AUGUST, 1986

FUSION

JOURNAL OF

THE AMERICAN SCIENTIFIC GLASSBLOWERS SOCIETY
1507 Hagley Rd., Toledo, Ohio 43612

OPENING OF THE 31st A.S.G.S. SYMPOSIUM

JOE GREGAR

PRESIDENT'S MESSAGE

As I write this message the memory of the 31st symposium in Cincinnati is still fresh in my mind. Tom Kern and his committee members are to be congratulated for an excellent program of seminars, technical papers, and workshops, plus the opportunity to visit the exhibits to see new products. For those who had family with them, a fine social program was arranged. It was educational and refreshing; I cannot think of a more pleasant way to learn. For those who did not, or could not attend, plan now to come to next year's symposium in Boston. To the Ohio Valley Section, on behalf of the Society, I thank you.

There are many new items of business to come before your B.O.D. With the blend of our younger directors with new ideas, and the experience of our older directors, I am confident that we can look forward to some positive results.

I also have a message directed to our junior members; I intend to contact as many of you as possible, either in person at section meetings, or by letter. What you have to say is important to all of us. Remember, we now have the "MEMORIAL AWARD". It will, I hope, encourage you to take a more active part in our Society. You are our future, and one day some of you will be officers of the A.S.G.S.

My goal this year is to continue efforts to increase our membership, and improve communications. To section chairmen may I remind you that your national officers will help you and your section in any way they can.

I start my term in office with a positive attitude, and I intend to finish in the same way. Once again I encourage you to become more involved, you all have so much to offer. I close this message with a quote by Benjamin Franklin; it is very fitting for our profession. I quote, "HIDE NOT YOUR TALENTS, THEY FOR USE WERE MADE. WHAT'S A SUNDIAL IN THE SHADE".

David Chandler
President, A.S.G.S.

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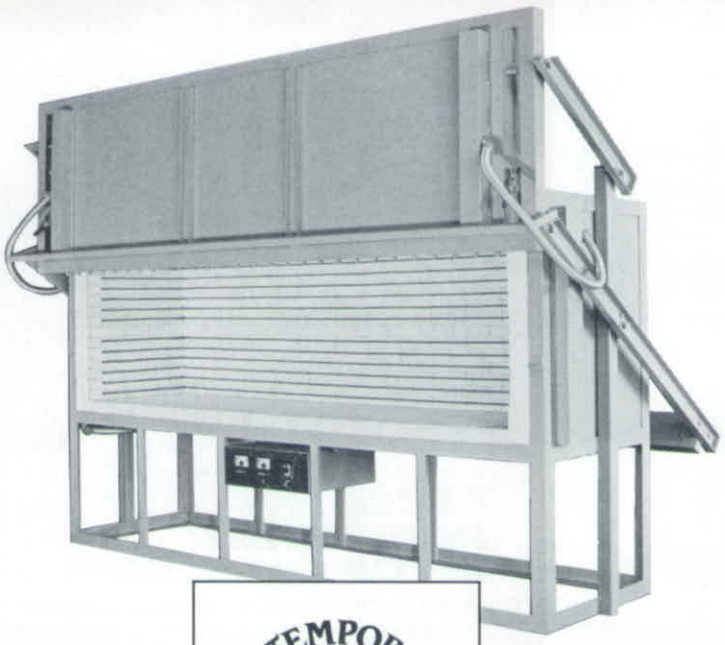

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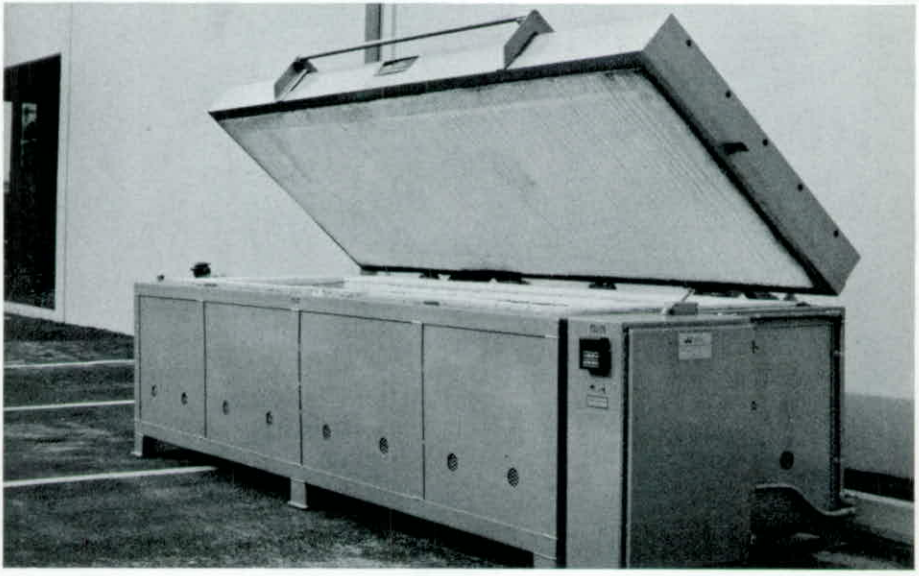

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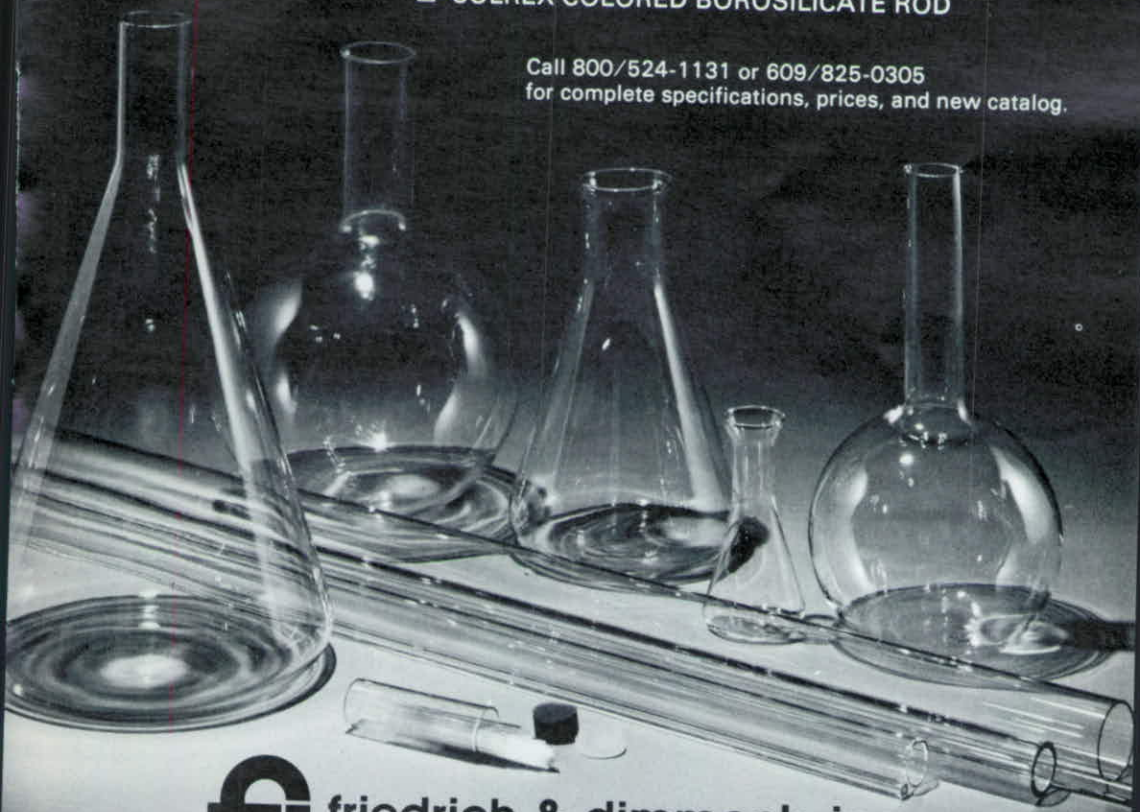

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PAST PRESIDENTS REMARKS

During our 31st symposium in Cincinnati in June, both the technical papers sessions and the videotape sessions were enhanced by presentations from the Japanese Glassblowing Society. I am pleased to see this international exchange as Mr. Harumichi Shibata's paper, "Status of the Japanese Glassblowing Society" and the introduction and description of four glassblowing shops, via videotapes presented by Mr. Shibata and supported by his three colleagues Mr. Yoshio Kinoshita, Mr. Kazumi Nogawa, and Mr. Tokunosuke Abe, were excellent communications.

I remember well my first meeting with Mr. Shibata and Mr. Kinoshita, along with nine of their colleagues, when attending our 20th symposium in Philadelphia in 1975. They presented a paper at that time and after the symposium we were privileged to entertain them at our University of Massachusetts Glassblowing Lab in Amherst. An unforgettable exchange took place during their visit then, as took place this year at our 31st symposium.

It is gratifying to be a member of an organization such as the A.S.G.S. that does so much for its members by participating in the interchange of knowledge. The international context of our meetings expresses the highest level of concerns in the quest for learning.

The International Symposium, to be held in Nurnberg, Germany in August this year, will be an excellent opportunity for the exchange of ideas and information. I'm only sorry that scheduling will not permit me to attend. The 1st International Symposium in England/Holland in 1976 and the 2nd International Symposium in Atlanta, GA, held in conjunction with our 26th Symposium in 1981, were immeasurably valuable to me. I sincerely hope all of us realize fully the value of the wide world accessibility we have open to us both here and abroad and that we can and should take full advantage of it if at all possible.

Gordon Good
Past President

32ND SYMPOSIUM & EXPOSITION

July 29 - August 2, 1987
Sheraton Boston Hotel

The New England Section, as hosts of next year's symposium, invite all of you to Boston in 1987. Since 1977, there has been a lot of new and interesting construction added to Boston. Within easy undercover walking distance of the Sheraton are the new Westin, Mariott, and Copley Plaza shopping complexes. Of course, all of the old historic attractions are still here for you to enjoy.

Please note that the dates for next year have been changed from what we normally do. The symposium will begin on Wednesday and end on Sunday. Start planning now, and if possible, extend your stay to enjoy other parts of New England.

Richard E. Ryan
Symposium Chairman
(617) 283-9000

COMPUTERS, ABSTRACTS and LIBRARIES

A Review of Database-type information service in the U.S.A.

In the 1980's, computer-assisted searches became a common method of finding and publishing information as compared to the more traditional card and file indexes.

The advantages of the electronic method have far outweighed the initial cost of the equipment since, once the system has been put into place, the blinding speed of the sorting and print process makes what was a tedious and sometimes frustrating task into one of what appears to be elegant simplicity.

For those who are fortunate enough to own or have access to a computer, the following information may be of value if they wish to use the services available at most of the larger local libraries using computer systems.

1) Using a modem, (telephone dialup transmission device), you can connect direct to the library system. To do this, you will have to first find out if your system is compatible. The currently recommended "baud-rate", or bits per second, transmission speed over the standard telephone line is 1200. The alternate choice is usually 300 or 2400 baud. In any case, both the sending and receiving computers must use the same rate. Most older systems still use 300 baud. Telephone receiver cradles and unbuffered printers are signs that 300 baud rates are in use. (A "buffer" is a storage area for text passed through the computer and transmitted to the printer at a rate far in excess of the printer's ability to print it immediately. The cheaper printers typically can store only one line at a time so that the computer is tied up trying to pass on the information instead of going on to the next task.) 2400 baud suffers from the technical defect in that it may sometimes be garbled due to older style telephone lines that pick up interference from adjacent wires, etc. Much higher transmission rates are available but are not mentioned since they are beyond the scope of this article.

   The instructions that come with the Modem describe the procedure in more detail.

2) For the glassblower, the most useful information is the printout of scientific articles containing diagrams, etc. of glass apparatus and other items of technical interest. Unfortunately this capacity is still in its first stages of development. However, some select sources exist and rapid improvement is underway. Among them are the following:

   a) Complete texts of over 80 interdisciplinary magazines are available on the DIALOG system in two databases produced by the Information Access Corporation.

   b) Similarly, the American Chemical Society has the complete texts of at least 18 journals available on the BRS system. At present the database contains post - 1980 only material. The file is known as "ACS Journals Online".

   c) In the June 1986 issue of COMPUTE! magazine, page 105, mention is made of a device for copying a printed page to the computer that is quite similar to the "bar-reader" commonly seen and used on supermarket checkout counters. Called a "Softstrip Reader", it consists of a reader that translates a special bar-code containing the text of the article desired.

      The printed page would be the normal page in any of the usual periodicals, the difference being that the bar-code would be printed alongside or as an appendix, etc., allowing a "full-text" transmission from computers that were linked internally, (e.g. Mainframe), or via modem connected devices.

3) Useful references dealing with this subject are:

   a) "Database", the magazine of Database Reference and Review – published by Online Communications.

b) Science and Technology Libraries. – published by The Howarth Press.

c) Annual Review of Information Science and Technology. – published by Knowledge Industry Publications for the American Society for Information Science.

A. Hawkins

New Chairman Elected For ASTM Laboratory Apparatus Committee

PHILADELPHIA, PA – Robert C. Burke, retired manager of labware manufacturing for American Dade, Miami, Florida, was elected chairman of ASTM Committee E-41 on Laboratory Apparatus. Burke will serve a two-year term, effective January 1986, as head of the 85-member standards-writing committee, one of 140 such committees within ASTM.

Burke, a resident of S. W. 84th Avenue, Miami, attended Dade Community College and the University of Miami. From 1936 - 1958 he worked for Pfieffer Glass Corp., where he eventually became vice president. In 1958 he joined American Dade as manager of labware manufacturing where he remained until his retirement in 1984.

Burke was a 1984 recipient of the ASTM Helen L. Casey Award and a 1983 recipient of the ASTM Award of Merit. In addition to his contributions to ASTM, he is also a member of the American Scientific Glass Blowers Society and chairman of International Standards Organization TC48.

AUDIO-VISUAL COMMITTEE

Requests for tapes should be sent to: Owen Kingsbury, Chemistry Department, East Carolina University, Greenville, NC 27858-4353. Users of the tapes are requested to notify him of any damaged areas in the tapes when they are being returned.

ALL TAPES ARE COLOR/SOUND WITH THE EXCEPTION OF "GLASS BELLOWS", WHICH IS SILENT.

Members can call Owen Kingsbury to reserve a tape, **but** they must send a short, signed note asking for the tape or tapes, so he will have some record of who is making the request. (917/757-6237)

Also, add a **donated** film to our individual tape list, **Glassworking At Dounreay** – is a twenty-two minute video program. The main part of the video is devoted to the manufacture of a large (95 mm dia.) centrifuge tube with three sidearms, the construction of which is followed stage by stage making it very easy to watch.

