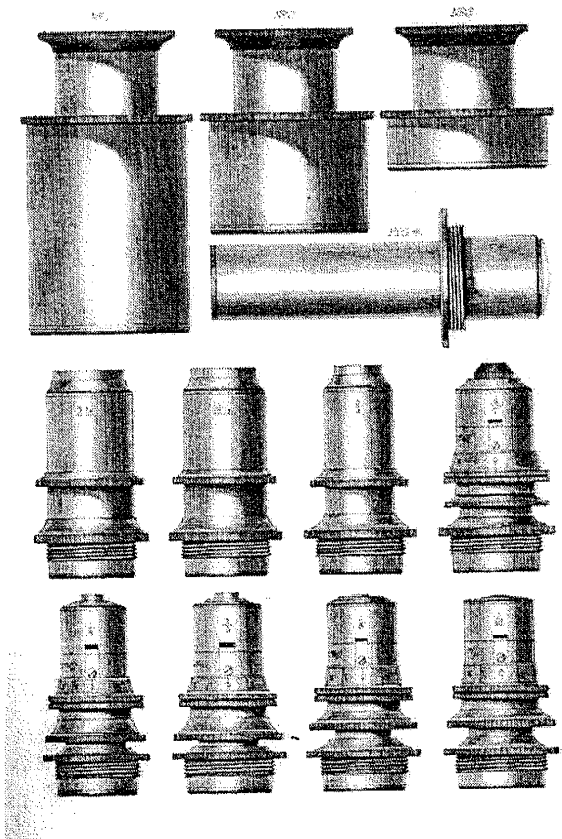

Fig. 7. Smith & Beck oculars and objectives. Note that shorter focal length lenses have a correction collar.

16" x 2-1/8". Besides the instrument and accessory boxes the carrying case is home to several additional pieces.There is a large bull's-eye condenser stand with a lead weighed base standing 13" high upon which rides a 3" plano-convex lens fitted to an extension arm via a ball and socket joint.This also accepts a double lens device for focusing light to a very small spot.There is an auxiliary draw tube engraved with a 6" scale subdivided into tenth's of an inch.A neat little spanner[11] wrench for adjusting tension in the main pivots tops off the bits and pieces fitted into the carrying case.

The three pairs of normal viewing oculars are unsigned and unnumbered. However, they are easily identified in Plate V of Beck's book where he illustrates his "eyepieces" and "object-glasses" in full size drawings.These oculars are easily identified as Nos. 1, 2 and 3, in increasing order of magnification.The plate from Beck is reprinted here as Figure 7. One of the No. 2 oculars is slotted to accept an eyepiece micrometer.

The objective lenses reside in individual heavy brass cans with screw-on tops. Glazebrook chose lenses with a focal length of 1/2", 2/3", 4/10", 1/5" and 1/8". The two longer lenses are unmarked, the others have the focal length engraved but no maker. This lack of engraved identification seems characteristic of the lenses attributed to Smith & Beck in the RMS Collection. Once again Figure 7 identifies them.All have what we now refer to as the standard RMS mounting thread which Beck called the "universal screw". This was the standard size proposed by the Microscopical Society of London[12] in 1858.The lid of each brass can is engraved with the focal length of the lens and "Smith & Beck 6 Coleman St. London".

At a later date, a 2/3" objective was added. It is signed on the lens, "2/3 ERECTING GLASS R & J BECK". The erecting-glass provides, surprise (!), an erect image, handy during dissections and other object manipulations. When used with the No. 2 ocular and the auxiliary draw tube, magnifications of 5x to 100x are possible depending upon the amount the draw tube is extended. Clearly one would operate in the monocular mode during this operation unless one's forehead was wide enough to allow the draw tube to extend the right ocular 6" above the left.

Smith & Beck corrected their lenses for chromatic and spherical aberrations. Beck notes, "In the higher powers, both of these aberrations are considerably affected by variations of the thickness in the covers of objects; for if an achromatic object-glass be corrected for an object which is completely uncovered, a piece of thin glass or any fluid, placed between the object and the object-glass, will alter that correction and produce indistinctness. It is not perceptible in the lower powers, but in the highest powers the errors caused by the thinnest covering-medium becomes injurious."

To correct this problem objectives with focal lengths of 4/10" and shorter are fitted with a rotating correction collar. See Figure 8. Turning the graduated ring moves the front lens of the objective relative to the other lenses in the assembly. For an uncovered specimen the index is set to the zero mark. For covered specimens the lens is adjusted for the best image by visual inspection. For this and other optical testing, Beck favored viewing the scale from a podura, a genus

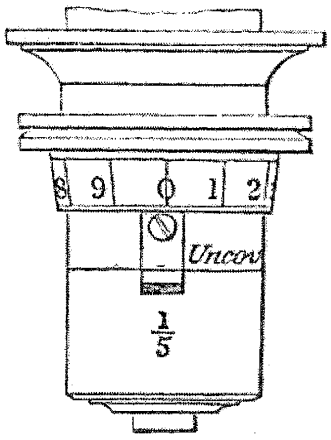

Fig. 8. Short focus objectives are fitted with a correction collar to adjust for various cover slide thicknesses.

of apterous insects having a terminal fork-shaped springing organ, sometimes called a spring tail. The scale's very fine structure makes it an ideal test target. The advent of standardized slip cover thickness and oil immersion today spare us from this inconvenience.

The Rest of the Stuff.

Part 3, thankfully, the final episode, will appear in a subsequent Journal. It will focus on some of the more unusual accessories in this outfit that were peculiar to the way microscopy was practiced in Glazebrook's time. Until then please contemplate the contents of the boxes of accessories illustrated in Figures 3 and 4. Be sure to reread the excellent Sobel and Solliday article in the June 1998 Journal which discusses many pieces like these.

The contents of the boxes illustrated in Figures 3 and 4 are:

Figure 3.

1. Brass forceps.
2. Stage forceps.
3. Glass trough with ivory wedge and whale bone spring.
4. Two glass plates with ledge.
5. Darker's three retarding-films, fitted to rotat ing cells in three arms.
6. Nosepiece adapter to receive Nicol's prism.
7. Empty slot. Probably held a live box.
8. Analyzer of Nicol's prism.
9. Polarizer of Nicol's prism.
10. Wenham's immersion condenser.
11. Side condensing lens (bulls-eye).
12. Camera lucida.
13. Lieberkuhn for 1-1/2 inch objective.
14. Lieberkuhn for 2/3 inch objective.
15. Objective for 4/10 inch objective.
16. Stage micrometer slide.
17. 1-1/2" objective lens.
18. 2/3" objective lens.
19. 2/3" erecting-lens
20. 4/10" objective lens.
21. 1/5" objective lens.
22. 1/8" objective lens.
23. Achromatic centering condenser with wheel of diaphragm stops.
24. Wenham's parabolic dark field condenser.
25. Eyepiece micrometer and brass mounted slide.
26. No. 2 ocular lens.
27. No. 2 ocular lens with slot for micrometer.
28. Under-the-stage mounting tube.

Figure 4.

1. Ivory rule.
2. Ivory rule.
3. Mirror.
4. Right angle prism reflector.
5. Dark well holder.
6. 3/8" dark well.
7. 1/3" dark well.
8. 1/4" dark well.
9. No. 3 ocular lens.
10. No. 3 ocular lens.
11. Non-centering achromatic condenser with diaphragm of stops.
12. Maltwood finder slide.
13. Lieberkuhn for 1-1/2" objective.
14. Lieberkuhn for 2/3" objective.
15. Lieberkuhn for 4/10" objective

Acknowledgments

Without the generosity of Glazebrook's great-great-grandson, Christopher John Phillip Rylands, this project could not have happened. Angela Doyle, Documentation Assistant and Audrey Forshaw, volunteer, of the Warrington Museum and Art Gallery, in Glazebrook's home town, contributed a wealth of significant historical material. Our own George Vitt provided the photography and the legerdemain required for all the digital image manipulation. He once again proved that you *can* teach an old dog new tricks. Rick Blankenhorn provided his good offices and support. To each and all I extend my sincerest thanks. I know this sounds like an Academy Awards acceptance speech, but I cannot leave the stage without publicly recognizing the unflagging encouragement and support of our revered editor, Gaylord Moss.

