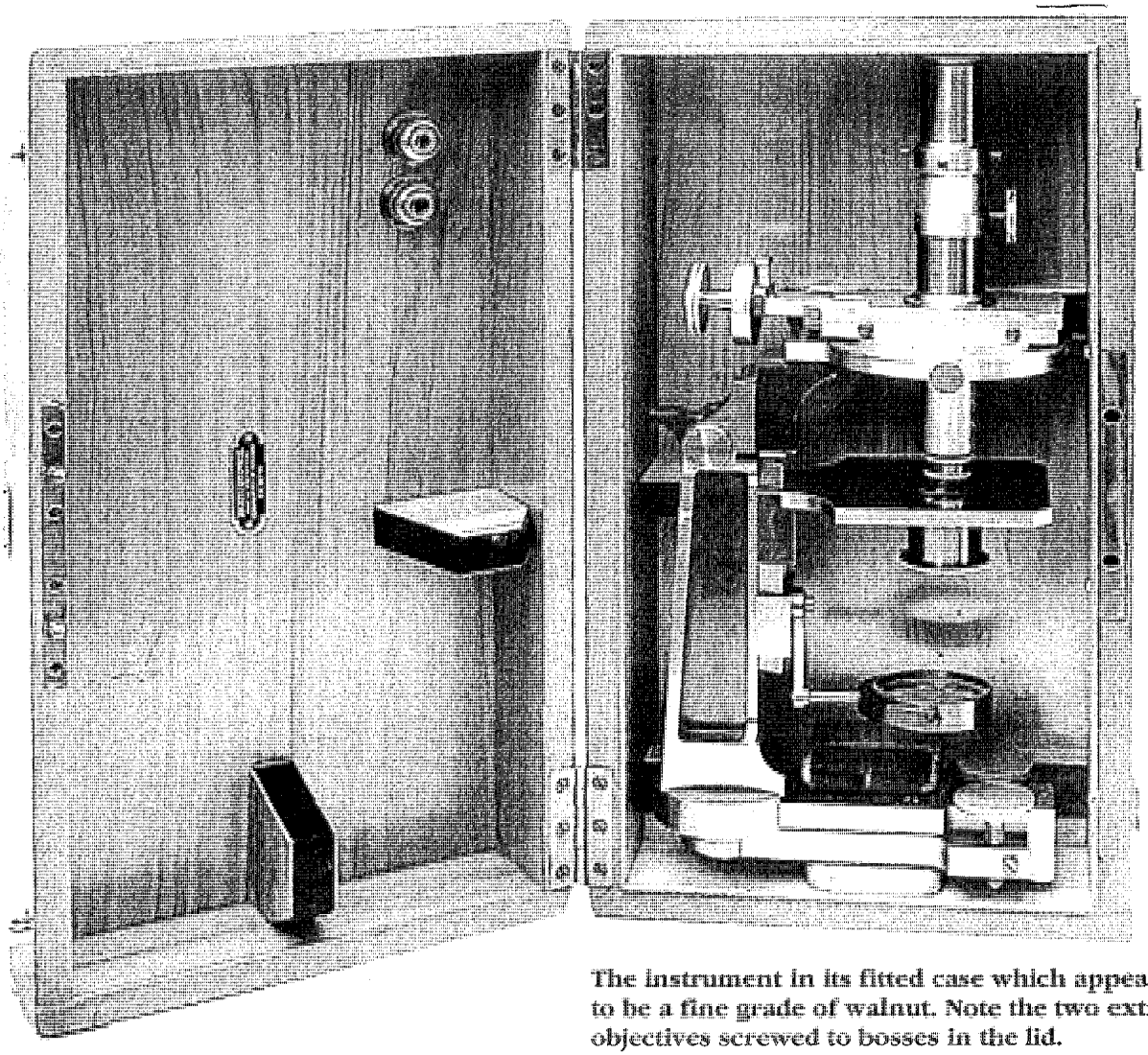
Journal of
THE MICROSCOPICAL SOCIETY OF SOUTHERN CALIFORNIA
Volume 5 Number 5 May 2000

Societe Genevoise

Allen Bishop



The instrument in its fitted case which appears to be a fine grade of walnut. Note the two extra objectives screwed to bosses in the lid.

This instrument appeared a few months ago on our favorite website, EBay. The seller, in Germany, did not have a clear idea of what he had, but took the trouble to contact the makers in Switzerland. Societe' Genevoise (S.I.P. today). He was provided with copies of early 20th Century catalogues of S.G.'s product line from that era. There were several similar instruments to the one featured here.

Societe Genevois furnished tools and measuring equipment to Swiss industry, especially the watch and clock making branch. The microscope seen here is a true

measuring instrument and has been identified as a toolroom instrument to be utilized by the watchmaking industry.This particular stand obviously escaped a hard, long life fulfilling its intended purpose; it is in almost unused condition.

There are virtually no identifying marks on this stand whatever. Were it to be separated from its box, the identity of the maker would disappear. There is no multiple-digit serial number anywhere, however a neatly stamped "1" appears repeated on most of the components. This is most probably a simple match marking identifier because the instrument is quite modular in construction. It is finished in a superb brownish gold lacquer with black enamel in cutaway areas.The filar micrometer and goniometer scales and indices are German silver.The box appears to be of a fine, straight-grained walnut.As might be expected, the overall fit and operation are incredibly smooth. After cleaning, the function of the goniometer and filar micrometer lead screw were tried devoid of any lubricant - their function seemed unimpaired.

This stand is now part of the display room of - you guessed it - a clock and watch collector!

Societe Genevoise also constructed at least one superb polarizing microscope model. It is illustrated and described in Albert Johannsen's 1918 book, *Manual of Petrographic Methods* and appears to be a magnificent instrument for its time. I wonder how many survive today? I would assume that any device or instrument constructed by Societe Genevoise should be considered extremely rare outside Switzerland and Europe.

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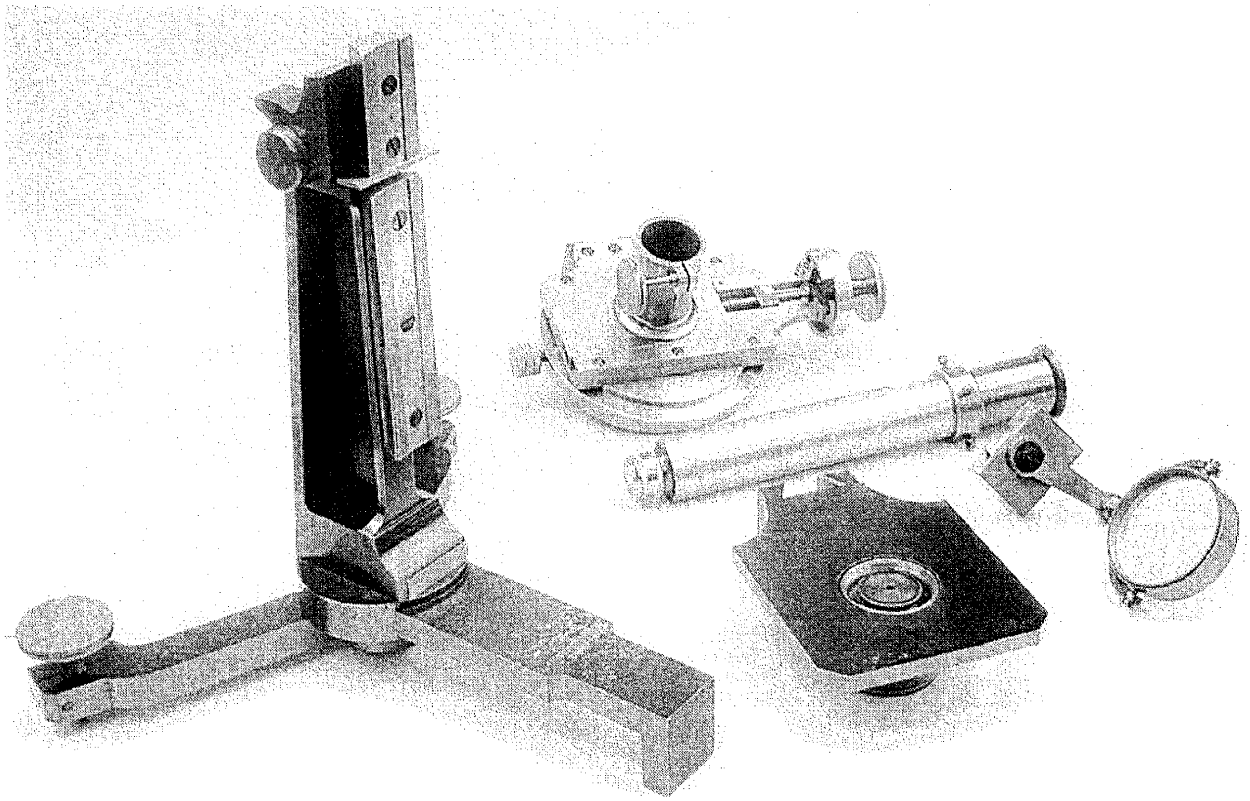
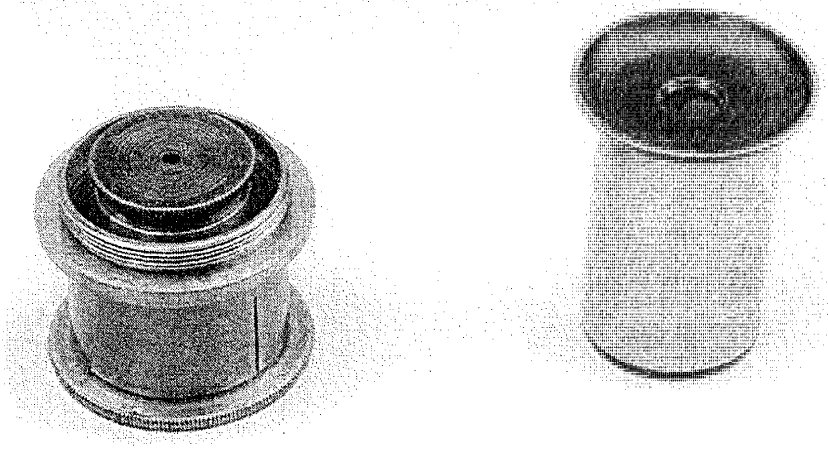
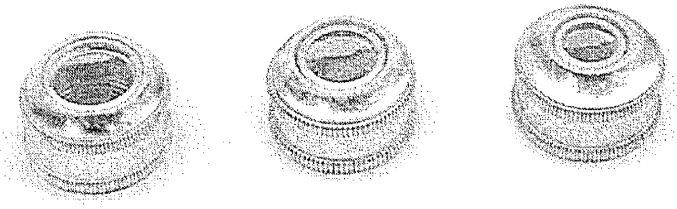
MICROSCOPICAL SOCIETY OF SOUTHERN CALIFORNIA