Ian Pearson sent us excerpts of the BSSG 1985 Symposium on tape. As soon as I have it changed to VHS from their PAC version, I will make it available to our membership.

Rohn and Haas has given our society library, a VHS 30 minute tape on "Handling Glassware Safety". This tape is now available to our membership.

Thank you very much.

Sincerely, Owen Kingsbury
Audio-Visual Chairman

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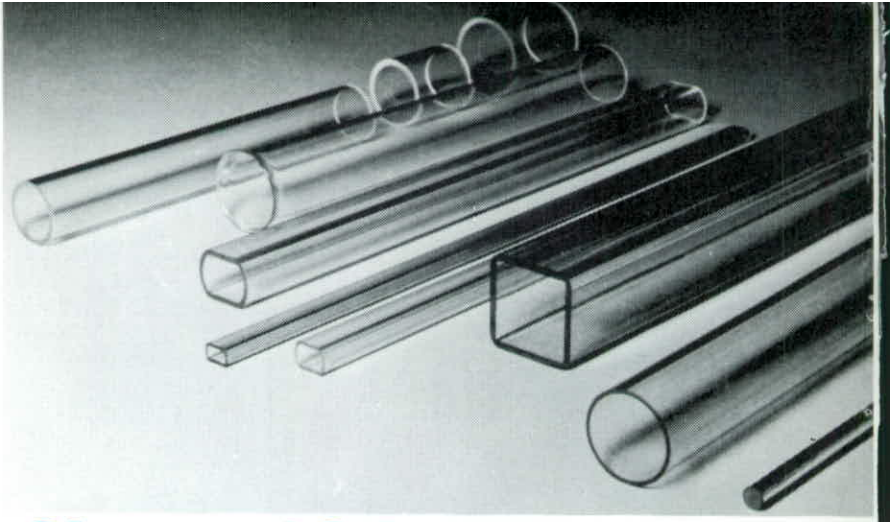

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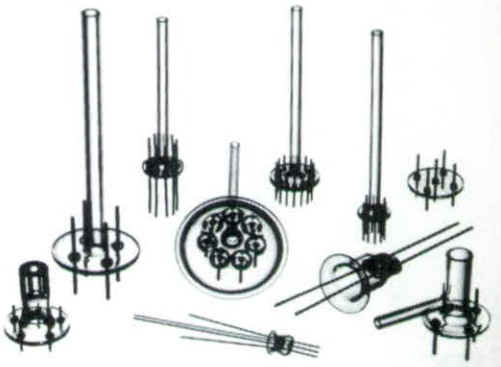

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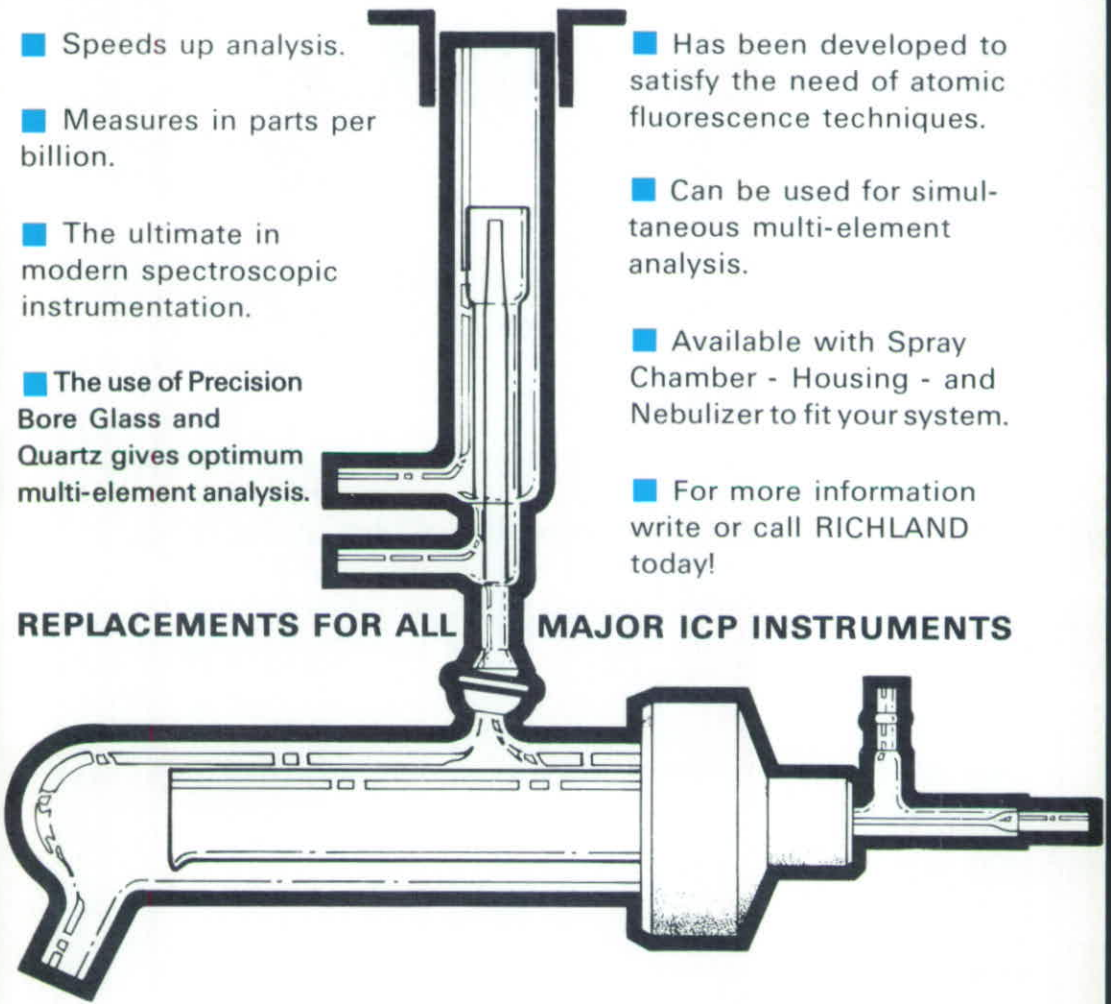

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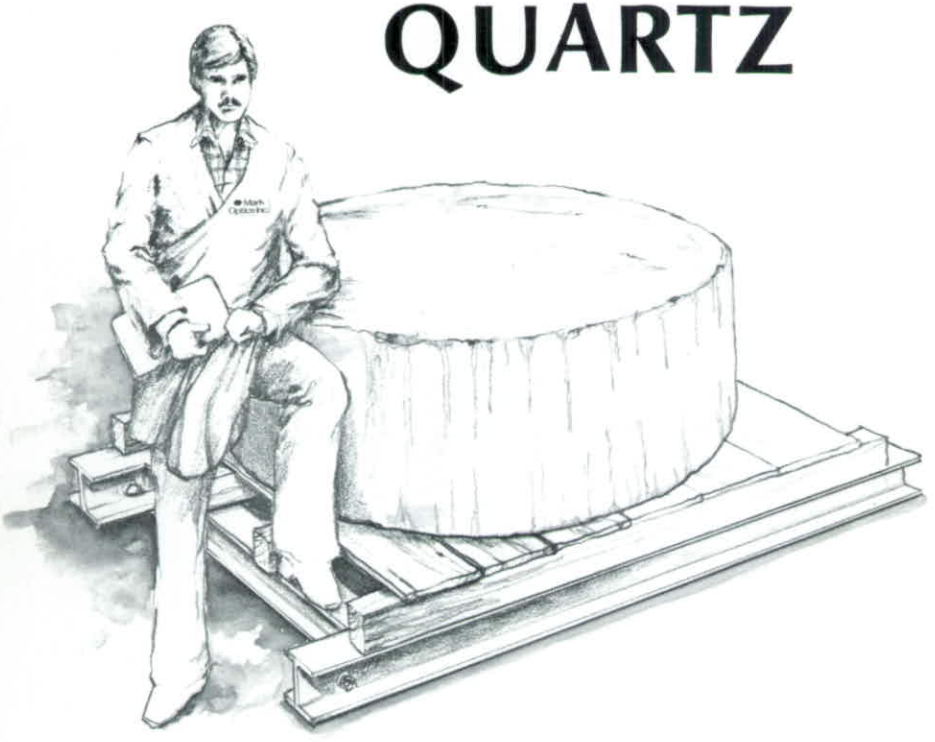

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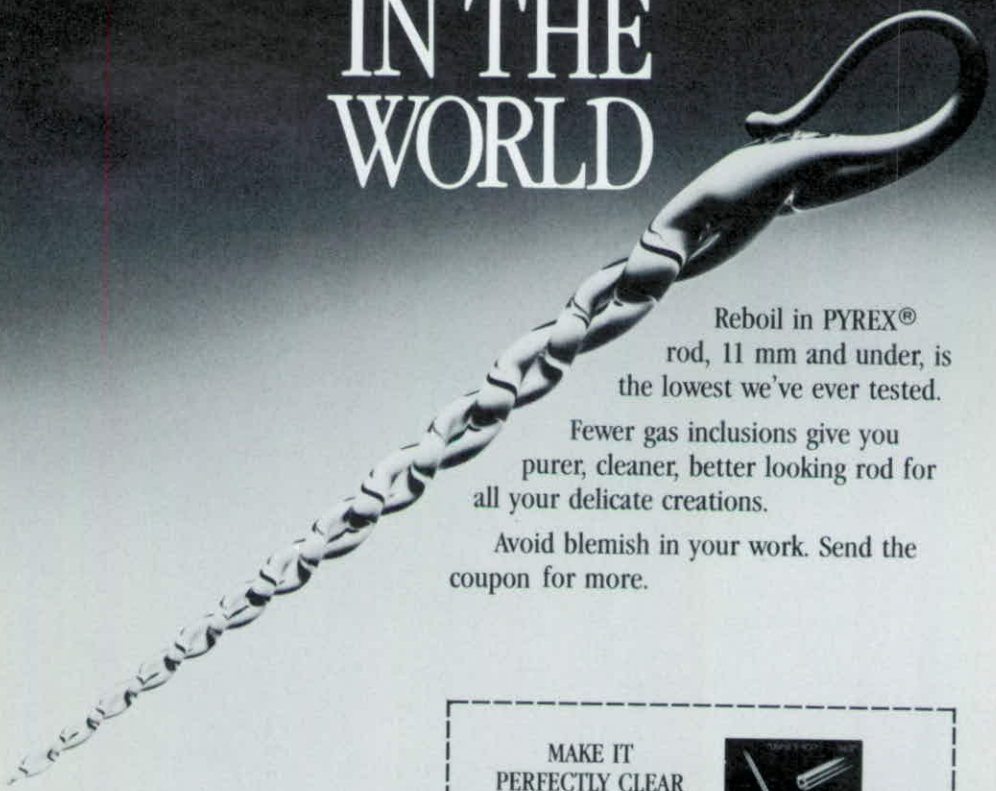

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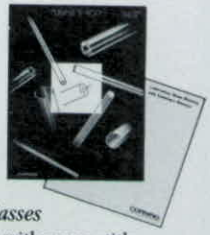

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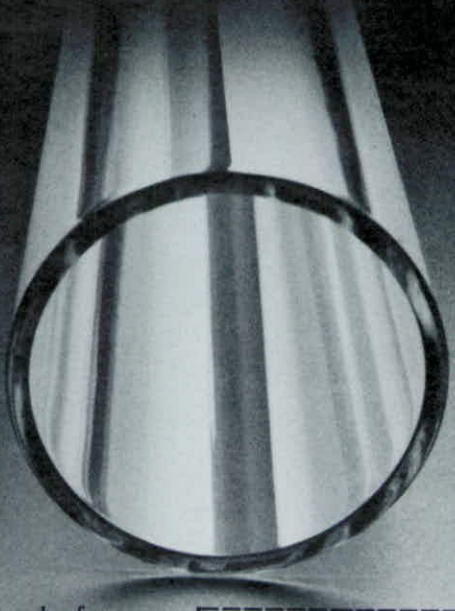

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Questions and Answers Report:

QUESTION:

Where can I purchase brass and graphite glassworking tools and oxy-gas burners?

ANSWER:

There are several fabricators or vendors of all types of tools for glassblowing. I will list several with their addresses below:

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400 Front Street
P.O. Box D
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Veriflo Corp.
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Richmond, CA 94804

Carlisle Machine Works
P.O. Box 746
Millville, NJ 08332

Lab. Supply & Equipment Co.
P.O. Box 668812
Charlotte, NC 28266

Bethlehem Apparatus Co.
Circa 1948
Hellertown, PA 18055

GM Associates Inc.
9803 Kitty Lane
Oakland, CA 94603

This is a follow-up on a previous question in our column regarding surface etching of glass. The information was forwarded by one of our members.

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Velvet Glass Frosting Base No. 77 is a powder to which water and hydrofluoric acid must be added to achieve a frosting mixture which is then used in the same way as Jack Frost.

No. 77 WET is the premixed liquid form of Velvet Glass Frosting Base No. 77. It is somewhat stronger than Jack Frost; it is therefore faster and can frost a wider variety of glassware than Jack Frost.

Screen-Etch is a paste which is used with a silk screen to achieve an etch of the pattern as in the silk screen.

Velvet Etching Cream is a paste which is used for brushing over small areas. Often Velvet Etching Cream is used with stencils or hand cut contact paper to frost unique designs, or personalizing marks on glass. The areas to be frosted should not be more than a few square inches or else you will be able to see brush marks. Velvet Etching Cream has found extensive use as a preparation to matte porcelain enamel finishes so that they can be painted or coated and not have the coating come off. Another use for Velvet Etching Cream is in removing the protective coating "SAR" from plastic. "SAR" is produced by E.I. du Pont deNemours & Company, Inc., and is a registered trade name.

The last compounds are Etching Ink No. 1 for use with a pen, and Etching Ink No. 2 for use with a rubber stamp. These are essentially marking inks which give a permanent means of identifying glass.