Let me leave you with this parting thought.

Microscope collectors make out-of-sight lovers.[13]

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[1]L'Turner, G. *The Great Age of the Microscope*, 1989, p. 171.

[2]*Illustrated Price List of Microscopes, Microscopic Apparatus and other Scientific Instruments, manufactured by R. & J. Beck, London*, ca. 1880, pp. 4-10. The New Large Best Binocular Microscope is priced at $500 to $1400 (!) depending upon the selection of accessories, a staggering figure for that day. albeit a somewhat later model, not that much different from the subject of this article. This catalog was published for R. & J. Beck's "American Branch" in Philadelphia, operated from the premises of James W. Queen & Co. There is no reason to believe London customers enjoyed significantly lower prices. Catalog provided through the good offices of Barry J. Sobel, MD.

[3]Author's note: Clearly, the responsible thing to have done before publishing this article would have been to check the Smith & Beck extant delivery books to confirm the fact that serial number 1538 was indeed delivered to T. G. Rylands. This was not done for reasons other than the author's innate moral turpitude and sloth. The circumstantial evidence tying micro-

scope and microscopist seems compelling.There is the testimony of the former owner, the great-great grandson of T. G. Rylands, who avers the instrument has been in his family since its purchase.There is a signature on a paper label on the microscope box that matches Glazebrook's published signature. But most importantly and conclusively, to the author at least, is the unimpeachable word of a scientific instrument dealer. (And yes, there IS a Santa Claus.) In the unlikely event someone even reads this mea culpa and does have access to the Smith & Beck records, please, please communicate your discovery, good news or bad.

[4]Bracegirdle, B. *Notes on Modern Microscope Manufacturers*, 1996, p. 68.

[5]L'e Turner, G. *Collecting Microscopes*, 1981, p. 73.

[6]Malies, H. *A Short History of the English Microscope*, 1981, p. 69.

[7]L'e Turner, G. *The Great Age of the Microscope*, 1989,pp. 175-177, 179-181. This reference has been helpful in identifying and describing features and accessories.

[8]For the benefit of readers unschooled in the nomenclature of gunnery, trunnions are those two supports on either side of a small cannon barrel that allow it to pivot in a vertical plane. Considering the size of this instrument, it is not an inappropriate designation.

[9]Packaging was available in either the classier Spanish mahogany or, for the diffident Bentley drivers of the day, the less expensive Honduras mahogany. It is hard for this wood-ignorant author to tell for certain which choice Glazebrook made, but I'd guess he was a Rolls Royce kind of guy.

[10]An excellent facsimile edition was published in 1987 as part of the *History of Microscopy Series by Science Heritage Ltd.*

[11]"Tommy-bar", for our United Kingdom readers.

[12]They received their Royal Charter in 1866 making them the Royal Microscopical Society as we know them today.

[13]Glen David Gold, 1998 on the occasion of his father's birthday.

Low Cost Hot Stage for Crystal Studies

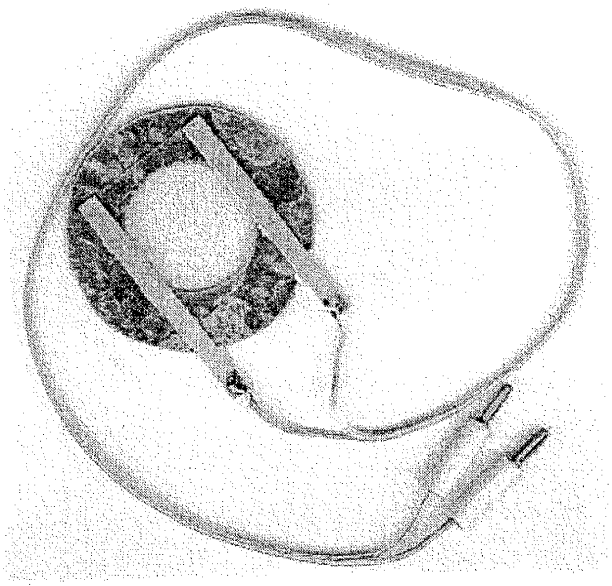
Gary Legal

At the Workshop of June 6, I showed a low cost hot stage that I constructed for viewing the melting or forming of crystals under the microscope. The original design by Ely Silk is described in the April 98 issue of *Microscopy Today*. Ely used an electro-conductive glass for defrosting car windows, but I obtained 1/8 inch thick glass used in aircraft for my unit.The glass is thin enough for effective critical or Kohler illumination. Brass strips are epoxied to the glass with silver conductive epoxy for the electrical leads. The completed unit is shown at right. A mica ring is attached under the glass as thermal insulation from the stage.

The resistance of the completed device is about 10 ohms. AC or DC may be used to power the Indium Tin Oxide resistive coating.

For consistant results, monitoring of the input voltage or current is necessary. The power source can be a microscope lamp supply or a simple AC unit using a Variac to drive a 120 to 6 volt transformer. One can dispense with meters if you change the voltage slowly while observing crystal reaction.

The hard part to find is the conductive glass. Some glass shops may be able to order it. A glass shop charged $10 to cut my 18 inch square into 2 inch pieces. 1/64" x1/4"x12" brass strips are available in most hardware stores and the conductive epoxy is carried in electronic parts stores. I used "Circuit Works" conductive epoxy made by Chemtronics in Kennesaw, GA.



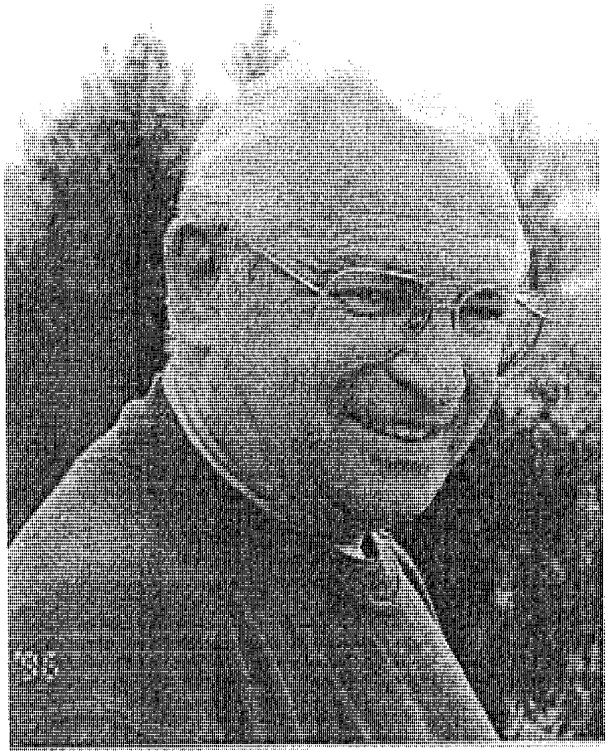
Typical voltage drive vs. heater temperature for the prototype is given below.

Voltage	Temp.deg. F
0	83
3.5	95
4.3	105
5	120
6	136
7	150
8	162
9	192

Editor's Note - At the workshop, Gary was kind enough to distribute units made with his extra glass for his cost of $5 each.