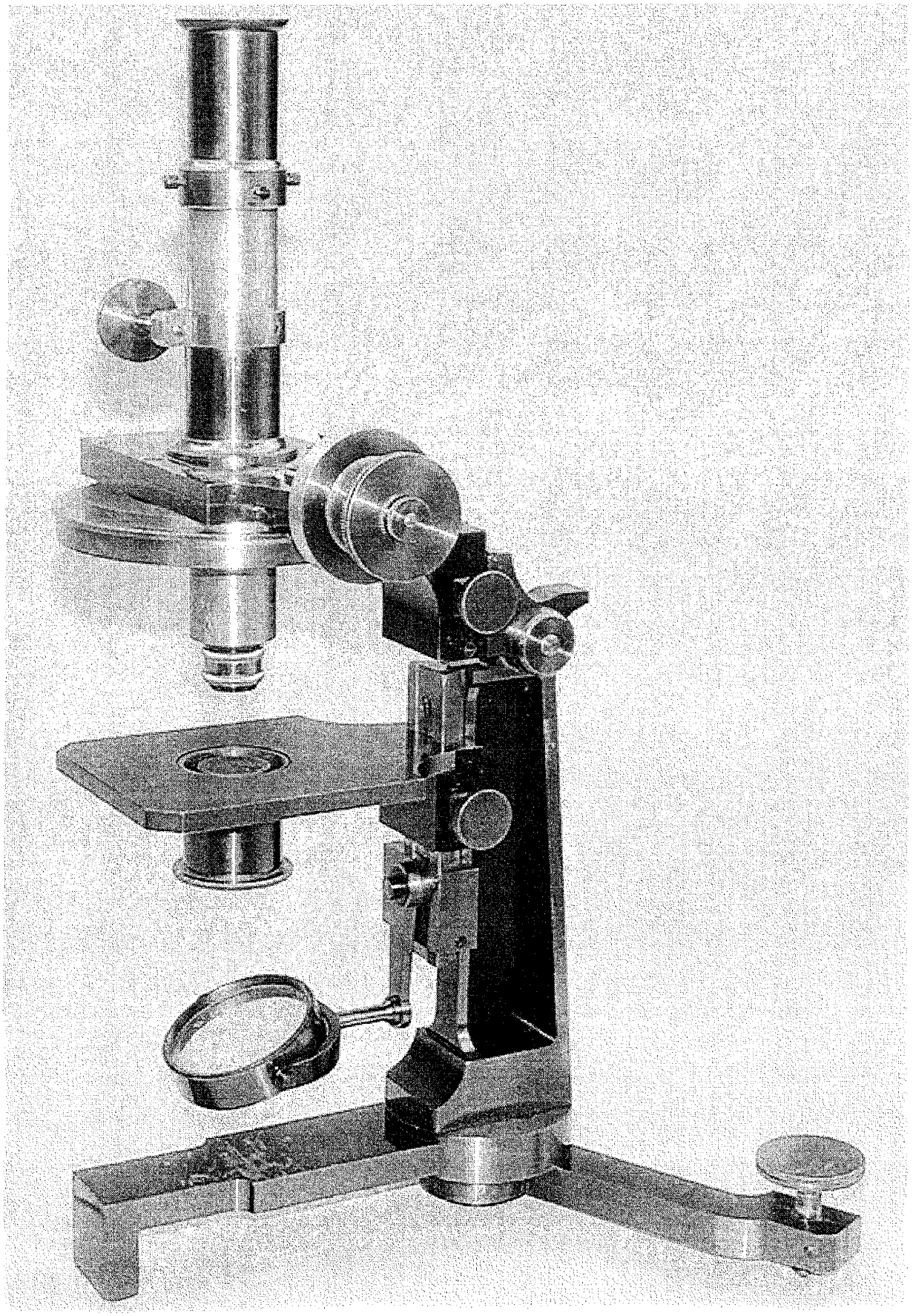


The stand is a very early example of modular construction, but it is doubtful whether the components from another stand would interchange readily, if at all.