Dave Blessing
Question & Answer Chairman

WANTED

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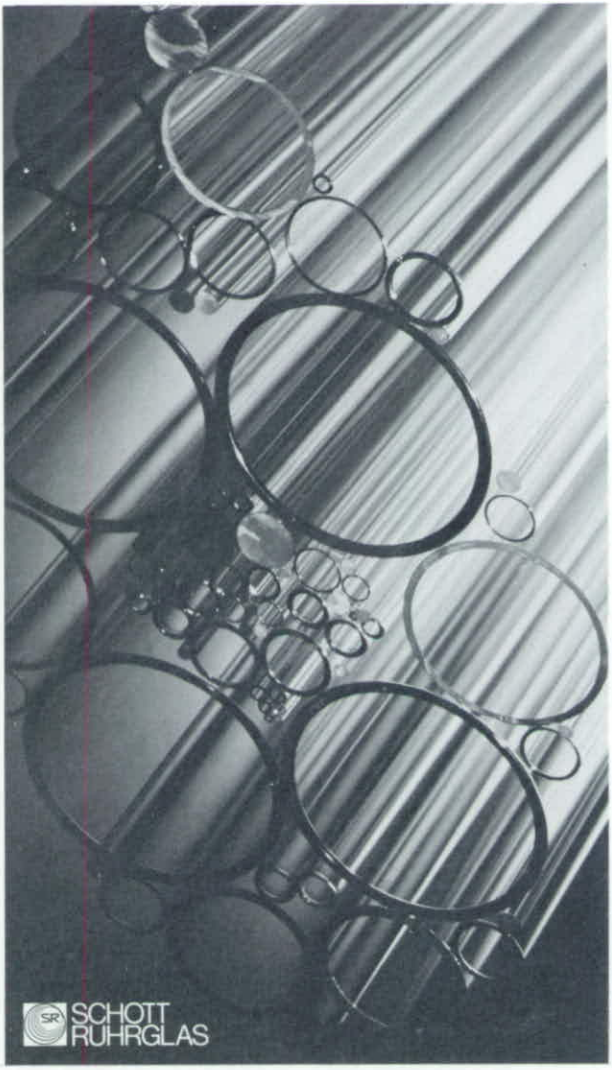

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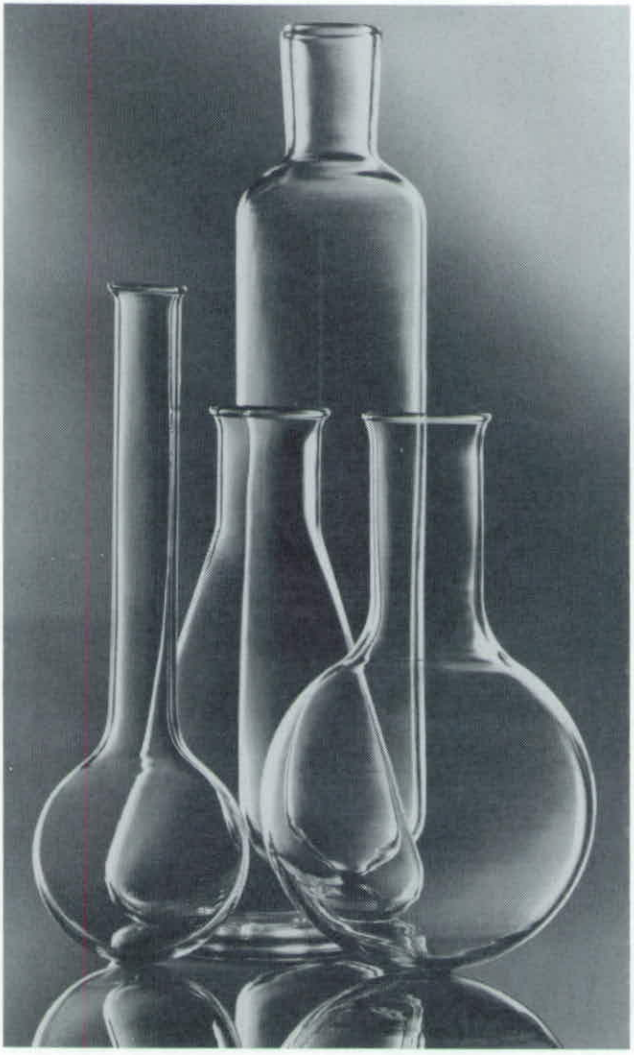

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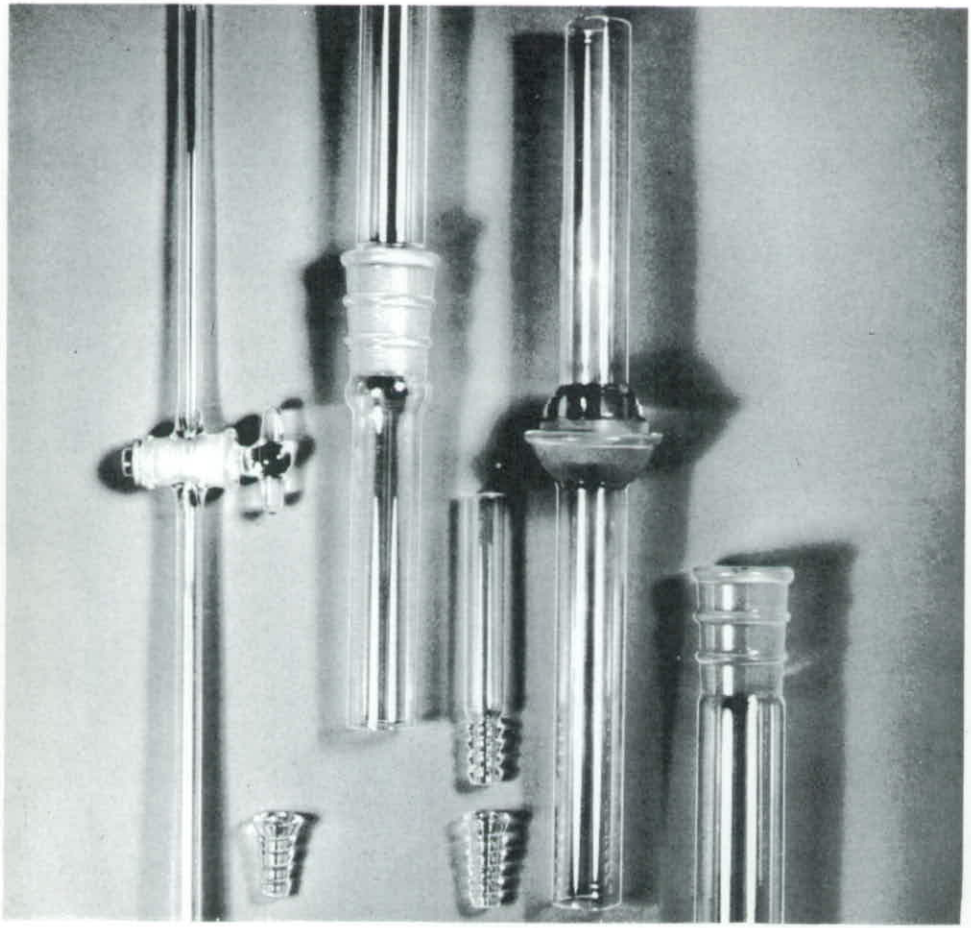

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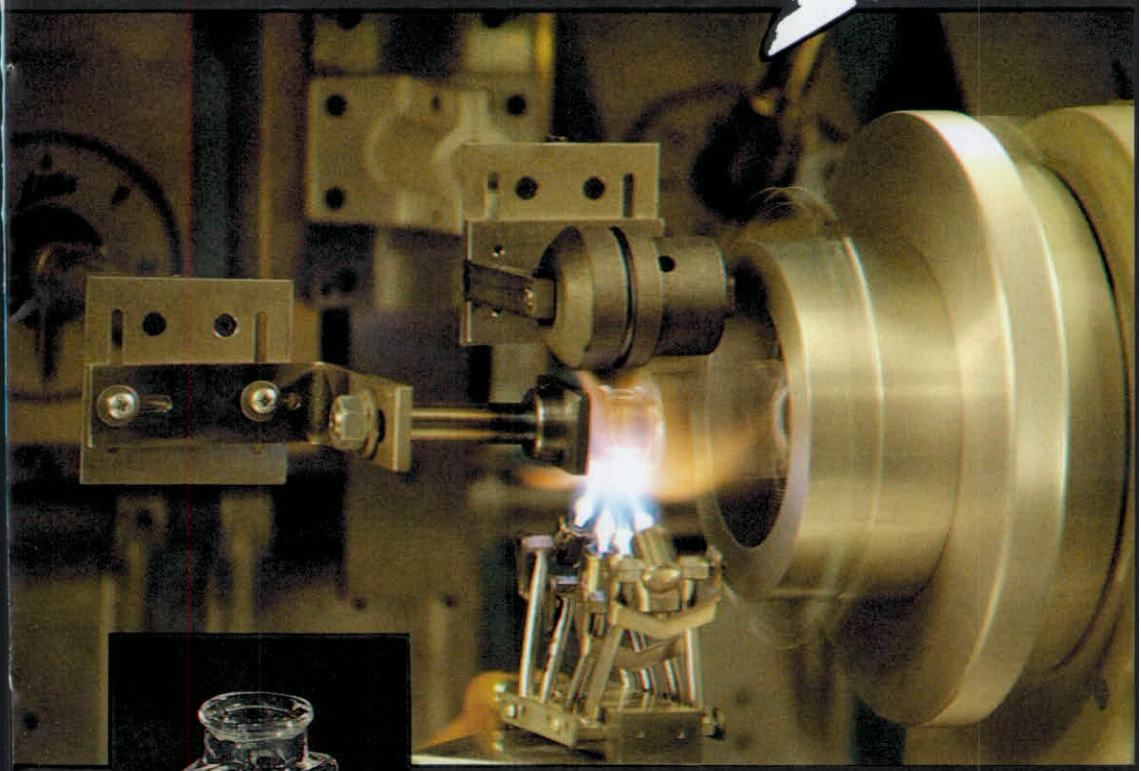

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SECTION NEWS

INTERNATIONAL SCENE

Japan

The March session of the Japanese Society of Scientific Glassblowing was held on the 20th at Kinro Fukushi Kaikan, one of the municipal facilities, in downtown Tokyo. About 60 members attended the session. It was opened by the president's address at 10:30 a.m. and two talks were given by guest speakers on the following subjects:

"Ultrahigh Purity Water"
Dr. Munehiro Okamura
Director, Water Engineering Division,
Mitsubishi Rayon Engineering Corp.

"Cleaning of Glass Surfaces"
Mr. Toru Usui
President, Sonic-Ferro Inc.

Following the talks, video tapes on the Litton lathe were shown by the courtesy of Marubeni Corp., one of the leading trading companies in Japan.

The final highlight was the video tapes of workshops for the A.S.G.S. symposium. A brief explanation of the A.S.G.S. and the video tapes was given by Coe Gotoh.

The talks and the video tapes were received very well by the attendants. The session was adjourned by 4:30 p.m.

The June session of the society was a plant tour. Members got together at a corner of Ueno National Park at 8:30 a.m. and got on a charter bus and visited Shibata Glass Co., Ltd. and Ishizuka Glass Co., Ltd. in the outskirts of Tokyo. The main product of the companies is various types of bottles.

The members did enjoy the tour very much. Sincere appreciation goes to the companies for their cooperation.

We got back to Tokyo at 6:30 p.m.

The October session will be held on the 30th at the Tokyo Industrial Engineering Center. Lectures and a small exhibit of burners and cutters are expected to be given.

Correspondent,
Coe Gotoh

Metro New York Section

The final 2 meetings of the 1985-86 season were held on April 25th and June 6th at the Ehring Tavern in the Bronx, New York.

Our first meeting, also our auction one, had 25 members in attendance. Auction time is a lot of fun and members bring glassblowing accessories to help the treasury.

The second meeting, with 30 members present, was hosted by Corning Glass. Special thanks to Tom Hanlon and Bob Gramarossa for a film from the Corning Museum on the only 2 glassblowers in mostly all Afghanistan. It presented glassblowing as it is done today and identically as it was performed 2700 years ago in the city of Herat.

Business centered around membership requirements of local chapters and this year's symposium. Treasurer Lindy Brown gave a full report and reassured everyone that no funds were used to finance his recent move to North Carolina. Thanks to Lindy for a job well done.

Ted Bolan swore in the new officers for the new fiscal year, which will begin September 1st for the Director-Chairman. The new officers are: Ottmar Safferling, Chairman and Director; Adolf Gunther, Chairman-elect and Director-elect; Fred Kummer, Treasurer; Donni Kornahrens, a new member, as Secretary. Congratulations to all.

Our next meeting will be held in October of this year.

Sincerely,
John Pucylowski
Secretary

Southeastern Section

The Southeastern Section celebrated its 30th anniversary at a meeting held in Atlanta, GA, April 4 - 5. Approximately 60 members and guests attended.

On Friday afternoon we toured the Lockheed Corporation, after a delicious lunch courtesy of Lockheed. We were allowed to see the C-130 Hercules plane on the assembly line. The size of this plane is hard to imagine. It takes up an entire football field. We toured the inside of some older models and were amazed by their inner space. We felt particularly fortunate to have this tour since we were told that it was the last that Lockheed would give to the public since security was becoming a problem.

Friday evening we were treated to a cocktail hour sponsored by Jim Carson of Chemglass, Bob McKellin of Wale Apparatus, and Danny and Bill Wilt of Wilt Industries. A wine and cheese party later in the evening was sponsored by John and Jim Babashak of Kontes Glass.

Saturday our annual section business meeting was held. New officers were elected. They are: President, Rick Smith; Vice-President, Kathy Harper; Secretary-Treasurer, Shere Stone; Section Director, Willie Shoup.

John and Bryan Bivins at registration desk. Bryan is a new Junior member.

Don Lillie of "Lillie Glassblowers" showing the thermoscope he made.

Aunt Fanny's Cabin, Atlanta, GA - where our new officers were installed.

Head table at 1986 Business Meeting. L - R: Shere Stone, Sec./Treas.; Rick Smith, Pres./SE section; Bill Caldwell, Outgoing Pres.; Willie Shoup, Sec. Chrm.

On Saturday afternoon we toured the Lillie Laboratory and watched Owen Kingsbury, as he demonstrated glass-to-metal seals and Ted Bolan, as he demonstrated a glass cutting tool that can be purchased from Wale Apparatus. Thom Lillie demonstrated his artistic ability by making a camel that stood about five inches. Another Lillie employee demonstrated the making of a rose. The camel, rose and tulip (cut out of stained glass by Ted Bolan) were raffled off at our banquet that night. The demonstration at the lab also included videos from the last symposium and a humorous take-off done at the Lillie lab by a local news commentator who attempted to copy Rick Smith's beautifully crafted Christmas ornament. Needless to say, the news commentator's ornament (blob) did not turn out very well. Don Lillie, our gracious host, fielded many questions about his laboratory and we are deeply indebted to him for his wonderful hospitality.