Member Profile

Leon Stabinsky



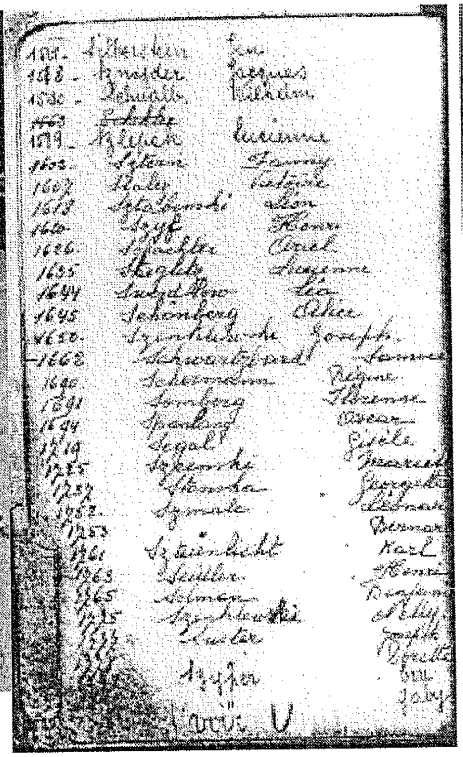
1996

Kindergarten April 1939

Both my mother and father were born in Warsaw, Poland. Following his military service in the Polish army, and faced with unemployment, abject poverty and discrimination, my father emigrated to Belgium in 1927, the day after he married my mother. He had obtained employment in one of the largest Belgian steel mills and was given a one-way train ticket to Belgium. My mother joined him a year later, after he had saved enough money to send for her passage.

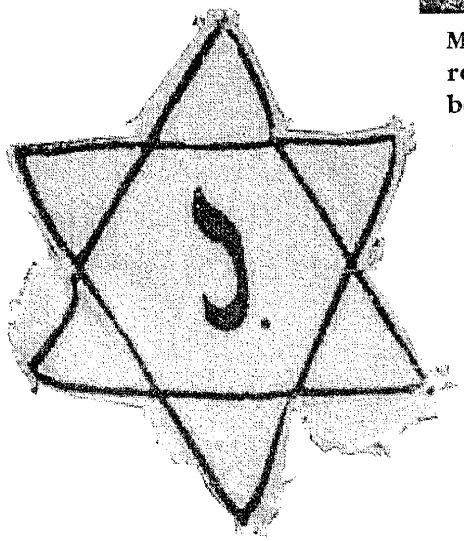
Although both my parents were born into very orthodox Jewish families, only my mother remained faithful to the religion throughout her life. My father became an ardent socialist and remained an agnostic until the day he died. The fact that they got together and tolerated each other's point-of-view can only be explained by their profound love for one another. I was born out of this "mixed marriage" in 1934 in Brussels, Belgium. By then, my father had formed a partnership with a former officer in the Czarist army and, in 1933, opened a machine shop specializing in the repair and modernization of industrial knitting machines. My mother worked as a seamstress to support the early struggling years of the venture. By the time I reached the age of two, my mother had become gravely ill and my parents decided to place me in a farmhouse foster home in the suburbs run by a childless couple, I remained there for the next three years. It is from that foster home that I have my earliest sad and happy memories, missing my parents, but playing with other kids and animals. My parents took me out of the foster home when the Germans invaded Poland and threatened Belgium. I still remember my parents listening to the radio broadcasts blasting out the screaming speeches of what I later realized must have been the voices of Hitler and Goebbels. I sensed somber feelings of depression and fear, especially when they talked about their families left behind in Poland. Before the Germans invaded Belgium in May 1940, my father, in anticipation, had acquired an automobile. The three of us along with my god-parents and their three kids drove toward the French coast hoping to get to England. It must have been low tide when we reached the coast, because I vividly remember the British troops speeding in trucks along the beaches trying to reach Dunkirk. The roads were crowded with refugees and we were rerouted inland. It was hot and noisy. We stopped in the Belgian town of Menin on the French border for the night and when we woke in the morning, it was pouring rain and we were surrounded by the dreaded German soldiers who had overtaken us. The car had to be abandoned and father purchased a horse and hay cart and started us on the long trek home to Brussels. Now we traveled at a much slower pace, along with myriad other refugees, periodically giving way to German military convoys. It was on one of these occasions, while running down a ditch on the side of the road, that I came across death for the first time in my

With Mother -German soldier in rear 1941



My real name and number recorded in "hidden children" book

On the day I left Belgium to come to the U.S.



This yellow cloth Star of David was meant for me, but my mother never sewed it on.

five and a half years. The sight of a dead Belgian soldier laying face-up traumatized me to this day.

Back in Brussels, I started kindergarten. While in kindergarten, I collected bottle caps and cigar bands, acquiring a passion for collecting which has been with me ever since. In spite of the German occupation, the first couple of years were, for me at least, quite happy. In the first and second grade I was an eager and interested student - the basic combination needed for good grades. These traits, which I acquired early, have remained with me for the rest of my academic career. I was fortunate to have had excellent primary school teachers. Aside from acquiring the basic skills, I still recall being fascinated by the science demonstrations, such as Archimedes' principle.

Belgium was ruled by an army general rather than the SS, so the rounding up of the Jews was slower than it was further east. First was a curfew, 10 p.m. for Jews and midnight for everyone else. Then, as the curfew was made even earlier, Jews could no longer own businesses, followed by radios, then gold and silver. These restrictions increased until, in the fall of 1942, Jewish children were no longer allowed to go to school. This was a bitter pill for me as I loved school and was about to enter the third grade.

All young people between the ages of 17 and 30 were required to enlist to work in factories in Germany. All Jews were made to register names and addresses, but my father did not register us, which probably saved our lives. In September of 1942, the first mass roundup of the Jews began and our family found a cellar to hide in where gentile friends and neighbors supplied us with food. I could hear the voices of my playmates outside, but I had to stay in the cellar.

My father had a good friend whose son, Paul Halter, was a leader of the underground resistance. He had established a network to save Jewish children by giving them false identification papers and placing them in Catholic private homes or institutions. He agreed to take me out of the unhealthy and unsafe hiding place

With thesis experiment 1956

With daughters and Dorothy on 25th wedding anniversary

in the cellar. (Paul Halter is now in his early 80's and I visited him in Belgium in May of this year.)

The underground took me to the basement of a Catholic hospital where I was given the new name of Simon Leblanc and was taught a new family history which was that my father was a Belgian soldier who was killed at the front and my mother was now working in a munitions factory in Germany. A lady of the underground then came and took me to my new home, a Catholic orphanage in Namur.

In 1991, at a conference of "hidden children," I again met this lady, Andree Guelen. She told the story of her role in Paul Halter's underground which ultimately saved 3600 children from the death camps. This is documented in the book, *The Rescuers, A Portrait of Moral Courage in the Holocaust.*

The underground was very careful in protecting the "hidden children." Records had to be kept so that the children could be found and returned to their families after the war; however, there was the constant danger of the Germans finding such records. Therefore, a scheme was devised in which the records were split into five books that were kept in separate houses. The page from one book above lists my real name together with my code number 1618. Another book shows the code number together with my false name, Simon Leblanc. Another book shows my number together with a false location. Another book relates the false location with a real one. The Germans would have to find all five books to trace the children. Every child had a person from the underground who checked on them each month so that their parents could be assured of their welfare.

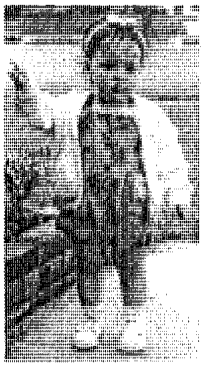
To keep up appearances at the Catholic orphanage, I had to go to church twice a day and study the Catechism. When I went to confession, the priest just kept me inside for a few minutes and then let me leave. I had to invent stories of my required penance, such as how many "Hail Marys" I had to say, to keep my standing with my classmates.

I stayed in the orphanage for 18 months until June of 1944 when a member of the underground woke me long after midnight and took me to a farm house outside Brussels where my parents were hiding.

Someone had denounced my Catholic home as harboring Jewish children and the Gestapo were on the way to round us up. I found out later, from a video interview with one of my saviors, that my life was saved because the local post office was steaming open any letters hand addressed to the Gestapo, then reading such letters and informing the underground of the contents before resealing and delivering them.

We had been liberated by the British in September of 1944 when suddenly the Germans broke out in the Battle of the Bulge. Everyone was terrified that we would be captured again. The weather was so overcast that the allied planes could not provide support which allowed the Germans to advance rapidly. Then, one glorious morning the skies cleared, there was a thundering rumble and the sky was filled with allied aircraft from horizon to horizon. Scintillating in the sunlight were bombers, fighters. and transports. People, overjoyed, clambered onto their rooftops, waving and banging pots and pans, knowing that they were saved. The celebration went on for so many days that the government finally had to beg the people to stop and go back to work.