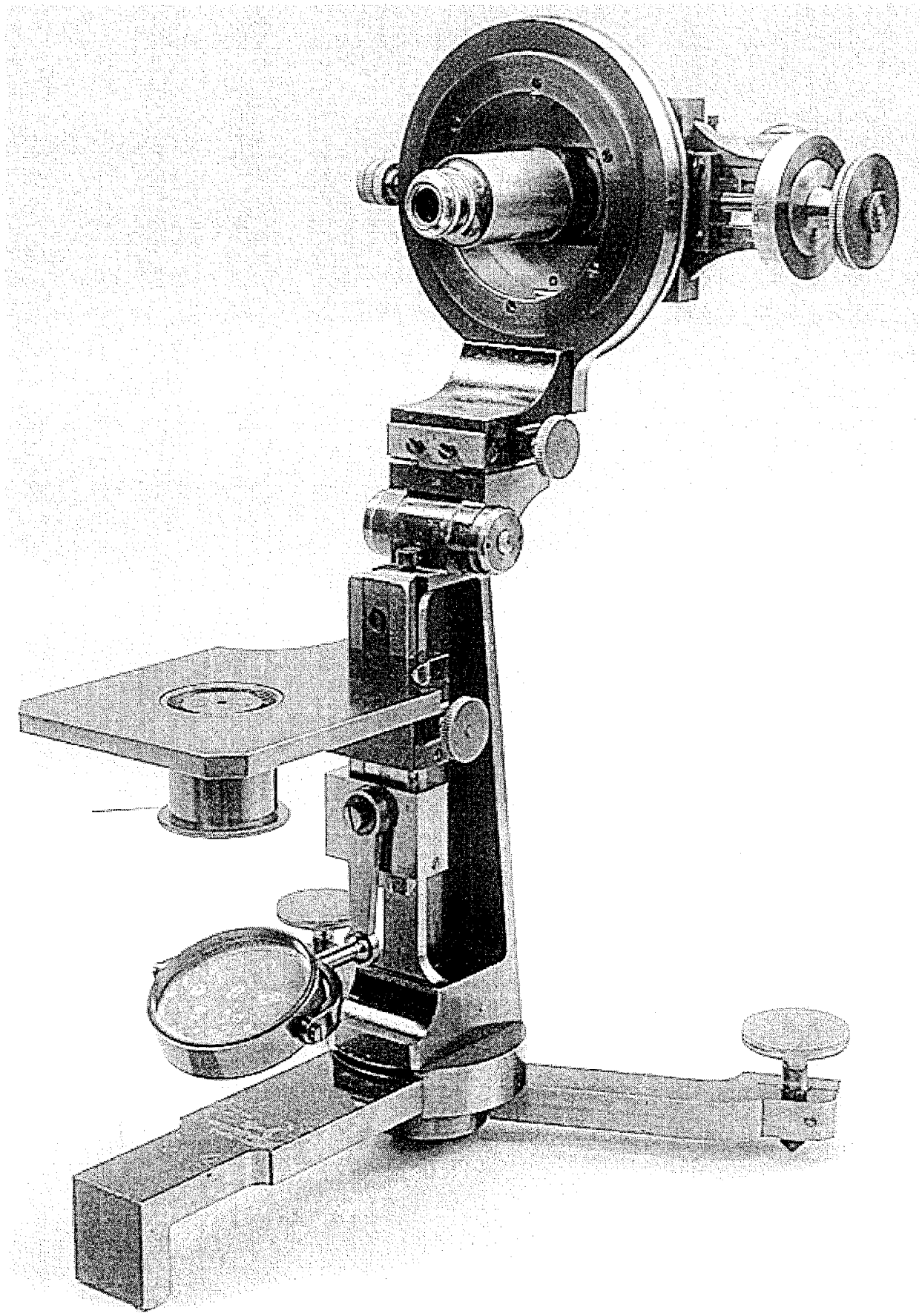




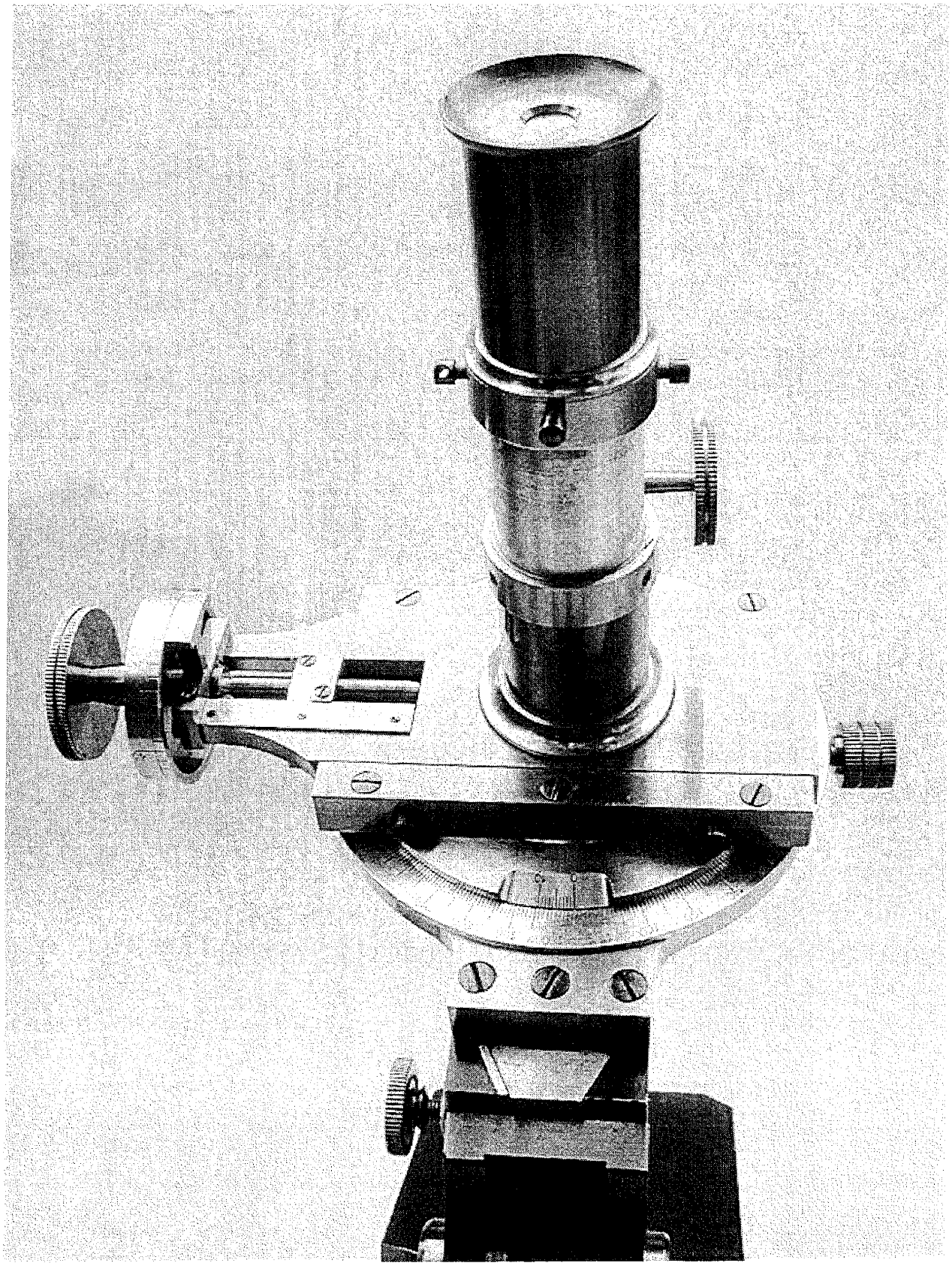
The pinhole condensor, eyepiece and compliment of three (very) low power objectives. Neither focal length, n.a. or linear magnification were checked; the objectives are devoid of any markings and have a unique attachment thread. Separated from the instrument, they would be a virtual mystery. The eyepiece, though also unmarked, has approximately 10X magnification, primarily to enhance the crosshairs which are positioned just below the lower lens element. All optics are outstanding.



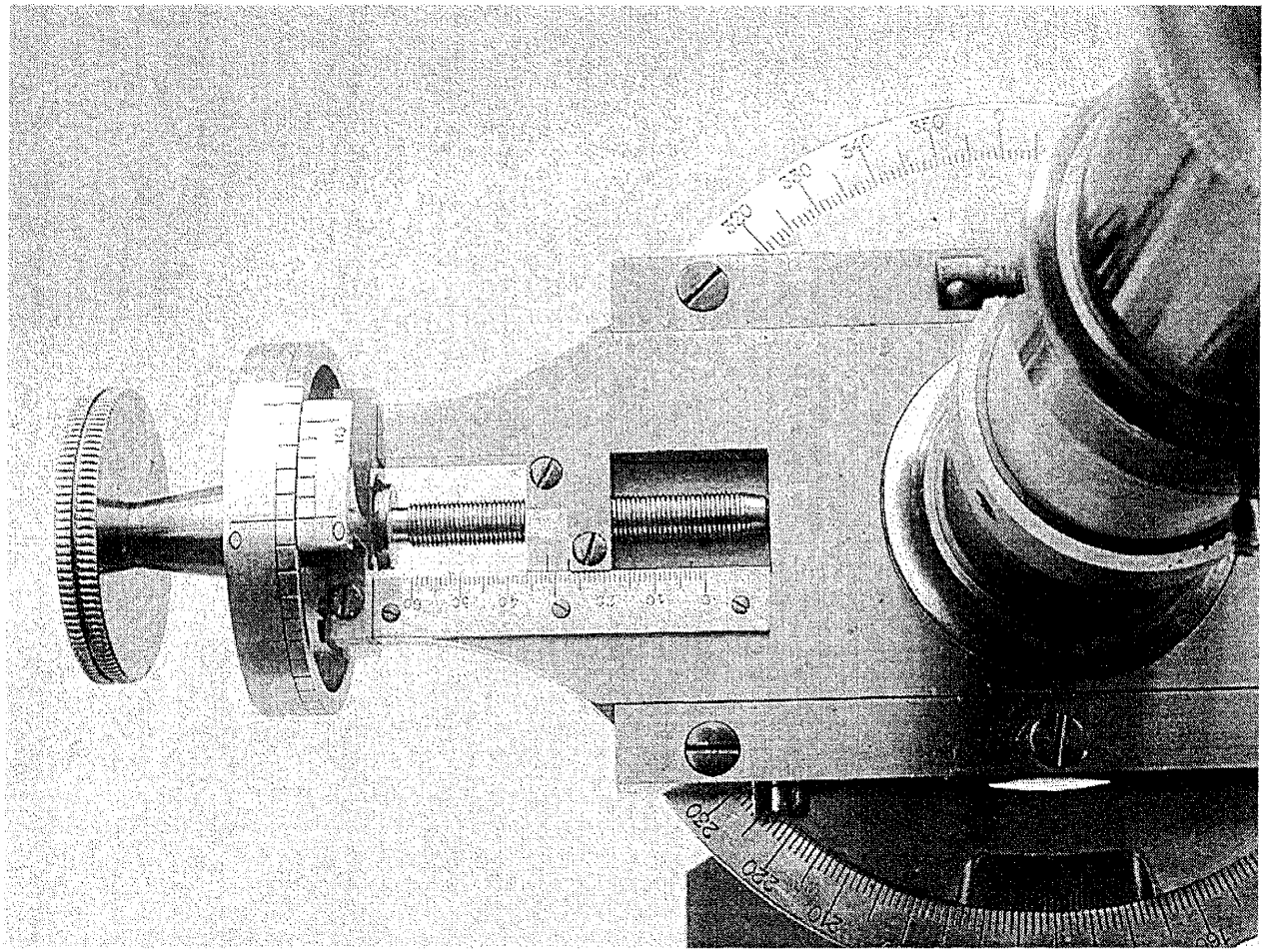
The instrument set up for vertical measurement. This is a true measuring microscope; magnifications are very low. There is a simple pinhole condensor and plano-convex mirror. Transmitted light would serve to create silhouettes of pinion profiles, shafts, etc.