Later that afternoon we caravaned to the "Lillie Pad" for cocktails and a reception sponsored by Lisa Van Gessell of Corning Glass. We watched a movie about glassblowers in Afghanistan and how they made their glass in home-made ovens. The pieces were vases, glasses and bowls, and the most popular being in their blue glass. The "recipe" for the glass is centuries old. Just before we viewed this documentary, done by Corning, Don Lillie reminded us that a few days after it was made, the Russians invaded Afghanistan and that probably the glassblowing was no longer done, due to the war and a lack of tourists to buy the glassware.

Dinner was held at Aunt Fanny's cabin, where our new officers were officially installed.

The Atlanta glassblowers did a great job of hosting the 30th anniversary meeting of the Southeastern Section of American Scientific Glassblowers. We are all looking forward to being in Williamburg, VA for our 31st meeting, which will be hosted by Gwen and John Bivens.

Shere Stone
Secretary/Treasurer

San Francisco Bay Area Section

On May 9 and 10, 1986, Litton Engineering Laboratories in Grass Valley, CA hosted an open house at their facility. Friday May 9th, members and guests were given guided tours of the plant by various Litton staff members. Saturday included a variety of

presentations and demonstrations of glass working equipment manufactured by Litton Engineering.

The highlight of the open house was an actual demonstration of the computer operated automated glassworking lathe making a product completely from beginning to end. This newest addition to Litton's product line should prove to be of great assistance to the glassblower in the future.

We would like to extend our sincere thanks to Charles V. Litton, Jr. and his staff for their time and effort. This was a weekend to be remembered!

The June 4, 1986 meeting was hosted by Teddy Goldsworthy-hanner and RPC Industries in Hayward, CA. Al Kalbin (recently retired from IBM/San Jose) presented a video tape he took at our Litton Engineering meeting. Also, a tape supplied by Litton Engineering was shown for members unable to attend the May Open House. Charles V. Litton, Jr. and Victor Mathews of Litton Engineering Laboratories were present to address any further questions which may have come from the visit in May.

At June 4th meeting at RPC Industries in Hayward, CA. Sectional Director, Dan Baker of Varian Associates; Teddy Goldsworthy-hanner, Chairman (RPC Industries), Ernie D'Amico, Sec./Treas. (Weiss Scientific Glassblowing Co.) and Vice Chairman, John Glossinger of Contemporary Kilns, Inc.

Charles V. Litton, Jr. welcomes members and guests to Litton Engineering Laboratories in Grass Valley, CA.

There were between 60 and 70 members and guests at Litton on May 9th & 10th. A group attended from the Southern California Section.

Michael Sweeney, East Coast Rep. for Litton, demonstrates the Litton Automated Glassworking Lathe.

John Glossinger of Contemporary Kilns in Novato, CA presented a slide program and discussion regarding the history and production of Contemporary Kilns.

The business discussion included the election of officers as follows: Teddy Goldsworthy-hanner, Chairman; John Glossinger, Vice-Chairman; Ernie D'Amico, Secretary-Treasurer; Dan Baker continues as Sectional Director.

Plans for our 30th ANNIVERSARY CELEBRATION in June, 1987 were discussed. It is the plan of the committee handling the arrangements and the officers of this section to take full advantage of the time of year (vacations!!) and the San Francisco Bay Area to encourage not only our section members to join in the celebration, but also members from other sections. The focus of this celebration will be on the events and accomplishments that have taken place in the past thirty years.

Respectfully submitted,
Art Hanner for Ernie D'Amico,
Secretary/Treasurer

Midwest Section

The Midwest Section of the A.S.G.S. held a workshop/dinner meeting on Friday, June 6, 1986 at Argonne National Laboratory, sponsored by Corning, which was represented by Bruce Kelts. Along with the members present was guest Jerry Cloninger, president of the national A.S.G.S.

Prior to a catered buffet dinner, workshop demonstrations were conducted by Joseph Gregar and John Squeo. Following dinner, a video tape, "Glassworking at Dounreay". was shown.

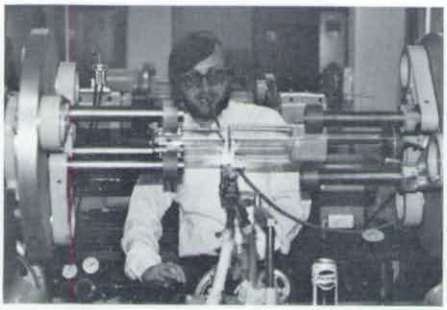
During the brief business meeting which followed, it was decided to present a Steuben piece as well as a plaque to the recipient of the Midwest Section Achievement Award who, for 1986, is Mr. Siegfried Greiner.

It was noted that this is the second year in a row that the Midwest Section will be honored at the national symposium. In 1985 James Morris received the Helmut E. Drechsel Award and this year, 1986, David Blessing will be receiving the J. Allen Alexander Award.

Joe Gregar's announcement of his resignation triggered the selection of Ian Duncanson as the treasurer of the Midwest Section. Chester Swopes' term as president of the Midwest Section will be drawing to a close. Nominations will be sought and an election will be

Midwest Section Director - Robert Ponton demonstrating Ring Seals.

Jerry Cloninger - Pres. Nat.



Midwest Section Chairman - Chester Swopes; Corning Rep. - Mr. Bruce Kelts.

John Squeo, Art Glass Demonstration.

held in November. On the same note, George Jahn, secretary, has retired from Amoco, but has agreed to hold the secretarial position until a replacement can be located.

Jerry encouraged attendance at the Cincinnati symposium and reminded everyone that the success of the symposium is the only reward received by the hosting section.

Bob Ponton was elected chairman of the 1989 symposium and the site chosen by the Midwest Section is Milwaukee, Wisconsin. Bob will present additional information at the next section meeting.

Bruce Kelts suggested members discuss the reinstatement of lamp shop sizes of tubing with other Corning representatives at the Cincinnati symposium, and indicated Corning was putting more representatives into the field and striving to put Pyrex back into the labs. He was pleased with the turn-out for the meeting and thanked everyone for coming.

The meeting adjourned at 8:23 p.m. The next Midwest meeting will be in September.

Respectfully submitted,
Joseph S. Gregar

Hudson-Mohawk Section

On May 8, 1986 the Hudson-Mohawk Section had its spring meeting at Rensselaer Polytech Institute. Before the meeting many section members and guests enjoyed dinner at Regan's Restaurant. This gave each of us a chance to get to know each other better.

After dinner we all went to Rensselaer Polytech Institute where our guest speaker, Dr. Robert Doremus, spoke to us about his current research on development of new types of glass and their applications. He also showed us his research labs where we could see how the development process was being done. Dr. Doremus' talk on developing new types of glass was very informative and impressive.

Joe Baum opened our business meeting after our guest speaker presentation. We had a lively meeting with discussion on many topics of interest.

Tim Landers
Secretary/Treasurer

Delaware Valley Section

The last 2 meetings of the Delaware Valley Section for the '85 - '86 year were held on March 26 and April 30.

Our March meeting began with a plant tour of H. S. Martin. Everyone enjoyed this so much and we would like to thank Nontas, Jim and Jack Kontes for their fine showing.

After our tour we went to Centerton Country Club where we had a delicious buffet dinner. This was one of our largest meetings this year; 102 members and guests were in attendance.

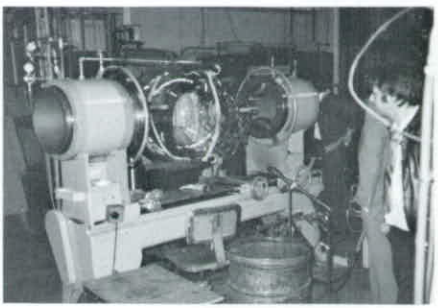
Our April meeting began with another wonderful buffet dinner at Centerton Country Club, hosted by The Glass Warehouse/Schott Glass. This new operation was introduced to us by Scott Wheaton, Vice-President/General Manager of Wheaton Scientific. It is part of Wheaton Industries which is now supplying Duran glass tubing and rod. Andy LaGrotte and Juergen Kramer from Schott Glass then presented a very informative slide presentation showing some of their numerous products.

During the meeting The Glass House/Schott Glass surprised us by picking tickets and presenting each winner with a set of their lovely long-stemmed wine glasses. Everyone had an enjoyable time and we would like to thank Scott Wheaton, Andy LaGrotte and Juergen Kramer for ending our year with such an interesting and informative meeting.

April Meeting – The Glass Warehouse/Schott Glass. L - R: Juergen Kramer, Schott Glass; Scott Wheaton, Wheaton Scientific; Andy LaGrotte, Schott Glass.

Juergen Kramer - Schott Glass and Windy McNellis - Mercury Glass Co. Winner of a set of Schott's wine glasses.

L - R: H.S. Martin, Nontas Kontes, John Treires, Jack Kontes, Jim Kontes.



The H. S. Martin plant tour - March meeting.

A subject discussed at both meetings was the Delaware Valley Section's sponsorship of the 1988 symposium and exhibition. Dave Edson, our chairman, gave us this update: the dates have been set for June 26, 1988 to July 1, 1988 at Resorts International Hotel Casino, Atlantic City, NJ.

There was an Exhibits meeting held on May 1 at Resorts International, presented by Joe Barker, our exhibits chairman. Many of the Delaware Valley Section's past exhibitors and future exhibitors met with Joe Barker, Dave Edson and also a spokes-person from Resorts International. This meeting gave the exhibitors a chance to meet Resorts and see the many advantages to having the 1988 symposium there.

The Delaware Valley Section would like to THANK the following companies for their support and active part in this past year's meetings. They are: Fisher and Porter, GTE Sylvania, Friedrich & Dimmock, Paul Stankard Paperweights, Kontes Glass, H. S. Martin and The Glass Warehouse/Schott Glass.

As you can see, the '85 - '86 year has been very active and strong. We are looking forward to many more productive years to come.

Respectfully submitted,
Cindy McNellis-Eberwine
Secretary/Treasurer

Southwestern Section

The annual meeting of the Southwestern Section was held on the afternoon of Saturday, May 17, 1986 in Houston, Texas.

Section Chairman Shorty Yeaman presided over the meeting and the results of the recent section election were announced. Officers elected for the 1986-1987 year are as follows: Shorty Yeaman, Section Chairman; Jack Korfhage, Vice-Chairman; Derald Cleckley, Sec./Treas.; Fred Kennedy, Sectional Director; Dave Lanman, Alternate Sectional Director.

All of the officers, except one, were introduced to the membership present. Congratulations and best wishes are extended to all.

Approximately 85 members and guests were in attendance for the meeting and the excellent technical program that followed.

The meeting was sponsored by Corning Glass Works, represented by Bob

GTE - Sylvania Reps. - Polly Bell, John Reed, Hank Richardson.

Newly elected S.W. Section officers, L-R: Frederick Kennedy - Sectional Director; Marvin "Shorty" Yeaman - Section Chairman; David Lanman - Alternate Sec. Director; Derald Cleckley - Sect. Secretary - Treas. Not present was newly elected Vice Chairman Jack Korfhage.

L - R: Hank Richardson - GTE Sylvania; Dan Wilt - Wilt Industries; John Reed - GTE Sylvania.

Webster, Rick Moore, Norman Martin and Chuck Foley; GTE Sylvania, represented by John Reed, Polly Bell and Hank Richardson; TexSaw Co., represented by Marty Bradsaw; and Wilt Industries, represented by Dan Wilt.

The film and slide presentations were excellent and enjoyed by all. Following the technical program, the sponsors were thanked for their participation in our section meeting. The meeting was adjourned by Section Chairman Yeaman.

The group proceeded to the buffet dinner and baseball game that followed.

Derald Cleckley
Secretary

Pittsburgh Tri-State Section

23 members of the Pittsburgh Tri-State Section were hosted for our Spring meeting on April 14 by Fisher Scientific Co. of Pittsburgh.

We were shown their priceless art collection by Fisher's curator, after which a fine meal was provided.

The highlight of the evening was a tour of Fisher's ph Electrode facility where the fabrication to final packaging was presented.

A special thanks to Fisher Scientific and Dennis Falconer for a most enjoyable evening.

Larry Harmon
Secretary/Treasurer

Section Officers & Host Dennis Falconer. L - R: Bob Greer, Chairman; Dennis Falconer, Host; Larry Harmon, Director; Aldo Gelpi, Vice-Chairman.

The group in Fisher Art Museum.

Dennis Falconer and his bench.

Southern California Section

Bruce makes it look easy.

The impressed crowd.

Norman Thomas our host.

In May, the Southern California Section found several of our members traveling north to the Bay Area Section meeting held at Litton in Grass Valley. Our thanks to the San Francisco Section and Litton for including us.

The regular May meeting for the Southern California Section was held at the Norman Thomas Art Glass Studio in Inglewood. A fine demonstration was given by Norman Thomas and his assistant, Bruce. A brief business meeting was held and officers for next year were elected. They are: Chairman, Gary Coyne; Vice-Chairman, Siegmond Grozinger; Sec./Treas., Richard Gerhart; Director, Jim Merritt; Alt. Director, Gabor Faludi.

We wish to thank Norman Thomas for hosting the meeting.

Great Lakes Section

The Great Lakes Section would like to announce its Fall meeting scheduled for November 1, 1986.

Under new board members – Peter Severn, Director; Manfred Langer, Chairman and Scott Bankroff, Secretary/Treasurer – we hope to make our first meeting a huge success. It will be held at the Michigan State University Scientific Glassblowing Laboratory located in the Chemistry Building on the Michigan State University campus.

Workshop and art demonstrations are already being planned. A tour of the Michigan State University Cyclotron, one of the largest cyclotrons in the country, is being planned also. A buffet dinner will follow.

We would like to extend an invitation to all our neighboring sections. Help us make the Great Lakes Section Fall meeting a great success!

For more information, please wirte or call Manfred Langer or Scott Bankroff, Michigan State University, Scientific Glassblowing Laboratory, Chemistry Building, East Lansing, Michigan 48823; (517) 355-1805.

Respectfully,
Scott Bankroff
Great Lakes Section - Sec./Treas.

Reference and Abstract Committee

If any members see any article(s) that might be of interest to the rest of the society please copy the article and/or write a citation and forward them to the Reference and Abstract Committee c/o Gary Coyne, c/o Chem. Dept., CSULA, 5151 St. University Dr., L.A. CA 90032. Please use the following form in preparing the citation:

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Synopsis of article:

This issue's articles were submitted by:

Jerry Cloninger *Gary Coyne*

Anthony Hawkins

APPARATUS

Phase Transition Porosimeter, J. Eckrich, B. Enustun and T. Demirel, American Laboratory, Vol. No. 18, Is. No. 3, March, 1986, pp. 80-92. Research paper introducing a method of pore-volume measurement which complements existing methods of mercury porosimetry. Good schematic and photograph of Pyrex glass dilatometer apparatus.