In New Zealand 1995



Granddaughter Charlotte Rose at 18 months

Both my mother's and father's families in Europe were killed in the Nazi death camps. Only my parents and I were left as my father restarted his machine shop.

In early 1946, a US Naval captain, sharp in dark overcoat and white scarf, rang our doorbell. He had come with gifts from my mother's brother who had left Poland in 1912 and had served in the US Navy in WWI. He was alive and well in Brooklyn and wanted to help us. My mother wanted to leave the bitter memories of Europe and emigrate to America to rejoin what was left of the family. My father, however, was not enthusiastic about moving, as his newly mechanized factory, which I loved to visit, was prospering. (My mother never learned of my delight whenever she punished me by banishing me to the factory for a day.)

In 1949, our visa to the US finally came through which depressed my father as he had to sell his business to come to America. Once in the U.S., it took one year for my father to find a job as machinist in a shop. This was a far cry from owning his own machine shop.

When I came here, I was mute for six months as I was embarrassed by my weak spoken English. In James Madison High School, I went to French classes where I learned English by reverse translation. I also listened to the New York Times radio station which had many discussion programs in which the speech was clear and distinct and was the main source of my 'ear' for English.

I had finished one semester at the City College of New York Engineering School when my father had a massive heart attack. To help at home, I decided to quit school and go to work. A wonderful teacher of descriptive geometry had encouraged me, saying that I had a natural talent. I went to an employment agency and told them that I was a draftsman. I won a job at Combustion Engineering which turned out to be one of the most rewarding five years of my life. A senior draftsman, John Sheridan, was assigned as my mentor and with his patient, knowledgeable teaching, I learned the trade in about three years. I bought a K& E Paragon top-of-the-line drafting set one piece at a time. My first monthly salary was the, then, princely sum of $250 per month. In 1951, I started night school at New York City College, reveling in the study of mechanisms, machine design, strength of materials and fluid mechanics. I kept in mind one of my father's proverbs, "Whatever you put into your head will be the lightest luggage that you have and no one can ever take it away from you." My father was always a source of inspiration for me.

After three years as a draftsman, I went into the proposal department. Then two years later when I got into the senior year at night college, I transferred to the Engineering Dept. where I was one of the engneers to be trained on the first IBM computer. We trained in the show window of the IBM building on Madison Avenue wearing suits and ties.

After graduating in 1957, I joined Curtiss Wright to work on gas turbines and after six months enrolled in the NYU Guggenheim school of Aeronautical Engineering. Here, among great professors, was Carroll Peters, whose lectures on mathematics were as fascinating as BBC's Masterpiece Theatre and whose cape and wide brimmed hat stood out on campus. After I got my master's degree, I worked on advanced programs writing the first computer analysis at Curtiss Wright for the gas turbine cycle applied to the turbo-fan engine. In the summer of 1957, I took time off from studies to go to the beach where I met Dorothy who, in 1959, became my wife. On August 30, 1960, we flew out to California to begin work for North American in Canoga Park, where I remained for the next 34 years. I finished the course work for a Phd. program at UCLA, but left before finishing the thesis, taking a professional degree instead to support my growing family. We have two daughters, Tina and Pauline. Dorothy finished her degree and became a teacher. She also speaks and reads seven languages fluently, (Polish, Russian, German, Hebrew, Yiddish, Spanish and English) and even sings and recites poetry in them.

I have always been interested in history, especially that of technology. Once, while I was in Brussels visiting friends, I saw an antique microscope at a flea market. It was so beautiful, with all of its accessories, that when I saw its reasonable price of $120, the thought struck me that I could actually own this wonderful piece of scientific history. On that day I got the scientific instrument collecting virus.

Now, I make the circuit of London, Brussels and Paris, adding to my collection of all sorts of scientific instruments. Particular loves of mine are field microscopes; meteorological instruments for wind pressure, temperature and humidity; sundials and other time pieces; and scientific demonstration apparatus.

Minutes of the Meeting of 21 May, 1998

David L. Hirsch

When you entered the meeting room at seven o'clock this evening, it was already a proverbial beehive of activity. By this time, 17 microscopes of various types and vintages had already been broken out and MSSC members were eagerly scanning their specimens of pond water. It was extremely gratifying to sense the enthusiasm of all present in pursuing this mini excursion into the realm of the microscopic. Many of the members and guests present were, for the first time, made aware of the multifarious life forms existing in stagnating bodies of water. Although most of the samples came from the Los Angeles area, one sample came from an exotic place called Bird Point, Turnagain Arm, Alaska. The sample of algae was brought in by your intrepid Treasurer. I received the specimen in October, 1997 from Corresponding Member, MYRON WRIGHT while visiting with him in Anchorage. About 2 weeks later, I opened the specimen container and promptly resealed it lest the bouquet emanating from the agitated algae disturb the household.

Since that time, I was plagued by a chronic case of acute procrastination. Consequently, the sample sat on a shelf in my home until this evening. In the passing seven months, the resident algae turned from a flocculent green to something the color of thin tomato soup. RON MORRIS checked out a sample of the material with his TV monitor equipped microscope system, noting all that remained were clumps of apparently lifeless substances, and a large number of particles, some of which had 'cigar-like', or rectangular shapes. I still have some of the material, if anyone wishes to examine same. The bottom line? Without a doubt, confined algae, unlike wine, does not improve with age.

The eager and avid microscopists momentarily set aside their instruments when the meeting was called to order. JIM SOLLIDAY fired up his audio-visual apparatus and gave a two part presentation. For the upcoming prepared slide photographic exhibition, he reviewed the selected slides and identified their contributors. Next, Jim presented an excellent lap-dissolve slide show on pond life and higher life forms, enhanced by a dramatic musical background. As a follow-up, he demonstrated three specimen collecting kits of different complexities, which were assembled from readily available materials.

Jim reviewed some excellent references on protozoology and related subjects. The books include the following: *Fresh Water Protozoa*, by R.R.Kudo; *Ponds and Ditches*, by M.C.Cooke. *Fresh Water Microscopy*, by Garnett. *Fresh Water Biology*, by Ward and Whipple, and *Illustrated Guide to Protozoa*, by The Society of Protozoologists.

For additional information on the books mentioned above, and related ones, call Jim Solliday at (714) 775-1575.

DUES TIME APPROACHETH! We are correcting another residual shortcoming from our previous life by doing away with the old fiscal year, which ran from July 1 through June 30 of the following year. Replacing it will be a new fiscal year, to run from January 1 through December 31 of the same year.