The upper section of the instrument tilts back 90 degrees allowing vertical and traverse measurements to be made on upright surfaces.



Eyepiece and measuring head of the instrument. A filar micrometer and goniometer are combined. Three of the four capstan screws are visible; these are for centering the crosshairs, contained in a cell much like a surveying instrument's telescope. The two knobs on the right serve to lock the microscope tube in focus and lock the goniometer. Note that the measuring head assembly fits into a dovetail and may be quickly detached from the stand.



Closeup of the filar micrometer lead screw. The fit and finish finish on this instrument equals, if not surpasses any of the best British and Continental practice of the turn of the Century.

The small logo badge on the inside of the box lid says it all. Today, the company still is in business, but is known as S.I.P.

THE

Microscopists' Annual

FOR

1879.

NUMBER I.

CONTAINING

Useful Tables, Rules, Formulæ and Memoranda.
List of Microscopical Societies, with Officers, etc.
Directory of the Prominent Microscope Makers, Dealers and Importers in America and Europe.

THE WHOLE FORMING AN INDISPENSABLE HANDBOOK FOR ALL WHO HAVE OCCASION TO USE THE MICROSCOPE.

PRICE 25 CENTS.

NEW YORK:
THE INDUSTRIAL PUBLICATION COMPANY.
1880.

☞ A copy of this book will be sent to any address within the Postal Union on receipt of 25 cents in U. S. Postage Stamps, or 13 pence in British Postage Stamps. The number for 1880 will be the same price.

MICROSCOPY IN AMERICA
Part III
Society Listings from the Microscopists' Annual

Stuart L. Warter

In 1880, John Phin published the first of what was to be an annual series of directories with information of interest to microscopists. Much of the information contained overlapped with the Cassino directories extracted in Parts I and II of this series. Evidently the overlap was too great for this specialized directory to compete with the more comprehensive Naturalists' Directories, for Phin's directories do not seem to have persisited (there was other information than these lists, but it also was available elsewhere). This Annual for 1879, published in 1880, fills in the gap between 1878 and 1882 in my coverage of the Casino Directories. Because the information is different in the manner of presentation and completeness from that in the Cassino directories, I have chosen to not integrate the information from the Annual with that of the the others, and, as no extraction from a larger body of information is required, I am reproducing the pertinent pages as parts III and IV of this series. There is also contained information relating to microscopists and their societies abroad, and since that information is concise and otherwise unavailable, I have chosen not to extract the American information, but to present it all.

THE

MICROSCOPIST'S ANNUAL.

LIST OF MICROSCOPICAL SOCIETIES.

During the past two or three years our microscopists have shown great activity in organizing Societies, and many of these have exhibited a degree of activity and earnestness which has resulted in a marked diffusion of microscopical knowledge, if it has not served to extend the boundaries of science. That the first is quite as important as the second, few will have the hardihood to deny. Some of the new Societies, especially those at Rochester, N. Y., and Camden, N. J., have, in point of numbers and activity, far outstripped many of the older associations. The Rochester Society is now, we believe, the largest in the country, and it is constantly growing. Some of the old Societies have died out, but others seem to gain vigor with age. The oldest independent Microscopical Society is, we believe, the American Microscopical Society of New York, founded in 1865, though the Microscopical Section of the Boston Society of Natural History is older by one year. The latter Society is very rich

in Microscopical material, and so is the American Society of New York. The San Francisco Microscopical Society has also accumulated a very valuable collection, the members having all a strong *esprit de corps*. The addition of the collection and library of Prof. Arthur Mead Edwards to the treasures of this Society, was a valuable accession, and gave a powerful impetus to further accumulations in this direction.

Amongst the Societies which deserve special notice is that at Wellesley, Mass. This Society is composed wholly of ladies, and in this respect is, we believe, unique. While it may be difficult to form Societies wholly of ladies outside of female colleges, we feel assured that it will in almost all cases be found advisable to admit ladies to active membership in the ordinary Societies.

In the following pages we have endeavored to give as complete and accurate information as possible, in regard to all the Societies in the United States. But although we sent circulars to all the officers of the old Societies, we regret to be obliged to say that many have neglected to supply us with the needed information. To those statements which we have been unable *recently* to verify, we have appended a query mark, (?), and will be greatly obliged to any person that will furnish us with more recent and more accurate information. With this object in view, the pages of the Annual, which contain the list of Societies, will be sent free to every person who is an officer of a Society, and whose name we can find, and each copy will contain a printed blank so as to save Secretaries and others the trouble of writing out the statements in full.

We have also added a few foreign Societies, and hope in our next number, to make this list more complete.

SOCIETIES IN THE UNITED STATES.

American Society of Microscopists.

The importance of this Society warrants us in slightly disregarding strict alphabetical order, and giving it the first place on our list. This Society is the outcome of a Congress of American Microscopists held at Indianapolis, in 1878. At this Congress, The American Society of Microscopists was organized, and the first meeting was held at Buffalo, N. Y., on August, 19, 20 and 21, 1879. At this meeting the following officers were elected: President—Prof. H. L. Smith, Geneva, N. Y. Vice-Presidents—W. Webster Butterfield, of Indianapolis, Ind., and C. C. Merriman, of Rochester, N. Y. Secretary—Prof. Albert H. Tuttle, of Columbus, O. Treasurer—George E. Fell, of Buffalo, N. Y. Executive Committee—Dr. W. Rezner, of Cleveland, O.; Dr. Carl Seiler, Philadelphia, Pa.; Dr. W. C. Barrett, Buffalo, N. Y.

The next meeting will be held at Detroit, Mich., about the middle of August, 1880.

American Association for the Advancement of Science.

This Association meets at different places each year. At the meeting at Buffalo, in 1876, a Microscopical Section was organized, with Prof. R. H. Ward, as President. We believe, however, that the Section has never shown any great amount of activity.

American Postal Micro-Cabinet Club.

This club was organized in 1875, but owing to certain absurd Postal regulations its operations were at one time suspended. It is now in full operation, and doing a most useful and excellent work. President—Rev. Samuel Lockwood, Freehold, N. J. Secretary—Rev. A. B. Hervey, Taunton, Mass. Assistant Secretary and Treasurer—Joseph McKay, Troy, N. Y. Managers—R. H. Ward, Troy, N. Y.; C. M. Vorce, Cleveland, O.

Baltimore, Md.

Maryland Academy of Sciences—Section of Biology and Microscopy. Organized 1874. Meets first and third Wednesday evenings of each month, at Academy Buildings, Mulberry street. Chairman—B. W. Barton, M.D. Secretary—W. G. Harrison, M.D., 69 Centre street. (?)

Boston, Mass.

Boston Society of Natural History—Microscopical Section. Organized 1864. Meets second Wednesday evening of month. Committee—Edwin Bicknell; R. C. Greenleaf, and B. Joy Jeffries, M.D. (?)

Boston Microscopical Society. Organized 1873. Meets first and third Thursdays of month, at residences of members. President—David Hunt, Jr., M.D. Vice-Presidents—Stephen P. Sharples, S.B., and Alfred F. Holt, M.D. Secretary and Treasurer—R. R. Andrews, D.D.S., Brattle Square, Cambridge, Mass. Council—S. W. Creech, Jr.; J. Frank Brown, and Edward Moulton. Custodian—C. H. Osgood, D.D.S. (?)

Bridgeport, Conn.