Thermodynamics of Solvent Mixtures .I. Density and Viscosity of Binary Mixtures of N-methylpyrrolidinone-tetraahydrofuran and Propylene, A. V. Ananarama, Canadian Journal of Chemistry, Vol. No. 64, Is. No. 1, January, 1986, pp46-50. Research paper containing schematic of a Pyrex glass viscometer of unique design.

Transannular Interactions in Dimer Cation Radicals of Napthalene Derivatives. Conformation Anomaly and Stabilization Energy. A. Terahara et. al. Journal of Physical Chemistry, Vol. No. 90, Is. No. 8, April 10, 1986, pp. 1564-1571. Research paper dealing with electrochemical E.S.R. (Electron-Spin-Resonance), studies. Contains good schematic of a Pyrex glass and fused quartz cell-apparatus for insertion into the cylindrical E.S.R. cavity.

GLASS – APPARATUS

Insitu Infrared Spectroelectrochemistry. C. Korzeniewsky and S. Pons, J. of Vacuum Sci. Technology, Vol. No. B3, Is. No. 5, Sept./Oct., 1985, pp. 1421-24. This paper deals with a method of obtaining the infrared spectra of species at the electrode/solution interface. Included is a schematic of the infrared cell of a unique design using a glass syringe barrel.

Photo-metal Organic Vapor Phase Epitaxy: A Low Temperature Method for the growth of Cd Hg Te, S. J. C. Irvine, J. of Vacuum Science and Tech., Vol. No. B3, Is. No. 5, Sept./Oct., 1985, pp. 1450-55. Research paper documenting a method of epitaxial growth of HeTe specimens. Details method of cleaning specimens and method of purifying hydrogen and helium by means of Pd/Ag membrane and molecular sieve respectively prior to passing said gases over infrared heated specimens irradiated by ultraviolet light.

Thickness dependence of Curie temperature of MnBi thin Films, S.K. Das, S. Chauduri, & A.K. Pal, Journ. Mat. Science Letters, Vol. No. 4, Is. No. 10, Oct., 1985, pp 1203-07. Research paper with schematics of torsion balance vacuum evaporator incorporating

fused-quartz tubing, etc. C.G.W. 7059 glass substrate is coated with MnBi film then lowered into the field of a rotating base electromagnet for measurement of its saturation – magnetization and perpendicular anisotropic energy.

GLASS – ART AND DESIGN

Jewelry, R. Bernstein, Neuses Glas, Jan., 1986, pp. 36-44. Review of lampworked beads and/or jewelry starting in early 1980's. Excellent photographs etc. in this bilingual German-English periodical.

A Scientific Discovery in Florence, J. Curtis, Museum Magazine, Vol. No. 2, Is. No. 1, March/April, 1981, pp. 24-27. Early lampworked thermometers in the Museo di Storia Della Scienza, in Florence, Italy.

Kyoyo Asao: Glass Bead Master, New York, J. Glass Studies, Vol. No. 27, 1985, pp. 168. Abstract reference, no details. Interesting to those who view lampworked beads, etc.

GLASS – COMPONENTS

Protection of Glass Pipes by Reinforced P.V.C., R. Bychko et al, Steklo I Keramika (Russ.; Glass and Ceramics – Eng. Trans.), Vol. No. 42, Is. No. 1/2, Jan./Feb., 1985, pp. 11-12. (For English translation, Sept., 1985, pp. 77-79) Report discussing modification of standard P.V.C. (Polyvinylchloride.) formulations to promote greater adherence of the modified plastic coating to glass-pipe surfaces as part of a program to improve impact resistance of said glass-pipe.

GLASS – FRACTURE

Closure and Repropagation of Healed Cracks in Silicate Glass, T.A. Michalske & E.R. Fuller, Jr., Journal of the Am. Ceramic Society, Vol. No. 68, Is. No. 11, Nov., 1985, pp. 586-590. This investigation examines the effect of ambient humidity on crack healing for float glass and vitreous silica. These plus previous results were used to explain the measured forces of crack closure and repropagation.

GLASS REPAIR

A Doweling Technique for Glass Restoration, P. Jackson, The Conservator, Nov., 1982, pp. 35-36. A method of repairing wine glass stems.

Note on the reversable gluing of broken glass objects, L. Vos-Davidse, Studies in Conservation, Vol. No. 14, Is. No. 4, Nov., 1969, pp. 183. (no citation given)

GLASS – RESEARCH

Preparation of glass by sintering, E. M. Rabinovich, J. Material Science, Vol. No. 20, Is. No. 12, 1985, pp. 4259-97. Review article dealing with latest methods of creating glass mixtures. Extensive sections dealing with sol-gel preparation, sintered part components and vapor – phase deposition respectively. Includes a good bibliography.

GLASS – SURFACE

Improvement of the Adhesive Properties of a Glass Surface, K.B. Kostin et al, Steklo I Keramika (Russ.; Glass and Ceramics - Eng. Trans.), Vol. No. 42, Is. No. 1/2, Jan./Feb., 1985, pp. 12-13. (For English translation, Sept., 1985, pp. 79-80). Electrochemical method of modifying a glass surface by passing a D.C. current through the contact surface of a tin melt and the surface of a glass as a preparation for an aluminum reflective-surface deposition.

GAUGES

Bourdon Gauges Absolute Monometer, H. Jemenez-Dominquez, F. Figuroa - Lara, and S. Galindo, Review of Scientific Instruments, Vol. No. 57, Is. No. 3, March, 1986, pp. 499. A very simple assembly transforms an ordinary differential Bourdon gauge into an absolute manometer.

LABORATORY – TECHNIQUES

An Economical Alternative to Slush Baths, W.R. Weltmer and D.A. Wickens, Journal of Physics E, Vol. No. 18, Is. No.

7, July, 1986, pp. 556-7. A simple liquid nitrogen pump is described with its application to sub-ambient temperature controlled experiments. Results gave ± 1° C in range of -90° C to + 30°C. Although this isn't made out of glass, it might be handy for us to be aware of its existence.

LASER

An Evaluation of the Therman Characteristics of Glasses from Experiments on Laser Heating, N.E. Kask, L.S. Kornienko and O.V. Federovich, The Soviet J. of Glass Physics and Chemistry (Eng. trans.), July, 1985, pp. 359-64. Paper dealing with the breakdown of optical glasses exposed to pulsed laser heating of millisecond duration. Contains brief explanation of what happens and why.

Carbon Dioxide Lasers Adapt to Demanding Markets, L. Holmes, Laser Focus, Vol. No. 22, Is. No. 3, March, 1986, pp. 72-84. Review article of the development state of the CO_2 lasers. Contains comprehensive "Table of Worldwide Manufacturers of Carbon Dioxide Lasers", and is interesting to those using laser devices for cutting/sealing quartz glass components, etc. The robotics applications shows promise of adaptation to glass lathe and other mechanical aides for producing glassware.

Small CO_2 Laser Emits 3.5kW, 'Post Deadline Report' section, Laser Focus, Vol. No. 22, Is. No. 3, March, 1986, pp. 12. A new type of ultracompact fast-axial-flow CO_2 laser for industrial applications has been built and tested at J.E.C. Lasers Inc., Saddlebrook, N.J. The approx. 150 lb. laser head is less than 1 meter long and can be mounted on a robotic arm. A 5kW variation is also under development.

PATENTS

Very High Hermeticity Glass to Metal Seal, (Applied for by) D. Wanstead for Honeywell Corp., Vacuum, Vol. No. 36, Is. No. 4, April, 1986, pp. 240. Metallized end of a glass tube is inserted into a metal sleeve and soldered into place under a negative pressure applied to the metal sleeve.

THIN FILM – MEASUREMENT

A Simple Apparatus for Film Thickness Measurements, A.A. Hussain and J.S.S. Whiting, Journal of Physics E, Vol. No. 18, Is. No. 7, July, 1985, pp. 574-6. "Simple" is relative here, but it very well might be, as I am not familiar with others. It uses multiple beam interferometric technique of Fizeau fringes for thickness measurements. Accuracy is ± 2 nm in the 30 - 100 nm range and raises to ± 7 nm for 350 nm films.

A Simple Apparatus for Film Thickness Measurements (A Comment On), C. Bartholomew, Journal of Physics E, Vol. No. 19, Is. No. 3, March, 1986, pp. 236. The author had done his PhD. thesis on the article mentioned (J. of Physics E. Vol. 18 (7), pp. 574-6) and adds a few items of importance.

VACUUM DEPOSITION

Various, Journ. of Vacuum Sci. and Tech. (A), Vol. No. 3, Is. No. 6, Nov./Dec., 1985, pp. various. This edition contains several papers on plasma spraying and sputtering of metallic coatings.

VACUUM – GAUGE

We Do Have Vacuum Gauge Calibration Standards, C.R. Tilford, Research and Development, Vol. No. 28, Is. No. 3, March, 1986, pp. 105-112. The author describes what the U.S. National Bureau of Standards is doing to standardize vacuum gauges and leaks. Includes a breakdown of the various vacuum gauges techniques, how they perform, and the calibration techniques relevant to them.

Why Don't We Have Vacuum Gauge Calibration Standards, W. DeZorzi, Research and Development, Vol. No. 27, Is. No. 4, April, 1985, pp. 133-136. A look at the industries approaches to calibration reveals a disturbing disarray that will require a concerted effort to correct.

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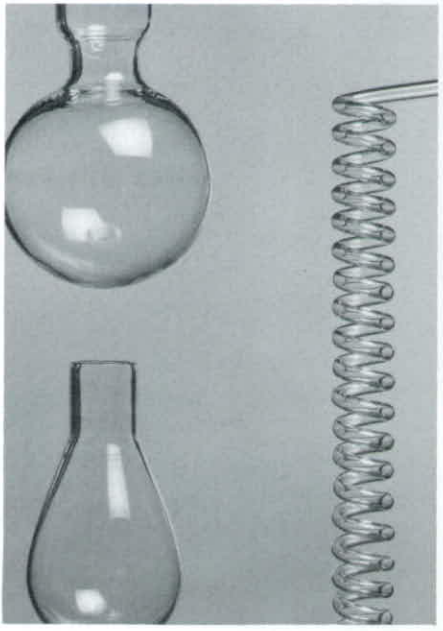

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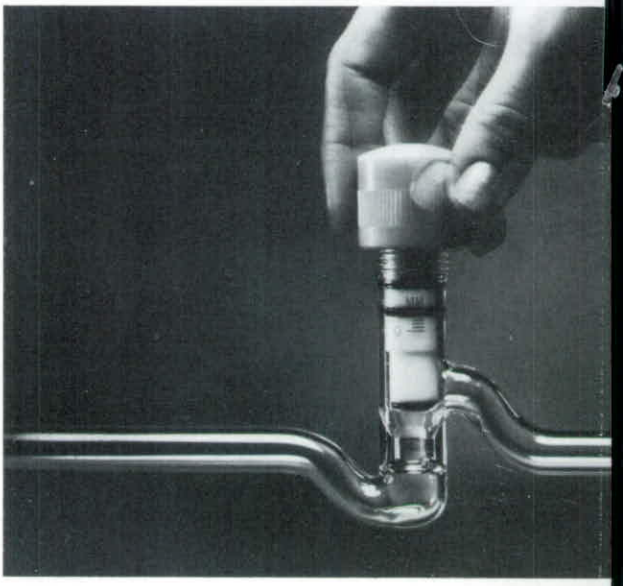

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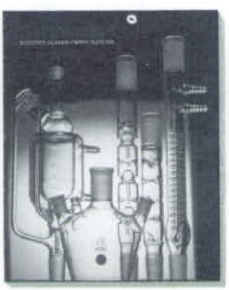

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31st SYMPOSIUM FINAL REPORT

It was with a strange mixture of feelings that I left the Marriott at the end of our symposium. Sadness and relief were among them, but relief was the definite winner.

I leave the final decisions about the meeting in the hands of those who are most capable of making a good judgment – those are the exhibitors and members who attended.

Yours very truly,
Thomas Kern, Chairman
American Scientific Glassblowers Society
31st Annual Symposium and Exhibition

31st SYMPOSIUM in PICTORIAL REVIEW

Board of Directors Meeting

Seminars

Art Show

Technical Papers

Workshop Sessions

Exhibitor's Reception

Dinner Cruise

Cocktail Party

Banquet


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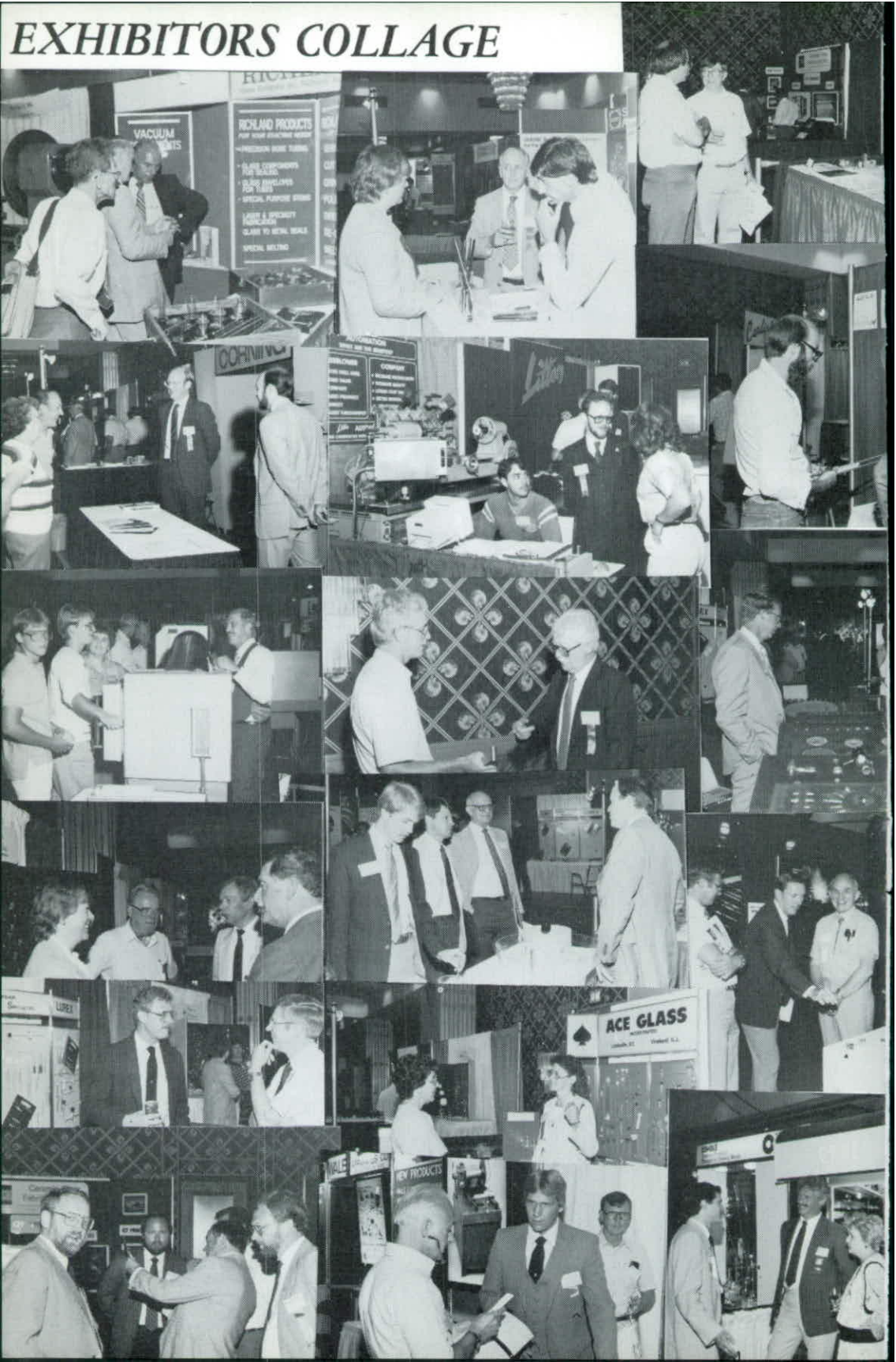
Spouse's Program