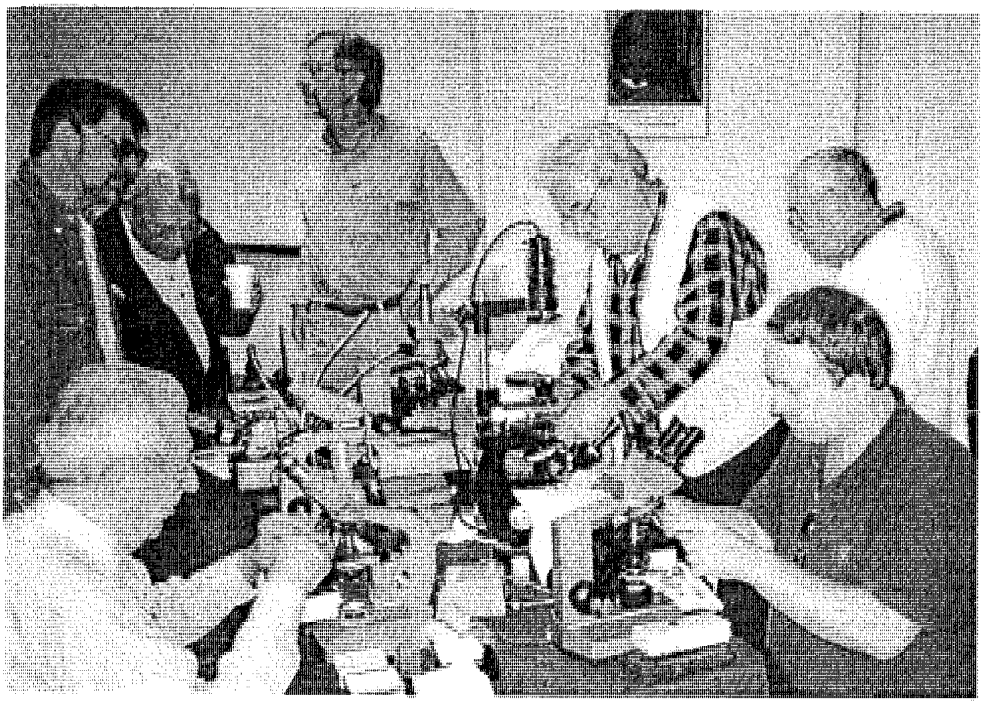
To accomplish this transition, ALL MSSC members will be assessed dues for the period of six months, from July 1, 1998 through December 31, 1998. For this period, the dues will be halved; $25.00 for Regular members and $20.00 for Corresponding members. ALL MSSC members are urged to send in their membership dues when they receive their notices, although advance payment for the six month period will be highly appreciated. Related notices will be published in future issues of the MSSC Journal. Please note that after December 31, 1998, dues will be payable for the full fiscal year, starting January 1, 1999. Dues are payable on a yearly basis, only.

LOGO. As mentioned in the previous MSSC Journal, our new logo has been ordained and established. Membership I.D. cards and other printed material showing the new logo will soon be available.

GETTING TO KNOW YOU. Our paid membership has risen to 93 and still climbing! As a result, we see many new faces at meetings and workshops. Members have commented that they would like to attach names to those faces. In our past life, we tried expensive cloisonne name tags which bombed, not only because the tags were easily lost, but because members "forgot" to wear them at meetings. What to do? One suggestion is to use self-adhesive paper tags with names hand printed by the members when they arrive at the meeting. This procedure is inexpensive, simple, and highly effective, so what say we give it a try?

THE NEW KIDS ON THE BLOCK. With great pleasure, I announce the enrollments of three new MSSC members. On behalf of the MSSC membership, I bid all of you: WELCOME ABOARD!

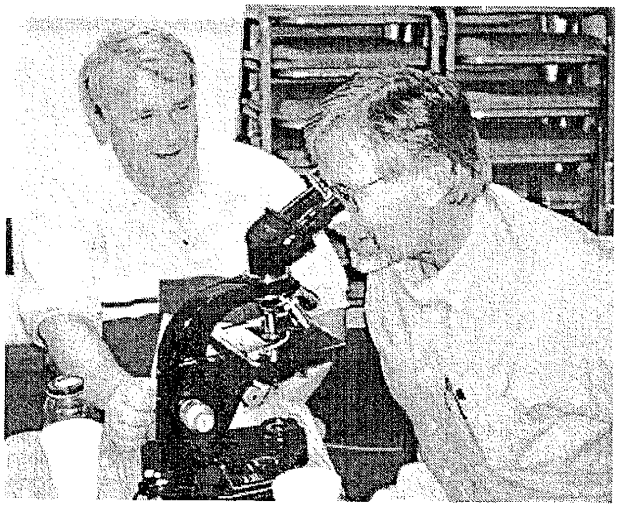
ANTHONY HARRIS. His interests lie in observing living organisms and researching their classifications. Anthony resides in the LA-Santa Monica area and was present at this evening's pond water perusal event. He read of the MSSC in the Los Angeles Times.



Left to right - George Vitt, Chris Brunt, Leon Stabinsky, Gaylord Moss, Larry Albright, Dario Solares, John Fedel.

Photos by Jim Clark of the Pond Water Meeting of 21 May 1998.

Stuart Warter and Pete Teti



Jerry Bernstein and Gaylord Moss

DR. JUAN BALLESTA ALCARAZ, of Barcelona, Spain, received his Doctors Degree in Medicine from the University of Barcelona. Dr. Alcaraz, a member of the Spanish Scientific Society, learned about us through the Internet.

JULIAN S. PULIDO. Sponsored by LARRY McDAVID, Mr. Pulido is the owner of Cross Sections Unlimited, a microscopical examination service. He is interested in new ideas and techniques.

Ron Morris and Izzy Lieberman

Scientific Antiquities Odyssey 1998

David L. Hirsch

A last minute decision to go overseas mandated missing the Saturday, May 2 MSSC Workshop. The Scientific Instrument Fair at London's' Portman Hotel on Sunday, 26 April, was one reason for my absence. Include visits to museums in Great Britain, and flea markets or jumble sales, and the trip becomes meaningful.

LEON STABINSKY, BARRY SOBEL and I rendezvoused at the Scientific Instrument Fair. We remained for the whole show, revisiting the many fully laden tables a number of times, before selecting the scientific goodies which each of us happily schlepped home. Barry returned to the USA in time to attend the MSSC Workshop, whilst Leon and I carried on our unrelenting search for the scientific instrument collector's Holy Grails.

After the London Fair, with my Britrail pass at the ready, I made day-trips from London. In Chichester, a beat up Parke monocular stand was by-passed in favor of a good pub lunch. In Arundel, there came to light a well made German children's microscope with rack and pinion course focus, and the unusual name of "Octopus." The sliding body tube version is shown in Le' Turners *Golden Age of the Microscope*, item 236. In Bath Spa, at the Golden Emporium, I eschewed a caseless Baker monocular stand, circa 1870. For reasons best known to some owner in the undocumented past, the fragmented scope, atrociously priced at £300. was mounted on a brass base weighing about 4 Kg. Being limited as I was, to the weight of high ticket scientific 'treasure' that the airlines would tolerate, the klunky Baker stayed behind. In retrospect, I look with fond memory to the year 1992 when, in the very same shop, I bought a circa 1865, massively constructed Baker monocular stand loaded with accessories, in a glass fronted exhibition case, mind you, for a lip-smacking £95!

Unlike Leon and Barry, my schedule didn't allow me to visit the instrument collectors Valhallas; the Bermondsey based Caledonian Market, and Portobello Road. Next on my itinerary was Taunton, reached by Virgin Trains, a spinoff of British Rail. Besides selling records and running Virgin Atlantic Airways those record folks also operate Virgin Rail. Talk about entrepeneurship! In Taunton, I located a bona fide dealer in scientific instruments. His stock included several microscopes of varied vintages and states of preservation, but nothing of interest to me. I did, however, come away with an fine set of draughting instruments and a Saxony built graphometer with unusual graduations.

As customary, with these trips across 'the pond", the missus gave me a "wish list;" mainly stuff for the grandkids. The list included stuffed toys aptly called 'Beanie Babies.' A toy shop in Taunton sold me a Princess Beanie Baby for five pounds, which seemed a lot for a wee purple bag of beans shaped like a bear. A USA home shopping show on TV offered it for over $300.00! Go figure.

I spent the next day in Chester and visited an antique emporium the size of Rhode Island. Managed to ferret out two ratty, nondescript microscopes, each costing about as much as a Rolls Royce. Obviously, Dave's' wallet never left his pocket. I departed Chester the next morning, impressed with the beauty of its ruins and the magnificent Tudor architecture. As muscleman Arnold would say: "I'll be back."

Reached Edinburgh, my favorite Scottish city, on Saturday afternoon. I managed to visit several antique ships near the Royal Mile where, in past years, I always lucked out by finding a microscope or two. This time, the expected bonanza appeared in the form of a portable microscope signed: Husband's, 8 St. Augustine's Parade, Bristol. This stand was probably made by Baker, circa, 1860. It is similar to the microscope shown as fig. 99 on page 53 of Billings' 2nd ed. *Microscope Collection*. The case and instrument were in pristine condition and the price was right.