Scientific Society. Organized ——. President—H. A. Powers, D.D. Vice-President and Curator—Clarence Sterling. Recording Secretary—George C. Waldo. Corresponding Secretary—W. L. Sherwood.

Buffalo, N. Y.

Buffalo Microscopical Club. Organized 1876. President—Prof. D. S. Kellicott. Secretary—George E. Fell, C.E. Advisory Council—Henry Mills; Dr. L. M. Kenyon, and Dr. Lucien Howe.

Society of Natural Sciences—Microscopical Section. Organized 1872. Curator—Henry Mills, 162 Fargo avenue.

Camden, N. J.

Microscopical Society of Camden, N. J. Organized November 1878. Meets on the first Thursday of each month. President—Albert P. Brown, Ph.D. Secretary—Joseph De La Cour. Treasurer—Louis T. Derousse.

Chicago, Ill.

State Microscopical Society of Illinois. Organized 1869. Meets second and fourth Fridays of month, at the Academy of Sciences. President—Prof. H. A. Johnson. Vice-Presidents—H. H. Babcock; Lester Curtis. Secretary—E. B. Stuart. Coresponding Secretary—Prof. W. T. Belfield, M.D. Treasurer—W. H. Summers.

Cleveland, Ohio.

Kirtland Society of Natural History—Microscopical Branch. Secretary—John Bowers. (?)

Columbus, Ohio.

Tyndall Association—Microscopical Section. Organized 1874. Meets second Saturday evening of each month. President—Curtis C. Howard. Vice-President—Prof. Albert H. Tuttle. Recording Secretary—H. N. Dole. Curator—Rev. I. F. Stidham.

Denver, Col.

Denver Microscopical Society. (?)

Des Moines, Iowa.

Microscopical Section of the Iowa State Medical Society. President—J. J. M. Angear, M.D. Secretary—Prof. W. D. Middleton, M.D.

Detroit, Mich.

The Griffith Club of Microscopy. Organized August 7, 1879. Meets second Tuesday of each month. President—Prof. E. W. Wetmore. Vice-President—Prof. D. P. Mayhew. Secretary—W. H. Brearly. Treasurer—Robert N. Reynolds.

Dunkirk, N. Y.

Dunkirk Microscopical Society. Organized 1874. Meets second Friday evening of month. President—George E. Blackham, M.D. Secretary and Treasurer—M. E. C. Shelton.

Elmira, N. Y.

Microscopical Society now being organized.

Hanover, N. H.

Dartmouth Microscopical Club. Organized 1868. Meets twice annually. Pre-ident—Prof. E. Phelps. Vice-President—Prof. L. B. Hall. Cor. Secretary—Hiram A. Cutting, M.D., Lunenburgh, Essex Co., Vt.

Indianapolis, Ind.

INDIANA MICROSCOPICAL SOCIETY. Organized January, 1874. Meets first Friday of every month, at residences of members. President—William B. Fletcher, M.D. Secretary and Treasurer—Evan Hadley, M.D., 191 Virginia avenue.

Jamestown, N. Y.

JAMESTOWN MICROSCOPICAL SOCIETY. Organized June, 1873. Meets first Thursday evening of each month. President—A. Waterhouse, M.D. Recording Secretary and Treasurer—Samuel G. Love.

Kalamazoo, Mich.

STATE MICROSCOPICAL SOCIETY OF MICHIGAN. President—Rev. Dr. Foster. (?)

Lancaster, Pa.

THE MICROSCOPICAL SOCIETY OF LANCASTER, PA. Organized Feb. 9, 1880. Meets first Tuesday of each month for regular business. Meets third Tuesday of each month for Lectures, Reading of Papers, Discussions, etc. President—J. W. Crumbaugh, M.D. Secretary and Treasurer—J. D. Pyott.

Louisville, Ky.

LOUISVILLE MICROSCOPICAL SOCIETY. Organized 1874. Meets first and third Thursday evenings of month. President—Prof. J. Lawrence Smith. Vice-Presidents—Noble Butler, and C. F. Carpenter, M.D. Treasurer—C. J. F. Allen. Secretary—John Williamson. Cor. Secretary—E. S. Crosier, M.D. (?)

Memphis, Tenn.

MEMPHIS MICROSCOPICAL SOCIETY. Organized 1874. Meets first and third Thursday evenings of month, at 218 Main street. President—S. P. Cutler, M.D. Secretary and Treasurer—A. F. Dod, 257 Main street. (?)

New Brunswick, N. J.

NEW JERSEY MICROSCOPICAL SOCIETY. Organized 1871. Meets second Monday evening of month at Rutgers College.

President—Prof. F. C. Van Dyck. Vice-President—D. C. English, M.D. Corresponding Secretary—C. H. Voorhees, M.D. Recording Secretary and Treasurer—Rev. Samuel Lockwood, Ph.D., Freehold, Monmouth Co., N. J.

New York, (City.)

AMERICAN MICROSCOPICAL SOCIETY OF THE CITY OF NEW YORK. Organized 1865. Meets second and fourth Wednesday evenings of month, at 12 East Twenty-second Street. President—John B. Rich, M.D. Vice-President—William H. Atkinson, M.D. Secretary—O. G. Mason. Treasurer—T. d'Oremieulx. Curator—John Frey.

BAILEY CLUB. A small club of working microscopists. Meetings informal, every second Tuesday, at residences of members.

NEW YORK ACADEMY OF SCIENCES. This is the oldest Scientific Society in the state, and although it has not a Microscopical Section formally attached to it, yet microscopical subjects are frequently discussed, and the Academy numbers amongst its members, the ablest microscopists of the city.

NEW YORK MICROSCOPICAL SOCIETY. Organized ———. Meets first and third Friday of each month. President—R. Hitchcock. Vice-President, John L. Wall. Recording Secretary—W. H. Mead. Corresponding Secretary—B. Braman. Treasurer—W. C. Hubbard. Librarian and Curator—F. M. Deems.

Philadelphia, Pa.

ACADEMY OF NATURAL SCIENCES—BIOLOGICAL AND MICROSCOPICAL SECTION. Organized 1868. Meets first Monday evening of the month, except July and August, in the hall of the Academy, corner Nineteenth and Race streets. Director—W. S. W. Ruschenberger, M.D. Vice-Director—James Tyson, M.D. Recorder—J. G. Richardson, M.D., 1,835 Chestnut street. Cor. Secretary—J. H. McQuillen, M.D. Treasurer—Isaac Morris, M.D. Conservator—J. Gibbons Hunt, M.D. (?)

FAIRMOUNT MICROSCOPICAL SOCIETY. Organized 1871. Meets third Thursday evening of month. President—S. H. Griffith, M.D. Secretary and Treasurer—William C.

Stevenson, Jr., 24 South Fourth street. Managers—Jno. Gordon Gray; E. O. Shakespeare, M.D., and B. F. Quimby. (?)

Portland, Me.

Portland Society of Natual History. President—William Wood, M.D. (?)

Rochester, N. Y.

Rochester Microscopical Society. Organized Jan. 13th, 1879. Meets second Monday of each month. President—Prof. S. A. Lattimore. Vice-President—C. C. Merriman. Secretary—J. Edw. Line. Treasurer—C. E. Rider.

Rochester Alga Club. Organized March, 1880. President—C. M. Booth, M.D.

Sacramento, Cal.

Agassiz Institute. Organized 1872. Meets second Tuesday evening of month. President— —— ——. Vice-President—Rev. I. E. Dwinell, D.D. Secretary—A. P. Andrews. Corresponding Secretary—Rev. J. H. C. Bronte. (?)

San Francisco, Cal.

San Francisco Microscopical Society. Organized 1872. Meets first and third Thursdays of month, at 531 California street. President—C. Mason Kinne. Vice-President—William Norris. Recording Secretary—Charles H. Denison. Corresponding Secretary—Charles W. Banks. Treasurer—G. L. Murdock.

Syracuse, N. Y.

The Central New York Microscopical Club. President—Geo. K. Collins. Vice-Presidents—Alfred Mercer, M.D.; Danl. G. Fort, of Oswega. Secretary—A. L. Woodward. Treasurer—Robert Aberdein, M.D.

Troy, N. Y.

Troy Scientific Association—Microscopical Section. Organized 1870. Meets first Monday evening of month, except July and August, at residences of members. President—R. H. Ward, M.D. Secretary—C. E. Hanaman.

Wellesley, Mass.

The Microscopical Society of Wellesley College. Organized May, 1877. Meets second Monday evening of each month, during the College year. President—Ida J. Brown. Vice-President—Mary I. Beattie. Recording Secretary—Ellen A. G. Page. Corresponding Secretary—Ada I. Ayer.

West Chester, Pa.