EXHIBITORS COLLAGE

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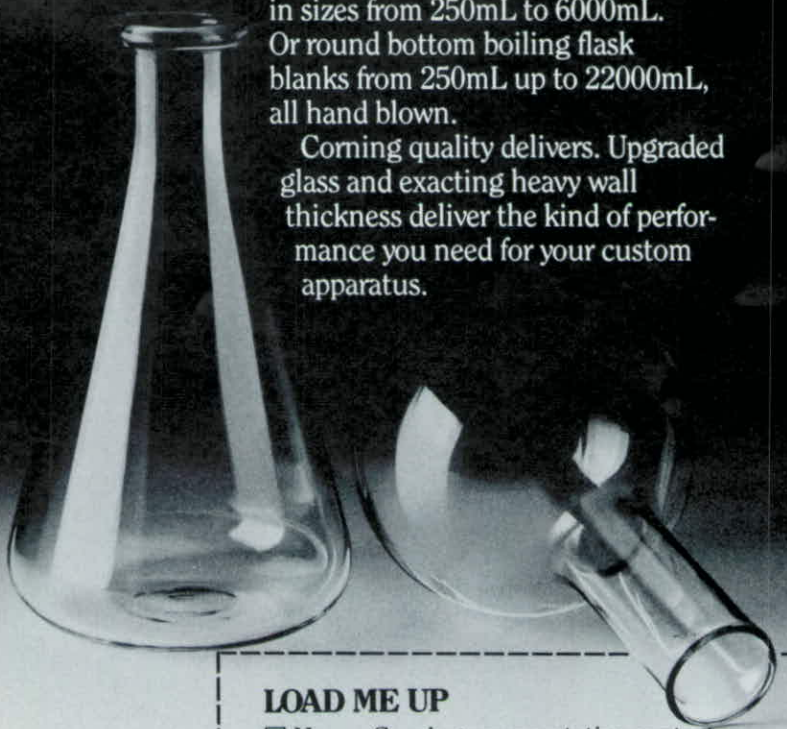

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SOME PHYSICAL PROPERTIES OF COMMERCIAL GLASSES

JULY 9, 1986

COMPANY	TRADE NAME/NO.	PRINC. USE	THERM COND.	SPEC HEAT	SOFT. PT.	STRAIN PT.	ANNEAL. PT.	FUS PT.	REFR. INDEX	DENS.	POIS. RATO	YOUNG'S MOD. ($\times 10^6$)	COMP STR.
CORNING	7740	GB	N/A	N/A	821	510	560	1252	1.474	2.23	.20	9.1	N/A
	7913	Q	N/A	N/A	1530	890	1020	N/A	1.458	2.18	.19	9.8	N/A
KIMBLE	KG-33	GB	2.7	.204	827	513	565	N/A	1.47	2.22	N/A	9.5	N/A
	KG-35	GB	2.5	.200	755	530	570	N/A	1.5	2.4	N/A	10.5	N/A
SCHOTT	8330	GB	N/A	N/A	815	N/A	560	1270	1.473	2.23	N/A	N/A	
AMERSIL	SYNTH	Q	3.3	.18	N/A	1025	1120	1600	N/A	N/A	.17	N/A	1.66
	NAT	Q	3.3	.18	N/A	1075	1180	1730	N/A	N/A	.17	N/A	1.66
G.E.		Q	3.3	.16	1683	1120	1215	N/A	1.4585	2.2	.17	10.5	1.6
THERM. AMERICAN	VIT-REOSIL	Q	N/A	.1657	1583	1108	1190	N/A	N/A	N/A	.17	10.3	2.9
QUARTZ SCI. INC. (transparent)		Q	3.3	.18	1670	1070	1140	1750	N/A	2.2	.14	11.7	1.6

1. Principle Use: Q - Quartz GB - General Borosilicate
2. Thermal Cond: Units - cal/cm/sec°C
3. Specific Heat: Units at 20°C - cal/gm
4. Soft., Strain, Anneal., and Fus. Points in °C
5. Density Units - gm/cm^3
6. Young's Mod. and Comp. Str.: Units - PSI

Poisson's Ratio: the ratio of the transverse contraction per unit dimension of a bar of uniform cross-section to its elongation per unit length when subjected to tensile strength.

Young's Modulus: is the modulus of elasticity; the stress required to produce a unit change in length.

Density: is the weight per unit volume and the values listed are reported in grams per cubic centimeter.

Compiled by Laurie E. Harnick
University of Western Ontario — Chemistry Department - Glassblowing Shop
London, Ontario
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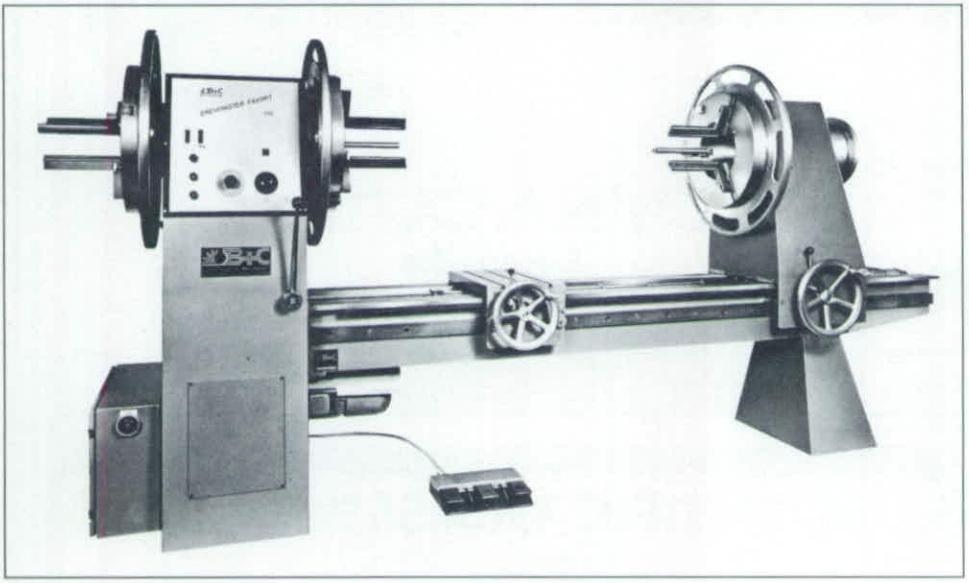

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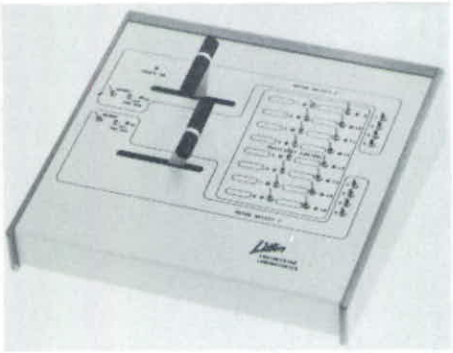
New Products and Literature

The listing of a product or literature does not necessarily include the endorsement of the Society or ***Fusion*** *staff. All such items are entered only as a service to the readers of the publication. If further information is desired concerning the item, sufficient address is given so that the company may be contacted directly. We would appreciate your mentioning in any such communication the fact that you are corresponding as the result of seeing the item in* ***Fusion****.*

LITTON HOSTS BAY AREA A.S.G.S.

On May 9 and 10 Litton Engineering Laboratories of Grass Valley, California hosted the monthly meeting of the San Francisco Bay Area Section of the A.S.G.S. Over 60 glassblowers from Northern California attended.

Activities began Friday night with tours of the facilities. Saturday presentations included demonstrations on Litton's Automated Lathe and discussions on the future of glassblowing. Litton also announced and demonstrated their new Manual Control System, a control designed to provide remote, manual control of a lathe or other industrial machinery.



Control box for Litton Manual Control System.

An enjoyable buffet lunch was included in Saturday's agenda, following which videos of individual applications on the Automated Lathe were presented. The entire program was very well received. Litton would like to thank those who attended for their interest and cooperation.

Demonstrations and videos on the Automated Lathe and other new products are currently available to all interested parties. For an appointment or more information call or write either the West Coast facility or the East Coast office. See advertisement for addresses and telephone numbers.

KIMBLE EXPANDS LINE OF DISPOSABLE GLASS CENTRIFUGE TUBES

Kimble has expanded its line of disposable centrifuge tubes; a selection of plain top tubes and a 50mL version of its existing screw thread tube are being offered.

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Complementing the present line of screw thread disposable centrifuge tubes is a new 50 mL size. Black phenolic caps are available with rubber of PTFE/rubber liners.

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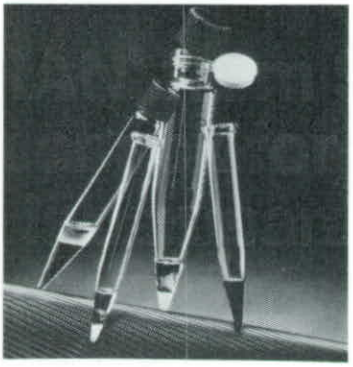
Packed in shrink-wrapped, low particulate trays, Kimble tubes are protected from contaminants.



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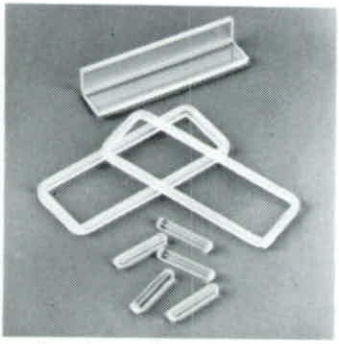

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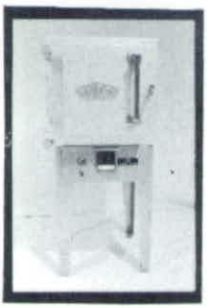

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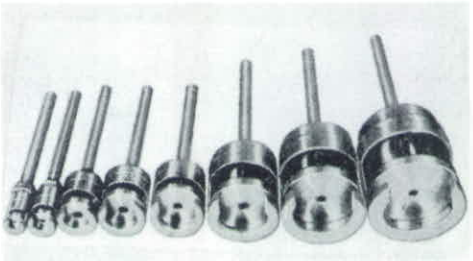

joint holders. These holders, manufactured by this German company are the finest quality available in the world. They are made with aluminum jaws and easy to hold, wooden handles. The handles are hollow with the jaws constructed so a blow hose can be used. An easy and efficient way for the glassblower to attach ball and sockets to flasks, etc.

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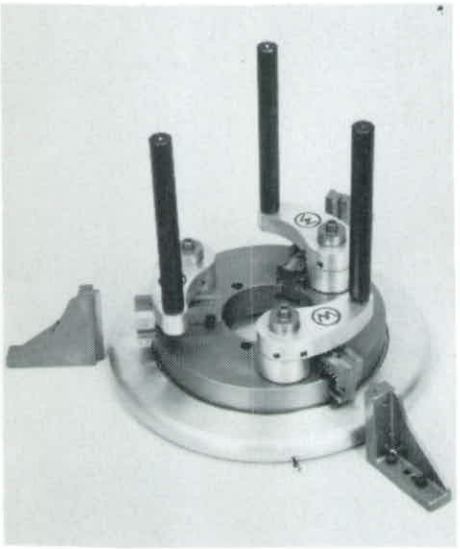
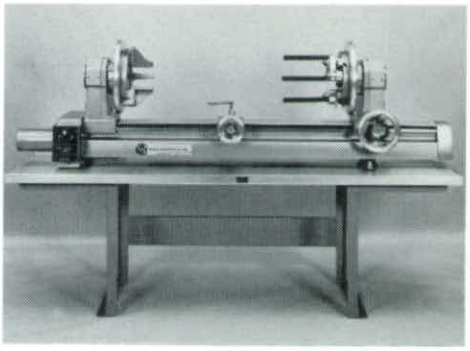
The WALE Universal Scroll Chuck was designed to combine all the features of a scroll chuck and a universal or sun & planet (S & P) chuck into one handwheel operated chuck while improving on the performance of currently available S & P chucks. This chuck, developed with accuracy, repeatability and reliability in mind, offers the user convenience, increased productivity, lower costs and long service life.



Detail photo of Wale Universal Scroll Chuck. Universal arms mounted. Shown with interchangeable outer scroll chuck jaws.

Prior to the development of this revolutionary chuck design it was necessary to utilize two distinctly different styles of chucks to efficiently accommodate a wide range of glass tubing or apparatus. Scroll chucks, featuring a high degree of accuracy, have only a limited capacity for a given spindle bore diameter. In order to accommodate larger sizes of workpieces for the same spindle bore diameter the use of the S& P chuck is necessary. However, in order to utilize the features of either chuck the operator must remove one chuck from the spindle nose and replace it with another which will suit his needs. The process of correctly mounting the new chuck to assure accuracy and alignment, the actual physical process of changing and handling the chucks, the space used for and problems of safely storing the chucks and the costs of purchasing and maintaining two relatively expensive pieces of equipment only compounds the problem.