Sunday was an active day for me. Attended a 'Hood' sale in a huge underground parking structure off Leith Walk. Hundreds of dealers were displaying all sorts of (add your own expletive) merchandise from the trunks (hoods) of their cars. Bought a box of 19th century prepared slides, a parallel rule from WWII, a small hand held microscope/magnifier combo, made in France. It used to be featured in the old Johnson Smith catalogs. The bargain of the day was a new 'brolly' (umbrella), for 50p. Passed on an eighteenth century spirit lamp illuminator; too beat up and too pricey. I parked my treasures back at the hotel, then headed for the Royal Museum of Scotland. On the way, I passed a newly married couple emerging from a church. The area bustled with colorfully dressed fellows in kilts, long stockings, sporrans (a kind of low slung Scottish belly pack) and ruffled shirts. Nearby, a similarly bedecked citizen was blasting away on a bagpipe. The joyous occasion provided me with a fitting exposure to the Edinburghian social scene.

The highlight of my short stay in Edinburgh was a visit to the Royal Museum of Scotland on Chambers Street.

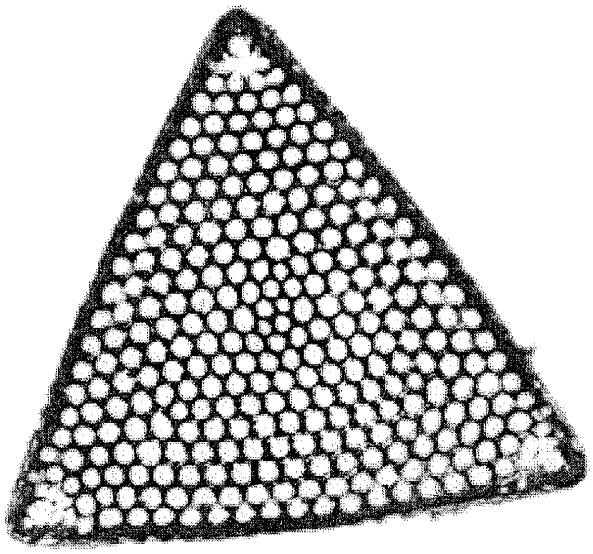
This magnificent Victorian building houses rich international collections of natural history, decorative arts, technology and archeology. The Instruments of Science exhibition on an upper floor was my principal objective. Scientific instruments, which represent hundreds of all types, were classified and arranged in attractive displays. I took photographs of many instruments, with emphasis on the dozens of pristine microscopes being shown. The photographs will be displayed at a future MSSC Workshop. Many of the museum's instruments comprise the Arthur Frank Collection. Arthur is a well known collector, and a long time friend, now residing in Jersey, one of the Channel Islands off the coast of France. Before leaving the museum, I visited their gift shop which yielded two interesting kaleidoscopes, but no microscopically oriented books.

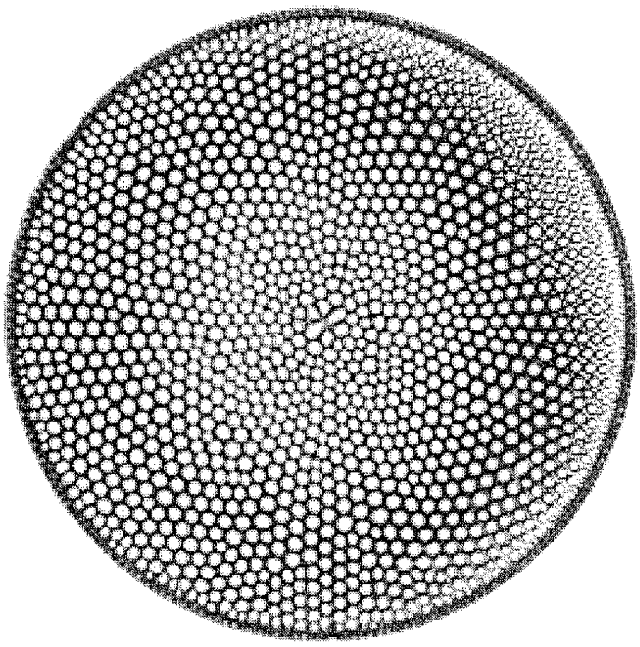
My best buy? From a Hanover, Germany dealer at the London Science Fair: An ensemble labelled, "Das Ultra-Lumara Mikroskope, D.R.P., a well designed and ingeniously packaged microscope of high quality and versatility, down to the grain-of-wheat bulb illuminator. The operation and spec sheets were well written, albeit in Scientific German. Ironically, I passed this microscope a number of times at the Fair, thinking it to be a childrens' toy!

During a spasm of innovativeness, I wondered why so-called bullseye lenses were not combined with diaphragms to control the light. Little did I realize that someone beat me to the idea - by 125 years! I found my bullseye/iris diaphragm combo at the London Fair. It is unsigned, but undeniably of English make. It was hidden among a bevy of (yuck!) POLISHED instruments. The device is adjustable in height between 7" and 8.5". The 2" dia. double convex lens has a focal length of 4". The leaf-type diaphragm is stoppable down to 0.312" dia. The lens/diaphragm assemblage is adjustable 0.25" laterally, and locked. Can anyone out there in MSSC Land supply provenance on this optical device?

Regrettably, the auctions of scientific instruments seldom occur within days of the London Scientific Instrument Fair. The next Fair comes up on Sunday, October 25, 1998. Any takers?

Diatom Micrographs taken by John deHaas in 1969





WORKSHOP of the Microscopical Society of Southern California

by: **George G. Vitt, Jr.**
Date: **Saturday, 2 May 1998**
Location: **Steve Craig's Lab.**, 32 persons attended.

This Workshop broke another attendance record! Again, we solicit ideas on how to reduce the attendance!

1. **Larry Albright** informed us that the final selection of photomicrographic slides, for exhibition as prints at the Palos Verdes Museum, would be done by a committee at the Museum.

2. **Steve Craig** introduced a visitor, Mr. Buchman.

3. **Larry McDavid** recounted the recent visit of several MSSCers to the residence of **John De Haas**, where John had demonstrated and explained his excellent techniques for the restoration of scientific instruments, especially microscopes. Of greatest import was the lacquering of brass parts and the refilling of faded engraved information with special pigment. After John had demonstrated his lacquering method, he let his guests try their own hand at it. John also gave his sources of materials used in restoration. Many thanks to John! We all hope that this will be one of a series of such workshops. Larry then gave the names of various companies from which materials and tools for restoration may be obtained. (See the May 1998 Journal of the MSSC for his excellent and exhaustive writeup on this subject.) Larry then showed a fine brass brush wheel for cleaning knurling and a set of 'damping greases' recently received from Nye Lubricants, New Bedford, MA.

4. **Gaylord Moss** described a film processing service by a lab in Washington State, which supplies and processes a thick-base, coarse grain color negative movie film, optimized for 1/30sec. exposure and tungsten light. There was a discussion on this 'reduced cost' film/processing and its problems. **Barry Sobel** stated that Konica Service offers a 2-day service of higher quality. RGB on Highland Ave., does the same. Gaylord then described the problems a Lorquin Society member has in photographing 'chrome-gold' beetles in an attempt (unsuccessful) of capturing their unique metallic sheen. This sheen is due to a complex multilayer holographic structure which should be investigated with an SEM! It seems that these tropical beetles come out after a rain, and their metallic appearance mimics that of raindrops, and acts as camouflage to help perpetuate the species.

5. **Richard Jefts** stated that an article on the 'shroud of Turin' in Time magazine never even mentioned the important work on this subject that had been conducted by Walter McCrone, of the McCrone Institute; nor did it mention his book, *Judgement Day*, devoted wholly to this subject! While on the subject of glaring omissions, **Gaylord Moss** expressed surprise and justifiable outrage that, on his recent visit to the LA Times Book Fairat UCLA, he did not see a single booth on the subject of Science or Natural History! (This must be a sign of the times.) Richard then showed the book, *Wonders Through the Microscope*, Popular Science Publishing, 1934, and an article from a series, "Hunting Little Big Game with your Microscope", *Popular Science Magazine*, Nov. 1937

6. **Stuart Warter** reported that the e-bay auction page on Internet often misrepresents the value of articles being offered, and that some items are misrepresented -and gives an example of a microscope which had been attributed to Edward Wheeler. "You must be careful," said Stuart. **George Vitt** gave a similar example of a Russian icon which had been recently offered on e-bay as being in the class of a rare treasure - which it certainly was not!