West Chester Microscopical Society. Organized Aug. 24th, 1877. Meets bi-weekly on Thursday evenings. President—Dr. Jesse C. Green. Vice-Presidents—Alfred Sharpless and Dr. J. B. Wood. Recording Secretary—B. Harry Warren. Corresponding Secretary—R. T. Cornwell. Treasurer—William W. Jefferis.

Philosophical Society. Devoted largely to Microscopy. Meets every second Thursday. President—Jos. J. Lewis. Secretary—William S. Windle.

EUROPEAN SOCIETIES.

London, England.

Royal Microscopical Society. Founded in 1839. Incorporated by Royal Charter, 1866. Meetings, monthly; commencing on the first Wednesday in October, and continuing until the first Wednesday in June, at Kings College, Strand, at 8 o'clock, P.M. Visitors are admitted by introduction of Fellows. Council: President—Lionel S. Beale, Esq., M.B., F.R.S. Vice-Presidents—Robert Braithwaite, Esq., M.D., M.R.C.S., F.L.S.; Charles T. Hudson, Esq., M.A., LL.D.; Henry J. Slack, Esq., F.G.S.; Henry C. Sorby, Esq., L.L.D., F.R.S. Treasurer—John Ware Stephenson, Esq., F.R.A.S. Secretaries—Charles Steward, Esq., M.R.C.S., F.L.S.; Frank Crisp, Esq., LL.B., B.A., F.L.S. Twelve other members of Council—John Badcock, Esq.; William A. Bevington, Esq.; Charles James Fox, Esq.; James Glaisher, Esq., F.R.S.; A. de Souza Guimaraens, Esq.; William J. Gray, Esq., M.D.; John E. Ingpen, Esq.; Emanuel W. Jones, Esq., F.R.A.S.;

William T. Loy, Esq.; John Matthews, Esq., M.D.; John Millar, Esq., L.R.C.P.E.; Thomas Palmer, Esq., B.Sc.

QUEKETT MICROSCOPICAL CLUB. Organized 1865. Meets second and fourth Fridays of each month. President—T. Spencer Cobbold, M.D., F.R.S., F.L.S., etc. Vice-Presidents—T. H. Huxley, LL.D., F.R.S., etc.; John Matthews, M.D., F.R.M.S.; A. D. Michael, F.L.S., F.R.M.S.; Charles Stewart, M.R.C.S., F.L.S., F.R.M.S. Hon. Treasurer—F. W. Gay, F.R.M.S., 113 High Holborn, W.C. Hon. Secretaries—H. F. Hailes, 7 Haringay Road, Hornsey, N.; J. E. Ingpen, F.R.M.S., 7 The Hill, Putney, S. W. Hon. Secretary for Foreign Correspondence.—M. C. Cooke, M.A., LL.D., A.L.S. Committee—W. H. Gilburt, F.R.M.S.; F. A. Parsons; B. W. Priest; T. Spencer, F.C.S., F.R.M.S.; Frederick Oxley, F.R.M.S.; Ferdinand Coles, F.L.S.; Arthur Cottam, F.R.A.S.; Edward Dadswell; J. W. Groves; J. W. Reed, F.R.G.S.; J. C. Sigsworth, F.R.M.S.; T. C. White, M.R.C.S., etc. Hon. Reporter—Richard T. Lewis, F.R.M.S. Hon. Librarian—Alpheus Smith. Hon. Curator—Chas. Emery. Excursion Committee—F. W. Gay, F.R.M.S.; Frederick Oxley, F.R.M.S.; W. W. Reeves, F.R.M.S; T. Rogers, F.L.S., F.R.M.S.; James Spencer, F.R.M.S.

Liverpool, England.

MICROSCOPICAL SOCIETY OF LIVERPOOL. President—Rev. W. H. Dallinger, F.R.M.S. Vice-Presidents—G. F. Chantrell; Rev. W. Banister, B.A. Hon. Treasurer—W. J. Baker. Hon. Librarian—John H. Day. Hon. Secretary—I. C. Thompson.

New Castle, England.

NEWCASTLE MICROSCOPICAL SOCIETY. President—Prof. G. S. Brady. Secretary—M. H. Robson.

Berlin, Germany.

GESELLSCHAFT FUR MICROSKOPIE.

Brussels, Belgium.

LA SOCIETE BELGE DE MICROSCOPIE.

WORKSHOP of the Microscopical Society of Southern California

by: George G. Vitt, Jr.
Date: Saturday, 6 May 2000
Location: Ernie Meadows' residence

1. Jim Solliday spoke of Postal Microscopy Society (PMS) microslide boxes being kept for far too long by individuals in the US circuit. He asked all PMS members to take an inventory of boxes on hand and send the results to him so that he can then forward this information to the PMS in the UK.

2. Kenneth Miller of Sherman Oaks, CA introduced himself as a prospective new member of the MSSC and was given an enthusiastic round of applause. (He is now a most welcome member!)

3. Jim Solliday spoke of the forthcoming October visit of Mike Dingley who founded and runs the Postal Microscopical Club of Australia. For Mike's visit we are planning to have a special workshop meeting starting at 8:30am on Saturday, 28 October, at the residence of Ken Gregory, during which Mike will give a slide show on portable microscopes and their use in photomicrography.

4. George Vitt gave a brief description of Mike Dingley's diverse microscopical activities. George then expressed the thanks of the entire MSSC membership for Ernie Meadows' hospitality shown during the innumerable workshops we had conducted at his residence, regretting the fact that we are losing him as a member. Ernie stated that individual members could still use the facilities of his extensive machine shop, but only on Fridays - to which there was a round of applause. George then showed examples of recently made digital photos.

5. Jim Solliday showed the first model of a Richard Beck to be introduced in the US c.1870 - the Beck "National", s/n 8000. It features a 2-objective turret, rotating glass stage, R/P coarse focus, short lever fine focus adjustment.There was a discussion as to the best method of repairing the few broken teeth on the rack. Jim then showed a cased Spencer objective that had been "cut away" in its lower part by the manufacturer to show its construction. Such cutaway models are quite rare.

6. Allen Bishop showed several Zeiss "L" stands in excellent condition: a small E.German "L" stand, 1953; a wartime (1943) monocular mic. with 4 objectives; and an "LR" and "LW" stand. All of these models were pioneers in modular design. The "LU" model (brand new with all conceivable accessories!) can also be converted into an inverted mic. with trinocular head. He then showed the Japanese Tiyoda stand, which is exactly the same as the Zeiss "L" stand, all parts being interchangeable!. It has 5 objectives, 4 sets of eyepieces, dark field condenser. Allen and Jim Solliday gave a short history of the several Tiyoda/Zeiss agreements relating to the rights Tiyoda was given by Zeiss to manufacture microscopes according to Zeiss designs.

7. Dave Hirsch told of receiving email from Florence Blitch as to the progress Norm is making in his recovery, and thanking MSSC for the flowers Dave had sent and the good wishes of all the members.

8. Gaylord Moss mentioned that Mike Dingley had written an article on Tiyoda mics. He added that the best results from inkjet printers are attained through the use of papers designed by the manufacturer of the printer.

9. Chris Brunt stated that the programmable wide range miniature photometer that he had designed uses a 0.9 sq.mm sensor and a shutter speed range of 1/2000 to 2000 seconds. There was a discussion on the many merits of such an instrument.

10. Alan de Haas showed a large Zeiss "LU" stand, in pristine condition, made in 1936. Then he described the multitude of Zeiss mic. accessories that he had on display - some of them of extreme rarity. It was something to behold. These were: Zeiss "Micropolychromar" - a boxes very rare set of Rheinberg filters used on the "F" stand, or similar, with external & internal NA adjustment and fiber isolation filters (angled Rheinberg); a boxed condenser with 2 interchangeable tops for UV work (all quartz optics!); inverted mic. attachment for the "L" stand with special adjustable prism which allows oblique illumination of the specimen from the top; pancratic condenser with full set of filters; box with centerable objective mounts and the finest projection eyepieces ever made, which match all the Apo objectives that Zeiss ever made; "Microtars" - a complete boxed set of Zeiss incident light (BF & DF) objectives for John de Haas' "U-1" (Ultraphot 1 mic.; a stage attachment for the Zeiss "L" stand - a glass stage plate with black background - Zeiss Epi condensers using reflection optics - a rare set; prism style incident illuminator; Zeiss UPL (Plankton) inverted mic. which, with attachments, can also be used as a metallurgical mic.; Zeiss metallurgical phase illuminator; a boxed Zeiss Winkel post-war mic. (The inverted mic. not belongs to Larry Albright). Alan then spoke of phase contrast use in metallography.