Wale Universal Scroll Chucks mounted on Wale Slim-Spindle Glassworking lathe. Both configurations shown.

By combining the features of the scroll chuck – accuracy and handwheel operation, with those of the S & P chuck – the range and flexibility for truing slightly bent tubing or apparatus, in one chuck, the operator is able to overcome the problems inherent in the two chuck per spindle system.

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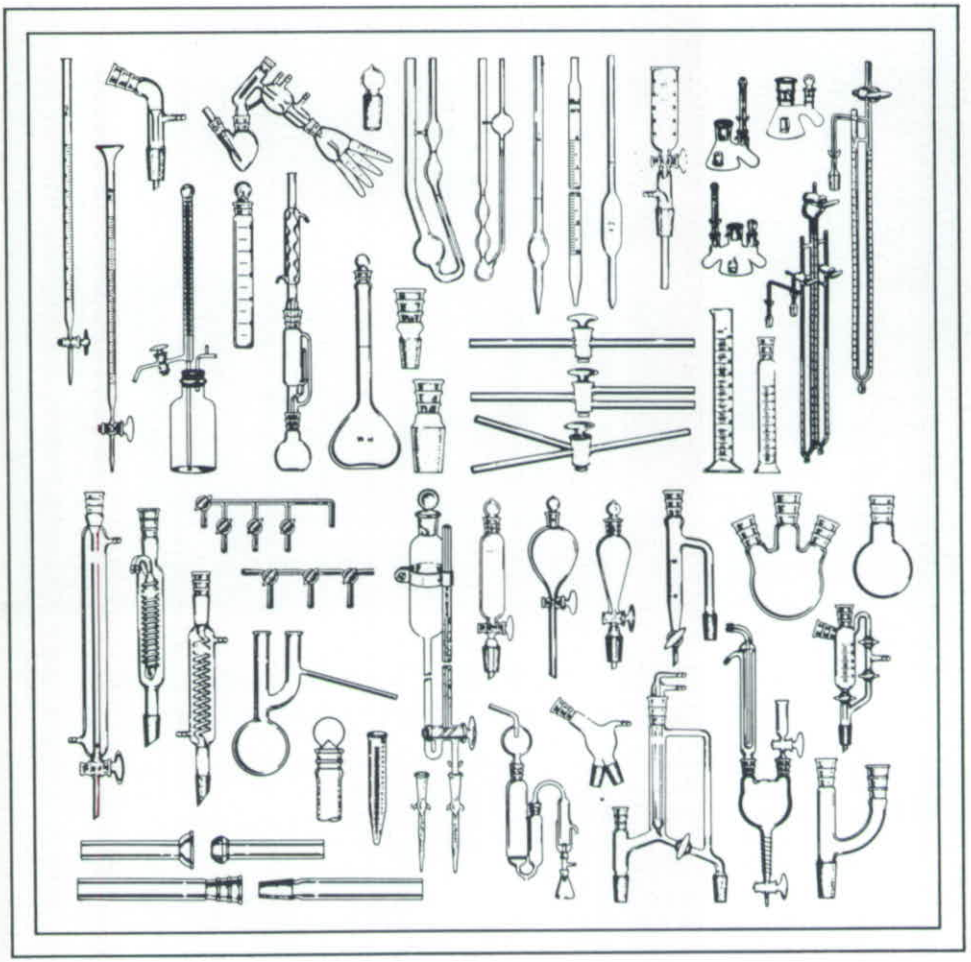

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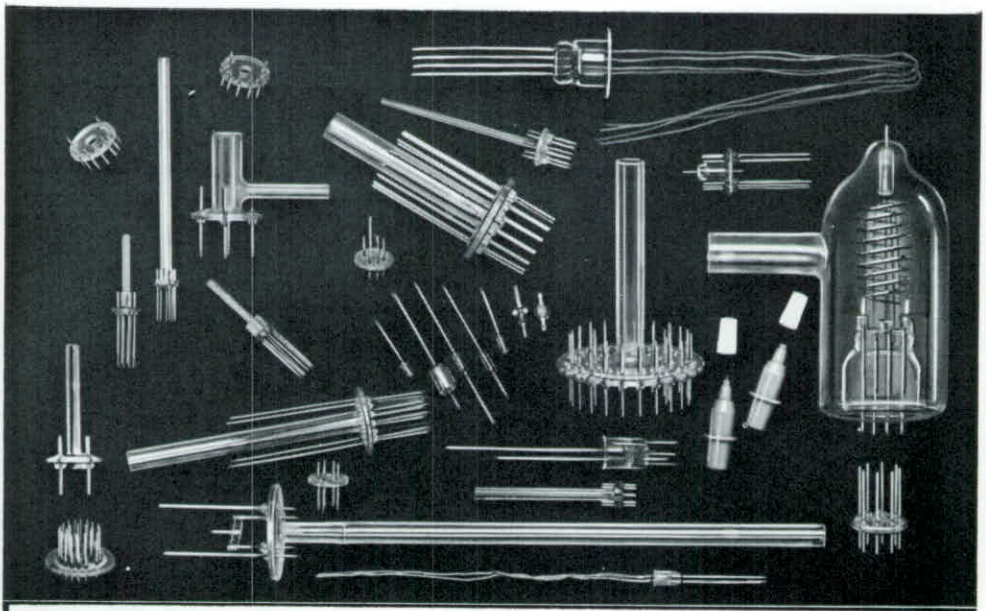

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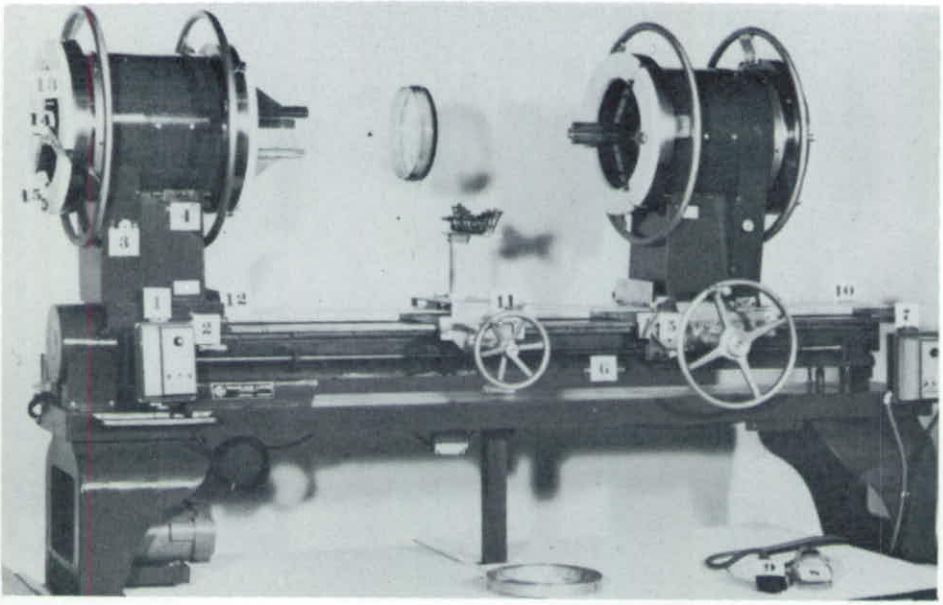

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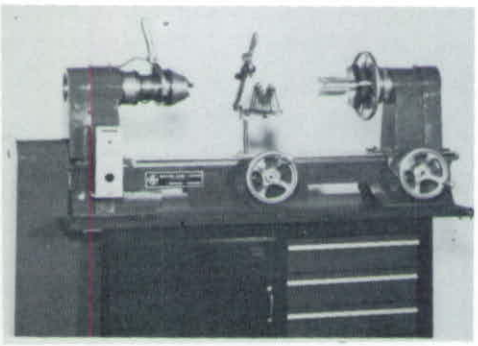

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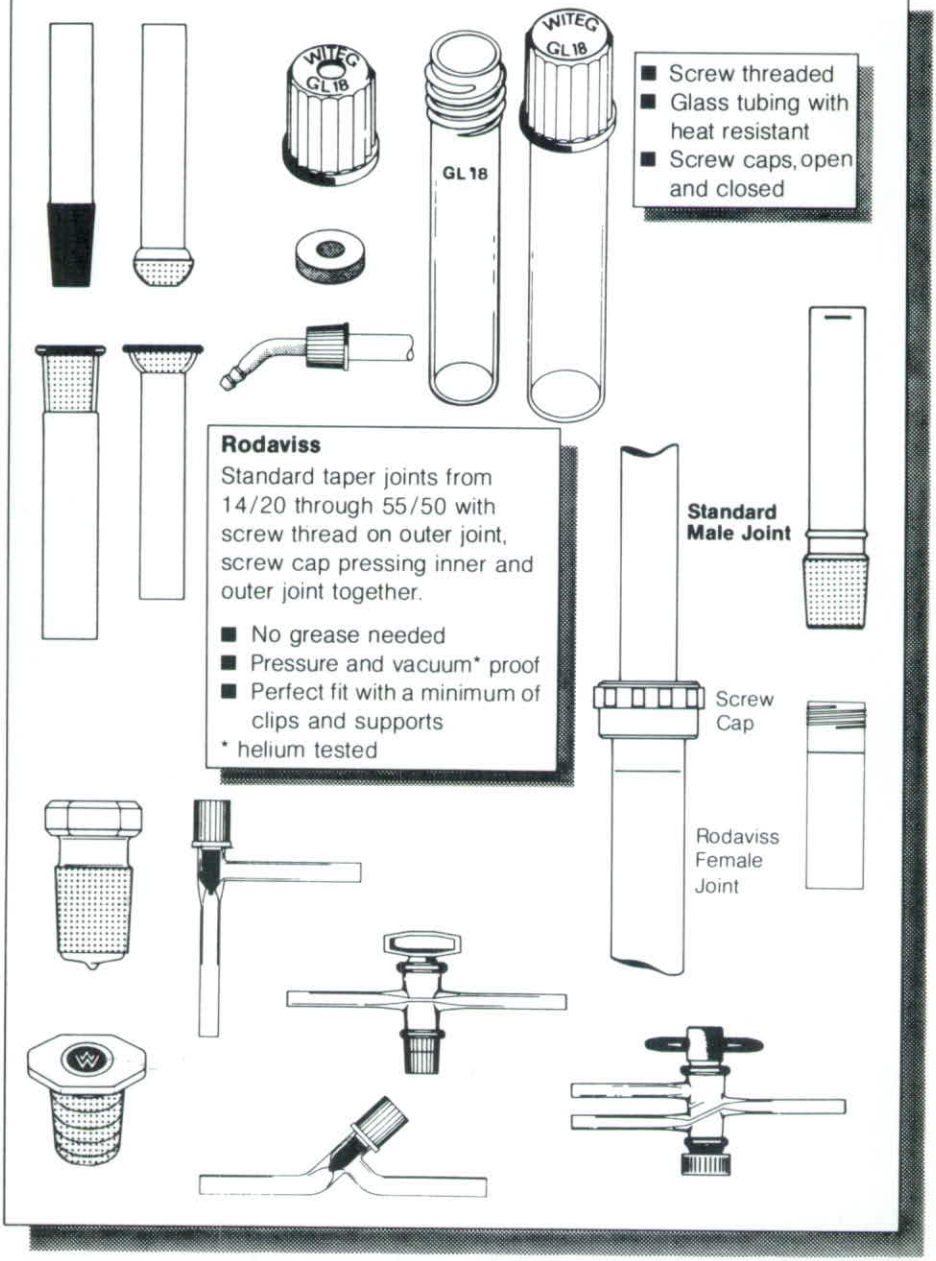

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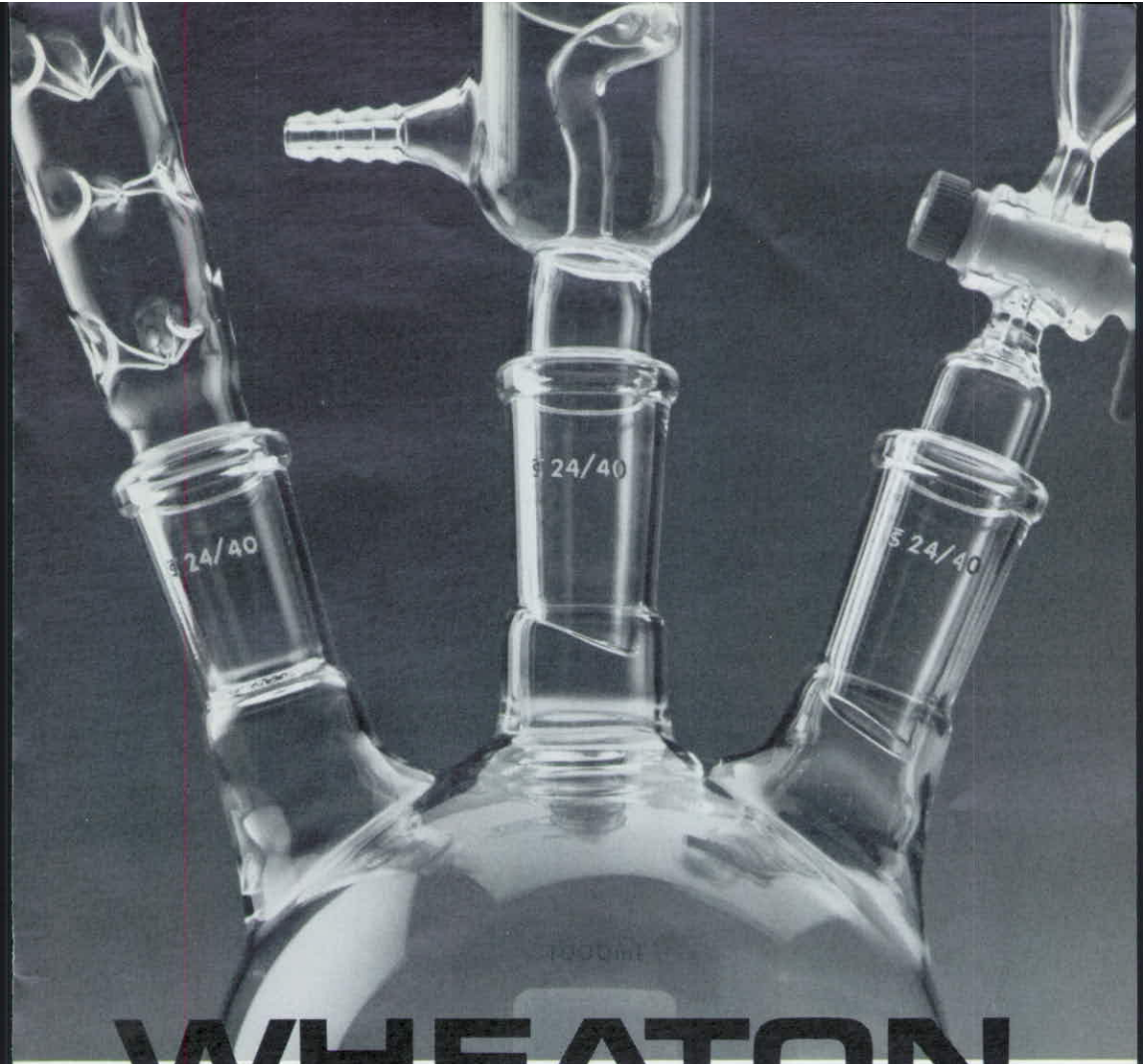

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AMERICAN SCIENTIFIC GLASSBLOWERS SOCIETY BOARD OF DIRECTORS MEETING

June 22, 1986

MOTION:

By Owen Kingsbury to accept minutes of November meeting. Second by David Hovey.