7. **Jim Solliday** reported that Warner Bros. had called him, asking him to use his photographic talents in photographing real and bogus Chinese paper money! His photos will be used in the movie *Lethal Weapon 4*. Jim then showed one of the rarest of American microscopes, the MacIntosh "Practitioner's Microscope No.1", a 2-pillar monocular, c.1888. It features a nickel plated tube, spring lever for fine focus, an aperture disk, swing mirror that can move above the stage, a fixed circular stage, a "tree frog" (term coined by **Larry Albright**) style base of cast iron and two Gundlach objectives. Jim than gave a history of the now defunct Chicago-based MacIntosh Company which made a diverse variety of interesting products.

There was a very active and talkative break between 10:40 and 11:03am.

8. **Norm Blitch** displayed and described a marvelous cased Spencer portable microscope, c.1920. After the Workshop, this small, very well conceived and constructed, American-made microscope was happily voted in to become the official Logo of the MSSC. Congratulations, Norm! He then showed a B&H catalog and a Telescope Post-card "Observatory of Athens", from the astronomer of Athens (Greece). It uses a 25" refractor and has a Schmitt finder scope. A German made 36" refractor at Licke may well be the largest brass telescope. Norm then showed the book *The Complete Beginner's Guide to Microscopes and Telescopes* by Aaron Klein, Doubleday, 1980. He also showed the

book *The Telescope and Microscope* by Thomas Dicke, Lane & Scott, NYC, 1852.

9. **Leo Milan** showed his copy photo of an SEM image of diatoms on a grain of sand, and stated that he had given to **Jim Solliday** the late **John Chesluk's** case of diatom photomicrographs on 35mm slides. Leo also brought some examples of Chesluk's photomicrographs of diatoms, done on 4x5 photosensitized aluminum plates, while he was with Douglas Aircraft Co. many years ago. **George Vitt** will scan these unique examples of photomicrography and the results will be published in a future MSSC Journal.

10. **John De Haas** brought for sale two binocular microscopes, an 'Aus Jena' microprojector, and a Leitz monocular microscope.

11. **Barry Sobel** gave a resume of his recent buying trip to England. (He then wrote a fine report on the subject for the May 1998 MSSC Journal). Barry then showed some of the acquisitions: a cased Culpeper c.1760(?); insects imbedded in amber; and a Stevenson type stereo dissecting mic. by Swift; dissecting mic. by Andrew Ross c.1850. He related that, when taking apart the Parks & Son (Birmingham) mic., he found within the end cap a resale slip dated 1937. It had sold for £3!

12. **Ron Morris** discussed a substitute for the 'Uranium Cube' (now unobtainable) which is used to observe the path of light rays. He then discussed the first slide selection show, and stated that **Joe Wise**, of the Crossroads school, has offered the use of a classroom with 20 person capacity for any Workshop meetings we wished to have.

13. **Gary Legel** brought a pristine Leitz monocular, large body tube, doctor's microscope for sale at a very reasonable price.

14. **Allen De Haas** showed an "F-Theta" type of lens used for laser scanning such things as film, where a flat field is absolutely necessary.

15. **Jim Clark** showed a Zeiss inverted microscope, with round stage, which he had "cleaned up with dish detergent+ water and a tooth brush".

16. **George Vitt** described some tests he is running on photographing microscopes with strobe flash units, and two special backgrounds he had put together. He then described a recently acquired 300 W-sec strobe with a 14" diameter diffuse white reflector and modeling lamp, which he will use for photographing tabletop setups of instruments. The unit is made in China, is well constructed, capable of remote operation, stand mounted, reasonably priced, and sold by Photographers' Warehouse (OH). The circular Xenon discharge tube is particularly well made with a fine ceramic base and large silver=plated pins. It is easily user replaceable and costs a reasonable $35.

We again thank **Steve and Millie Craig** for their boundless hospitality and patience! After adjournment, there was a brief officers' meeting, and many things for sale and as freebies on Steve's tables, after which a good sized group went to Coco's for food and more conversation, some of whom later went to **John De Haas's** for the above described demonstrations on restoration.

Other Voices

Herbert A. Gold

The May 1998 issue of the New York Microscopical Society's NYMS News brings a report of a restructuring at Leica. The Leica Microscopy and Scientific Instruments Group, a separate company independent of the Leica Group, has been acquired by Schroder Ventures. The new company has been renamed *Leica Microsystems*. The plan is to make this unit a public company. Products and distribution should remain the same and layoffs are not contemplated. There is an interesting note on the complications the beam splitter in a binocular microscope introduces in polarized light applications. *The Biota of Teasel Waters as a Science Fair Project* is a call for more investigation of the life that abounds in these aquatic habitats. You can now check out the Society's web page at **http:// www.nyms.org.**

Continuing the review of past issues of *Amateur Microscopist*, the newsletter of the Postal Microscopical Club of Australia:

Issue 19, April 1997, shows you how to build a simple microscope-to-camera attachment from cardboard. There is a short note on how to clean diatoms and an article on drawing a microscopic image without recourse to any accessory optical devices. Here's a neat idea. How about using an old 50mm SLR lens as a dissecting microscope? The new Nikon *Naturescope*, 20x portable stereo microscope is the subject of a new product review.

NOTE ON TUFFEN WEST (1823-1891)

J. Lester, Manchester

Courtesy of Roy Winsby of the Manchester Microscopical Society

There must be many who, like myself, delight in the lithographs and meticulous line engravings found in Victorian works on microscopy. Without doubt the most assiduous of these illustrators was Tuffen West, concerning whom little appears to have been written.

L.D. Sear's Presidential Address to the Quekett Microscopical Club (February 1936) gives some valuable information. "As an illustrator of other people's work he was unsurpassed". One page of the Micrographic Dictionary contains drawings of 78 "Infusorians". He took four years to illustrate John Blackwall's "English Spiders" and spent five years on Smith's work on diatoms. Sear tells us that Tuffen West began as an amateur after giving up the study of medicine, the result of an accident which led to some loss of hearing, and the artistic side of microscopy became his livelihood. He was secretive and it is not known how he worked. whether with projector, squared eyepiece or camera lucida..