11. Chris Brunt announced that the government has removed the restriction of selective resolution from

the GPS, allowing better resolution for commercial units.

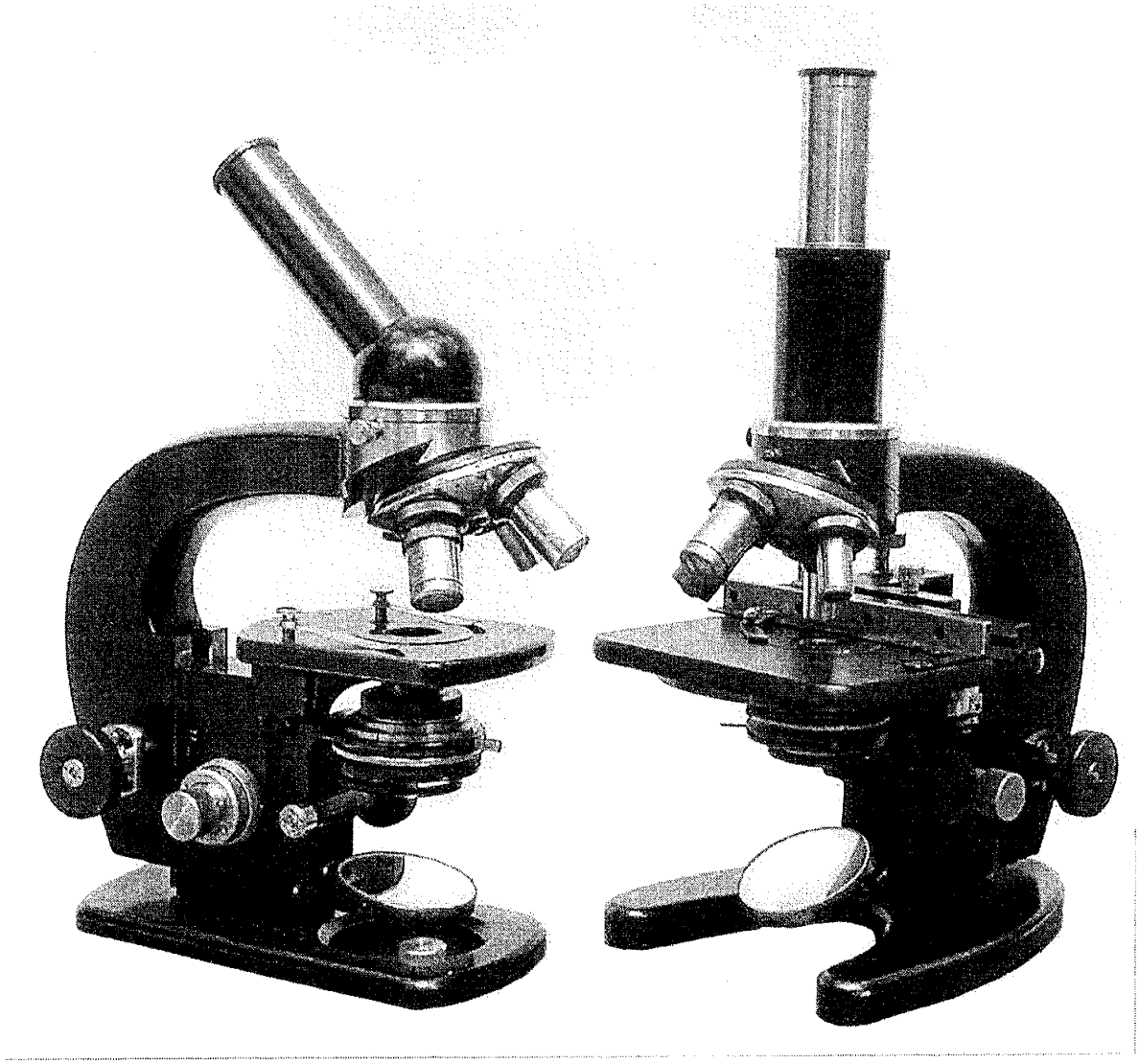
12. John Fedel brought a Zeiss KF-2 binocular biological mic. for sale. It has infinity corrected optics, and P10x/18 eyepieces. He then described the work he is doing with John de Haas in the analysis of inkjet papers by microtome paraffin sectioning of this paper. There was a discussion on transverse vs: cross sectioning advantages and the handling of paraffin. George Vitt suggested the possible use of silicone or polyurethane RTV elastomers instead of paraffin for embedding samples to be sectioned. There was a discussion on the sharpening of microtome knives with John de Haas suggesting the use of 3-M polishing paper with the A/O automatic knife sharpener.

13. Izzy Lieberman told of his most pleasant visit to member Bert Loro in Canada, where he saw interesting microscopical equipment that Bert had designed and built, such as the Cambridge style rocking microtome; the Polansky style interferometer for microscopy; dark/bright field illuminator for stereo microscopy; and Bert's collection of fine mics. and his magnificent garden!

14. John de Haas described how he made a simple but effective dark field illuminator for stereo mic. use: taking a small table lamp parabolic reflector some 6-8" in diameter, he cut away a portion at the apex, leaving a curved ring reflector with a 2-3" diameter aperture at the top. A central opaque stop allowed a ring of light, from a lamp below, to be reflected from the inner surface of the ring onto the specimen placed on the upper surface of said stop. Pretty neat!

15. Larry Albright showed a small, specially designed and constructed gadget that demonstrated magnetic levitation through the use of rare earth magnets and paramagnetic material strategically placed.

The workshop ended at about 12:30pm.



Zeiss L Stands at the workshop

Some Thoughts on Trick Illumination

by W.G. Hartley, Seaford

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Some time ago while turning over forgotten apparatus extemporized for various purposes, I realised that the ideas which had inspired it might be useful to others. I must say that these gadgets are not high-tec or optically elegant, and were made when proper apparatus was hard to obtain.

When I was working in the west of Scotland during the war, I entertained myself by examining the larval crustacea found on mooring wires. I was very isolated, reagents were difficult to obtain, and the most obvious course was to explore optical effects. It soon became apparent that the refractive effects of mounting media were worth study. In some cases the various systems - muscles and nerves, could be separately made visible in different mountants, and of course polarised light was extremely effective. I had had long experience of awkward optical specimens with salmon scales studied in primitive conditions, and subsequently was able to extend my ideas in the Royal Naval Physiological Laboratory at the time when phase contrast was just coming upon the scene. I was extremely fortunate in this. The great thing about phase contrast, according to the literature, was that it rendered visible things which differed only in refractive index from their surroundings. My experience had been that if a thing differed from its surroundings in refractive index, it was impossible to conceal it; I was, in the British tradition, thinking only in terms of an expert with time on his hands, and not of a busy technician who had on no account to overlook a subtle feature. This was the attitude which had deprived British microscopists of phase contrast in 1934 when Prof. Zernike lectured on it to the Quekett Club and Julius Rheinberg, of all people, decried interferometric expedients. According to legend, Zernike left two of his objectives with Watsons, and took his ideas to Zeiss, where they were ungrateful but took out patents as a precaution.

New apparatus was scarce in 1946 but old components were available and cheap at half a dozen London dealers. There was therefore a constant challenge to invent and construct apparatus and see what it would do. I began with a variable phase contrast microscope, using polarised light with mica annuli as beam splitters. Mica proved difficult to handle, and I found selenite from old slides easier to shape.

In the course of time I tried a number of other expedients - phase annuli made of cellophane, and others photographed onto a film of bichromate gelatin on a 12mm cover slip in the back focal plane of the objective - a splendid Watson 12mm Holoscopic, with a truly aplanatic aperture of 0.65 and an accessible back focal plane - and, much later, soot annuli as described by Wilska.

The microscope mainly used had an Abbe illuminator, and I collected all the large corrected condensers I could lay hands on to improve the situation. In fact, this was counter-productive. All the others had first focal planes inside the glass, so that an annulus could not be properly located to project an image in the back focal plane of the objective, and anyway, only low-power objectives have external back focal planes themselves. There is no virtue in using an achromatic condenser in monochromatic light, which is theoretically required if one is to use the quarter of a wavelength . in fact, variable phase contrast would have been more simply achieved by varying the illuminating colour, but polarised light offered numerous advantages. The Abbe illuminator projects a very fair and undistorted image of a graticule in the stop tray, and is perfectly suitable for projecting images of annuli. There is no reason to use anything more complicated; the only requirement is that the stop-holder should be at the proper level and accurately centred.