MOTION PASSED

MOTION:

By Larry Harmon to accept a By-Laws change as follows: Article III, Section A, No. 4, "Retired membership may be granted upon application from any member who becomes disabled or retired and has been a member in good standing for a period of equal to or greater than the difference between his age and 65, plus five years." Second by Owen Kingsbury.

MOTION PASSED

MOTION:

By Rudolf W. Schlott to make the following change in Article III, Section C, No. 4E, to read, "Retired members are entitled to all benefits of the class of membership to which they belonged at the time retired membership was granted, at an annual dues rate to be determined by the Board of Directors." Second by Robert J. Ponton.

MOTION PASSED

MOTION:

By Owen Kingsbury to make the following change in Article VI, No. 6, to eliminate "stamped and;" No. 6 now to read, "The larger envelope shall be pre-addressed to the Election Committee." Second by Jim Merritt.

MOTION PASSED

MOTION:

By Rudolf W. Schlott to bestow regular membership onto Mr. Daniel Wilt who is presently an Associate Member. Second by Owen J. Kingsbury, Jr.

MOTION PASSED

MOTION:

By Robert J. Ponton to raise by 10% the advertisement rate in **FUSION**. Second by Jim Merritt.

MOTION PASSED

MOTION:

By Joseph Gregar to nominate Robert Ponton to be the 34th Symposium Chairman in 1989 to be held in Milwaukee, Wisconsin. Second by Larry Harmon.

MOTION PASSED

MOTION:

By Owen Kingsbury that Jerry A. Cloninger be Chairman of the 1990 Symposium. Second by Rudolf W. Schlott.

MOTION PASSED

MOTION:

By Fred Kennedy to adjourn the meeting. Second by Dave Hovey.

MOTION PASSED

MOTION:

By Rudolf W. Schlott to re-elect Mr. Dave Daenzer as Treasurer of the A.S.G.S. Second by Larry Harmon.

MOTION PASSED

MOTION:

By David Hovey to accept committee chairmen as presented by President David Chandler. Second by Owen Kingsbury.

MOTION PASSED

MOTION:

By Larry Harmon to accept budget presented by Dave Daenzer at the Board of Directors meeting of June 22, 1986. Second by Robert J. Ponton.

MOTION PASSED

MOTION:

By William A. Wilt that William Gilhooley become a Life-Time Member. Second by F. G. Kennedy.

MOTION PASSED

MOTION:

By Larry Harmon to carry cancellation insurance to cover legal financial commitments to hotel and other concerns in the event circumstances prevent members attendance and resultant financial success. Second by Owen Kingsbury.

MOTION PASSED

MOTION:

By F. G. Kennedy to adjourn the meeting. Second by Owen Kingsbury.

MOTION PASSED

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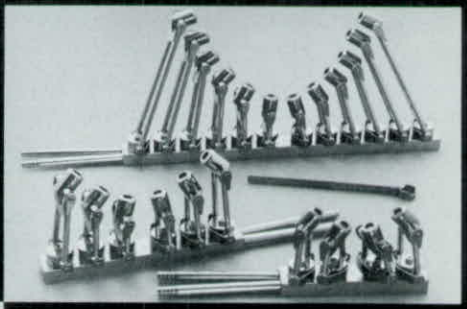

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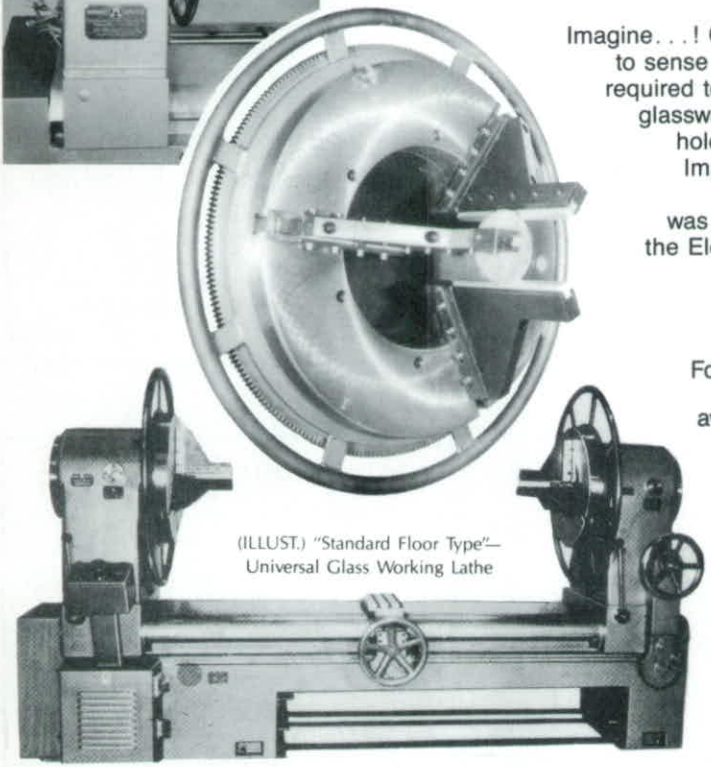

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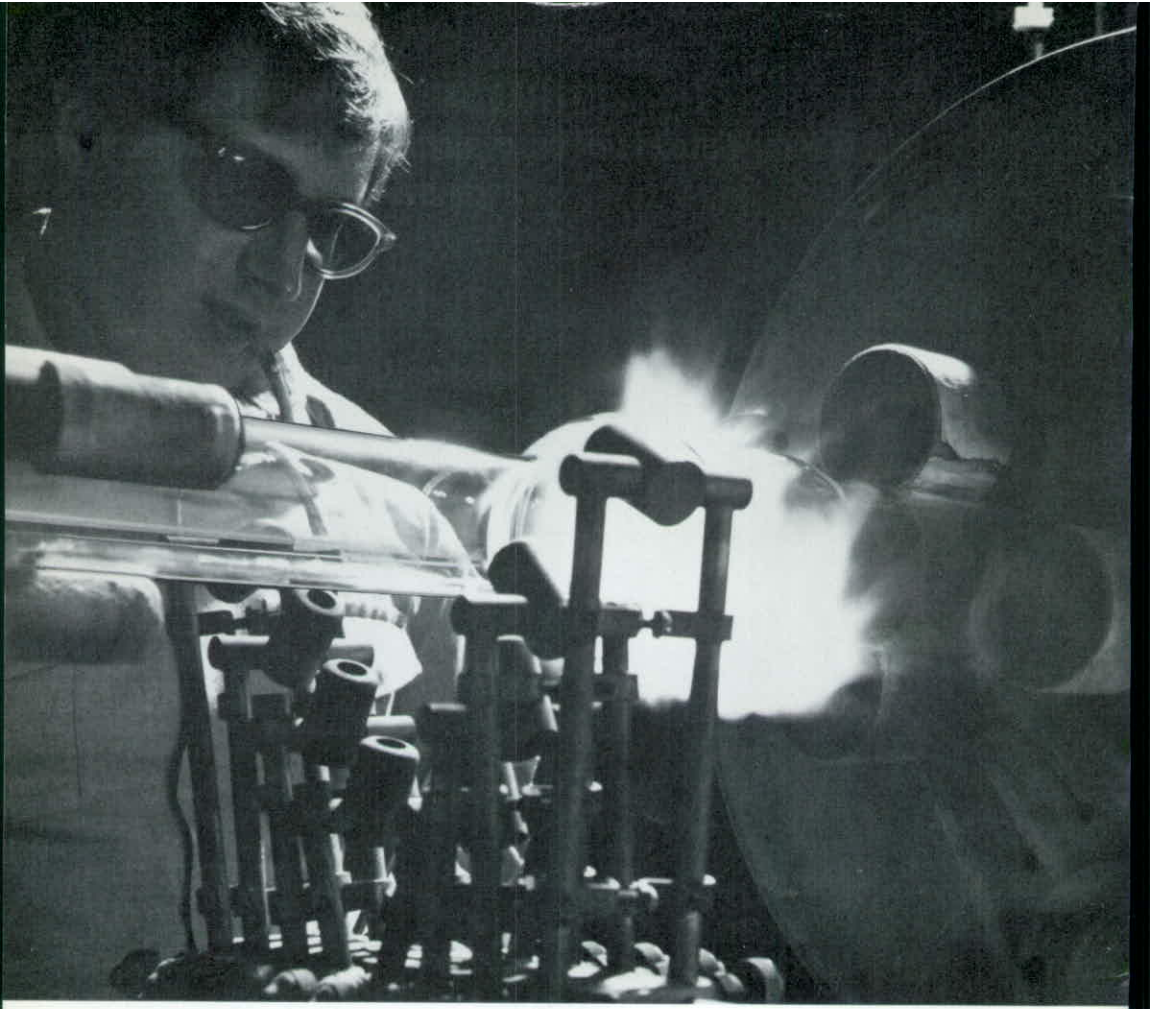

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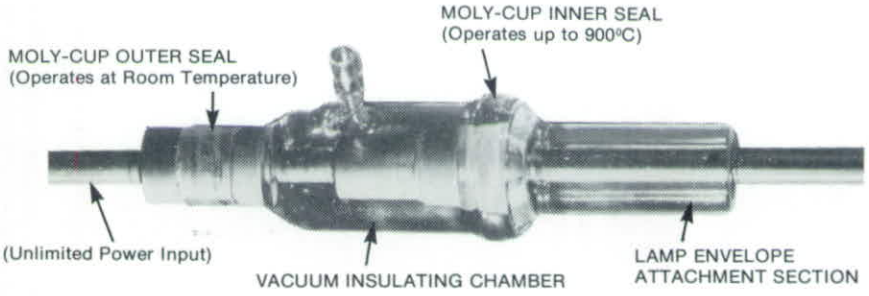

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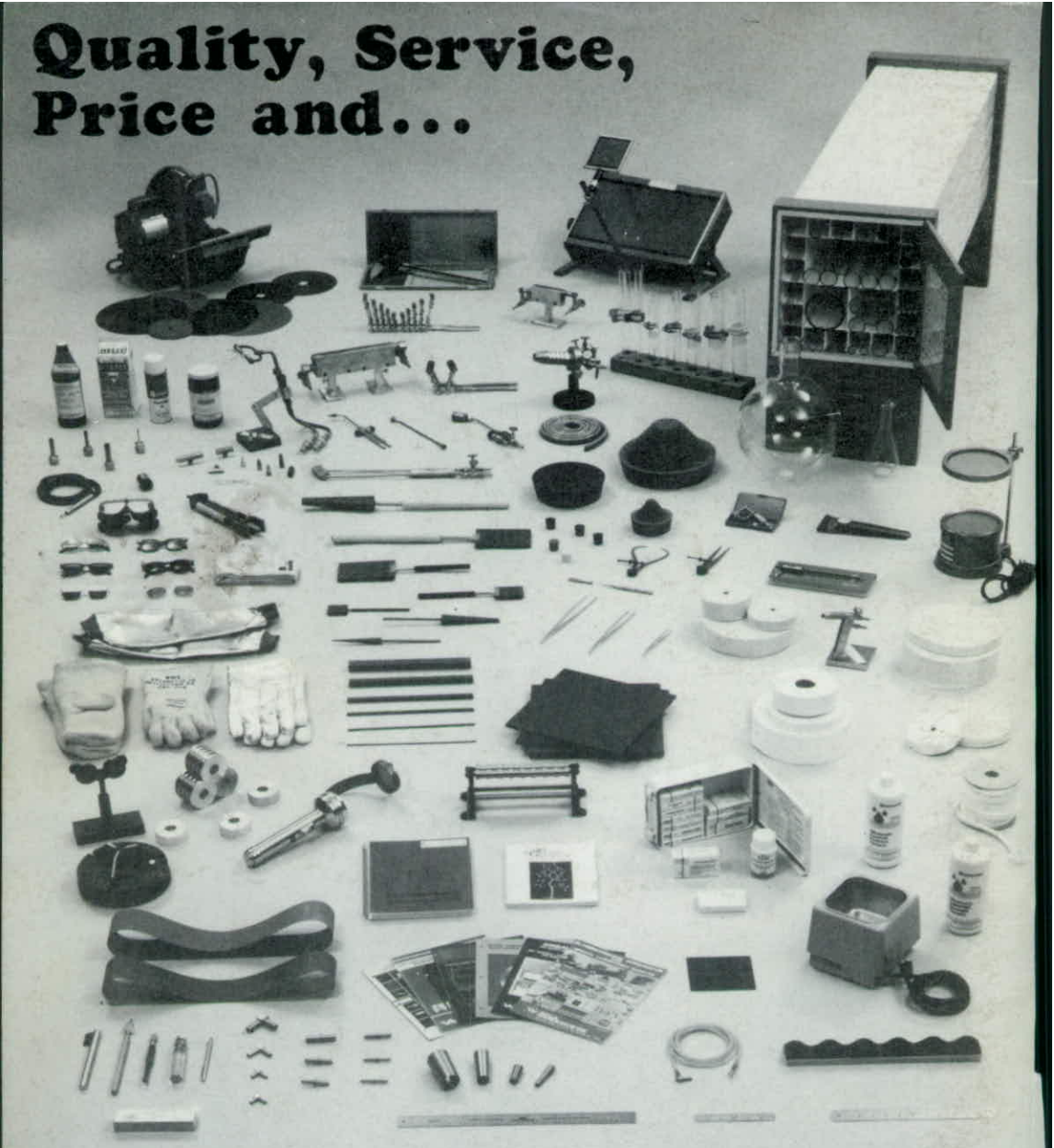

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