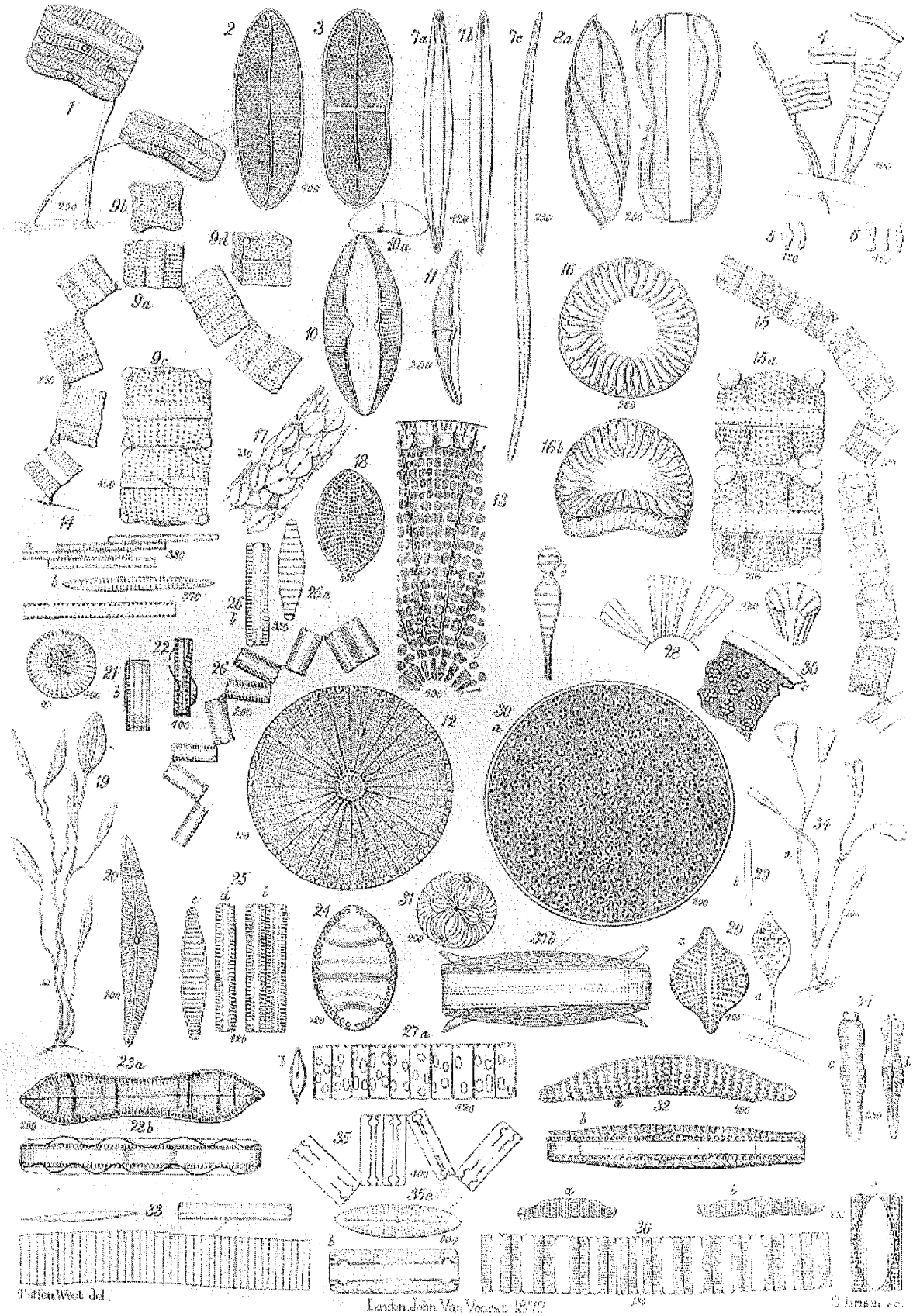
According to Curle's "Bibliographical History of the Ray Society", 1954 illustrators and lithographers such as Tuffen West and R.T. Hollick (who was deaf and dumb) Produced the black and white engravings. It seems both possible and likely that much of the colouring was hand-done by trained girls, probably directed by a colourist of ability called Standish whose name crops up now and again in the Ray Society's Minutes - they were, it seems, responsible for the colour work in the two volumes of Blackwall's "English Spiders".

Quite by accident, the writer came across some information supplied by Tuffen West himself. This was found in a Journal called "Recreative Science" published in 1860. West contributed a series of articles on diatoms, very informative and still worth reading; also an article on raphides or plant crystals. In one of the diatom articles he gives some precious biographical information. It appears that he was known as an artist but had no experience of microscopic work. He tells us that as a young man (no dates given) he was invited to illustrate a work on diatoms by a "Professor of Natural History in the new Queen's College, Cork." He does not name this diatomist. To quote his own account -

"To begin upon, four slips of glass had been given to him, labelled "Aberdeen", "Premnay Peat", "Cantire" and "Loch Mourne", names now familiar as household words to the initiated. On the central third of each of these slips, protected by a square of very thin glass, was to all appearance a little fine white dust covered with gum; the particles composing which dust, when held up to a bright light, flashed like rubies, diamonds, emeralds - a perfect coruscation of fairy gems."

Since the Professor had taken ill, West had time on his hands. He tells us, "To while away the time, he now sat down to these four slides ... to draw all he saw before him; not bad training this for eye and hand and patience ... Slowly then during these weeks did the work progress, and such was the fascination produced by their beauty in the artist's mind, that day after day he sat at them: night after night, the morning sun frequently rising ere his couch was sought for brief necessary repose. An occasional stroll through the fine scenery in the immediate neighbourhood, for health and recreation, afforded also an abundance of living specimens of many of the forms whose skeletons he was engaged in depicting, in addition to desmids and other objects of interest to the microscopist. The Vice-President of the College took compassion on the stranger, asking him in occasionally to tea and a social evening, when by other professors and visitors the question was repeatedly put "What is a diatom?". To add to the interest of the evening, the microscope was on two or three occasions brought in and some of the most elegant forms exhibited." Here West ends his biographical information.

The facing page shows some of Tuffen West's illustrations from *The Micrographic Dictionary*, Third Edition published in 1875 by John Van Voorst, London.



June Meeting

Wednesday, June 17 at 7 PM
Crossroads School
1714 21st Street
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The Implication of Pleochroic Radiohalos in Biotites and Diamonds and their Thermal Erasure at Low Temperatures

Radiohalos are an enigma that are not fully understood. They raise questions about the validity of current theories on the formation of materials by gradual cooling of molten materials. They are circular rings, spheres within spheres, that in a biotite look like small archery targets. A typical size is 45 microns and they can be seen with standard bright field microscopy.

Mark Armitage has studied radiohalos for some years and he will show some of his own micrographs of this phenomena in materials such as diamond. Some of the pictures are reportedly quite stunning.

In addition, Mark will give an overview of current theories and the controversy over the formation of minerals as related to radiohalos.

Mark Armitage (M.S. Biology) has worked in the microscope industry for over 20 years for such firms as Zeiss, Olympus and Reichert, and sold the Zeiss Jena line for many years in Southern California until it's demise. His articles on microscopic phenomena have appeared in *American Laboratory, Microscopy and Analysis, Microscopy Today, Olympus Scientific Review and CEN Technical Journal.* He currently serves as Adjunct Professor of Biology at Master's College in Santa Clarita, and Adjunct Instructor in Electron Microscopy at Azusa Pacific University.

Mark is an excellent speaker who has the ability to make a technically complex subject clear, interesting and entertaining.

It is another evening not to be missed. Following the refreshment break, there will be the usual exhibition of latest acquisitions and exchange of microscopical adventures and information.

Editor's Notes

As Dave Hirsch mentions in his meeting notes on page 118, dues for July through December 1998 are now due. This will enable us to get on a January to December schedule corresponding to a full indexed year of our Journal. For those who have joined after July of 1997, I have back issues to make up for those that you missed. Please let me know which issues you need to fill the time period from July 1997 to the present and I will send them.

Now that we have a logo, I will be printing a cover page for each year for those of you who keep your issues as a single volume. This will be sent along with the subject and author index at the end of each year. To bring us up to date, I will be mailing covers for the 1996 and 1997 years. The 1997 volume has 250 pages which it is hoped has information of lasting interest.

This month features our first color cover. This was made possible through the courtesy of Herb Gold, who not only provided the superb articles on Ryland and his microscope, but has underwritten the color cover.

There seems to have been even more excitement than usual at the meetings this month. The Pond Life Meeting, reported on by Dave Hirsch was spectacular. At one time, I counted 42 people and 17 microscopes, all busy. Everyone had a chance to sit and study the various scuzzy waters through a variety of microscopes while several of the real experts like Jerry Bernstein, Ron Morris and Larry Albright set up peep shows of weird and wonderful creatures. The format espoused by our education chair, Jim Clark, of having occasional hands-on learning sessions was a wild success that night.

One of the things that made that evening so remarkable was the beautiful sound and slide show that Jim Solliday presented as a prelude to looking through the microscopes. He showed a series of slides of the pond itself in varying conditions and lighting and then moved down to show the microscopic life in and around it. This was accompanied with richly appropriate music and his recorded narration. He detailed the whole ecology of the pond system as well as its particular inhabitants. It was not only an educational, but also a moving artistic presentation of the highest caliber.

Every month, I find more reasons to appreciate the good fellowship and shared interests of the MSSC. Thanks to all who are submitting articles to our Journal to make the documention of all these activities possible.

Gaylord E. Moss