I like to mount my substage stops on steel rings which adhere to a magnetised understage fitting, enabling them to be centred . This is very convenient, as it allows several to be attached in a sandwich - a polar disc, a birefringent filter, and any other temporary device, all centrable and capable of individual rotation. The rings I trepanned from my tobacco tins with a Q Max chassis cutter, (used for making electrical instrument panels), which leaves an undistorted flat

margin, and flanges of magnetic rubber are cemented to one side and to the understage fitting.

(Parenthetically, we had a great advantage in the Wicked Past, in being able to see instantly if our illuminating trains were aligned, and where the focal points were, in the faint haze of our tobacco smoke. That any of us survived in the vapour of solvents, with nobody wounded cutting hand sections, is an inspiration in these days.)

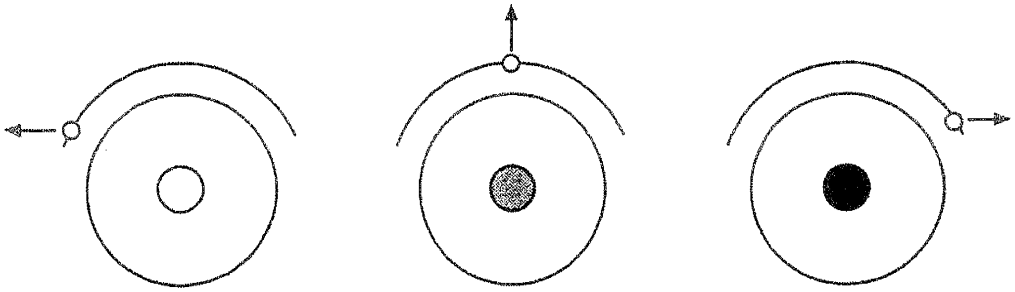

Fig. 1 A Polaroid patch stop can be made opaque or transparent by using a cap analyser.

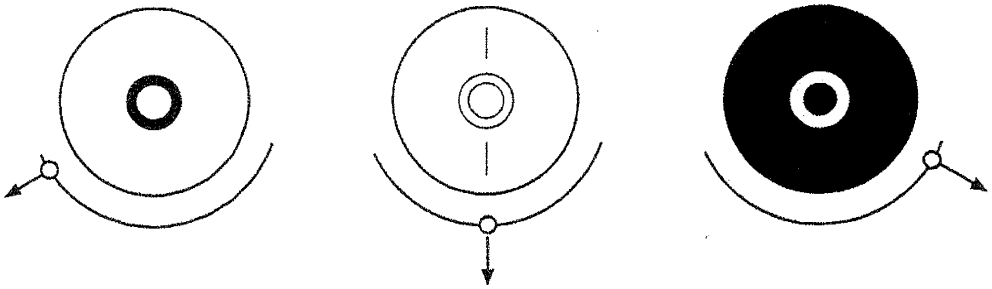

Fig. 2 A half-wave annulus is transparent in ordinary light. A substage polar disc and cap analyser change the contrast.

It is always surprising to find how small a patch stop provides dark-ground illumination with the normal Abbe illuminator; less than a centimetre covers a x10 objective aperture, and this means that a phase-contrast ring representing about 2/3 aperture is both small and awkward. Patch-stop darkground is usually consigned to NAs below 0.5, but can with care be used well beyond that. The requirement is that the stop must be in the first focal plane, and the illuminator used in immersion at its corresponding focal level, to bring the marginal zones into use. Fig. 1.

The small size of the stop is no problem. For phase contrast one does not need a condenser capable of filling the objective aperture - the 1.3 NA oil-immersion phase objective is illuminated at 0.8 NA at most. This enables the designer to use a condenser aperture of 1.0 instead of the customary 1.2, and locate the primary image plane at a comfortable distance from the lenses. The experimenting amateur removes the top lens from his ordinary condenser, which not only makes corrected condensers suitable, but also makes the stops much easier to construct, as they are larger.

I have always used dark-ground stops made with a polar central dise, and a cap analyzer, to obtain a 'Mitigated Darkground', which is often more instructive than the pure 'soot and whitewash' effect which, though it gives maximum contrast, can be ambiguous. The background intensity and colour can be varied by rotating the analyzer and using a disc of cellophane or other birefringent film in the light path.

The Rheinberg effect is associated with low powers, but can be obtained at high power with some oil-immersion dark-ground illuminators by using a very small axial hole in the central stop . Some paraboloids and the Cassegrain are suitable.

A glass substage stop with a half-wave mica annulus matching the phase ring of an objective provides full-cone illumination as it stands, or, in polarised light with a cap analyzer, a normal phase-contrast system. With an optically active filter - a disc of cellulose film or a selenite disc as well - it provides Rheinberg lighting. Fig. 2.

A point to consider when trying any illuminating plan is that unless the substage condenser is filled with light, the anticipated effect may fail to show.A large condenser is often lit by a lamp which only lights up its centre, so that the objective works at a fraction of its nominal aperture and the aperture diaphragm is ineffective. This is a common fault with Kohler illumination, but not with Nelsonian lighting, where the radiant and not the field iris is focused on the specimen.

It puzzled me as a beginner that Watsons listed a large achromatic condenser of 1.0 NA as suitable for medium power work, and RMS size dry and oil immersion condensers for high power.The reason was that the large condenser would illuminate a wide field, as it had a long focal length; high power work does not need a wide field so that a short-focus system was adequate.

The small condenser could be computed on the pattern of an objective, and be completely aplanatic, but if it were scaled up, the aplanatic errors would be scales up, while the numerical aperture remained the same, so that it was less accurate. Spherical aberration in a condenser does not in fact affect the resolving power, but the contrast, which is reduced because the spherical error puts light where it is not wanted.This is really only a serious consideration for diatomists, who rely entirely on diffraction effects.

A point to bear in mind is that the condenser has a designed lamp distance, as an objective has an designed tube-length.A large high-aperture condenser is very sensitive in this respect.Around 1900 large condensers were built to accept parallel light n infinity corrected - but the conventional lamp distance was later accepted as being about 30 cm.This would seriously affect the aplanatism of a large condenser, and the owner must determine what an unfamiliar condenser requires.

It is sensible to have a small high-power condenser, which can easily be filled with light and has not got to illuminate a wide field of view. Leitz offered a large condenser of 1.4 NA, a complex system which is a triumph of technology but in logic has no obvious advantage. I use one on my Royal, usually dry - but I am a *condenser freak*.

The Zeiss Achromat Trademark

by Lawrence Gubas
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The Zeiss Achromat Trademark

I recently discovered two interesting items about this famous Zeiss trademark. First, there is a photo copy of the issuing certificate of the approved trademark from the German trademark office in Berlin dated June 24, 1904 and a short article on the designer in a recent Zeiss internal publication, "Zeiss Im Bild" (Zeiss In Pictures).

In the northern part of Jena, there is a street named after Erich Kuithan (1875-1917) who was an important artist and painter who first gained prominent notice in Munich. He moved to Jena in 1903 where he opened an art school and taught drawing, painting and model making. He also acted as a consultant to the Carl Zeiss firm with regard to catalog layout and design. He organized the various pieces of artwork and illustrations within those early catalogs. It was he who designed this famous trademark for the firm. He later became a Professor in the new Art Department in the University and also the State Art Academy in Wannsee.

Editor's Notes

In 1957, I left the awful weather of Massachusetts in New England (described accurately in the Flanders and Swann song about Old England's weather) to make my home in California. In spite of the slight inconveniences of earthquakes, fires, droughts and floods, the sunny skies of California have been a constant source of joy.

In midwinter of1960, I was back in Boston for a Physics conference. Walking along near Harvard Square, crunching through the snow and ice, shivering in the biting wind, I passed over one of those barred grates in the pavement that admits light to a cellar room adjoining the street. Looking down, I could see into a long narrow laboratory filled with chemical apparatus and occupied by someone studiously working at a bench. Clearly, he was out of the wind and was warm, a state that I could only imagine. It occurred to me that work would be done in a much more dedicated manner in Boston than in California.The person in that dim room underneath my feet would have no lapse of concentration thinking about taking the afternoon off to go to the beach. On that day, just walking across the Charles River Bridge would be to court death by freezing.

This recounting comes to mind as a possible explanation for the relative paucity of the experimental reports of our members in California as compared to the work done by our friends in England. In this issue, the lovely article by W.G. Hartley, of the Manchester Microscopical Society, exemplifies these very well written contributions which have greatly enhanced and broadened the content of our Journal.

Thanks again to Mr. Roy Winsby and others of the Manchester Society and also the Postal Microscopical Society for providing so much valuable and interesting information to our readers.

For we members in California, maybe we can spend a little less time in the relentless sunshine and write up some more of our own experimental work.

Gaylord Moss