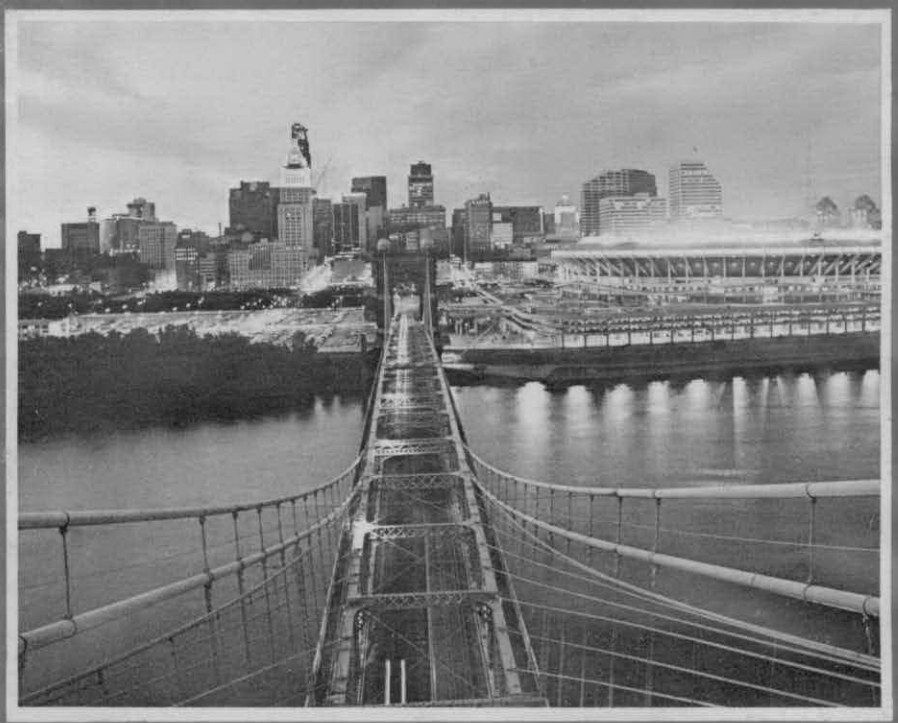
AUGUST, 1985

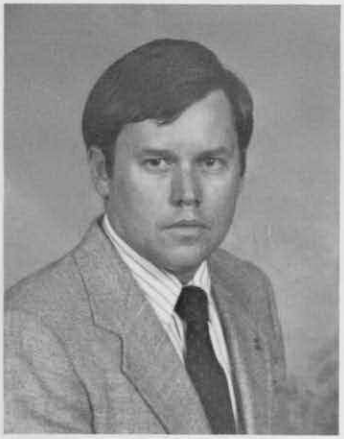
FUSION

JOURNAL OF

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



A view of part of the Cincinnati skyline from the John A. Roebling bridge, the first suspension bridge built in the United States.



PRESIDENT'S MESSAGE

There are many things that constitute a successful symposium. It is apparent that Fred Leslie and his committee members knew these items well. The symposium in Toronto, Ontario, Canada was an educational and social delight for everyone. I am sure those members and families who were present left Toronto feeling richly rewarded.

In the coming years, there are many subjects which should be addressed. Those which I feel are most important are the educational program and the overall membership of our society.

If we are to maintain our professional status in today's ever changing world, we have to stay abreast of technology and accept change. The things we looked upon as NEW IDEAS a few short years ago are now considered basic and elementary for our profession. To continue to be a viable and productive part of society, we must look upon innovation and change as an opportunity rather than a threat to our existence. Today's scientific glassblower must be ready to accept new ideas, become knowledgeable in new fields, answer many questions and consult easily with scientists of various disciplines.

One of the most important things we, as members of the American Scientific Glassblowers Society, have in our favor is our education program. Through our educational seminars, technical papers, and workshops we are making an effort to stay abreast of technology.

Many of you have probably been asked, why should I belong to the A.S.G.S.? My answer is; if there was ever a time that we, as glassblowers, need an organization of which to belong, **THE TIME IS NOW**. This society, in many ways, is offering us, the members, a way to stay in tune with today's technology. The rest is up to you.

It is my hope that by continuing to offer a good sound educational program, we will be able to attract new members into our society and at the same time offer something that will help retain our present members.

Jerry A Cloninger
President A.S.G.S.

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Journal of
THE AMERICAN SCIENTIFIC GLASSBLOWERS SOCIETY
1507 Hagley Road • Toledo, Ohio 43612

Volume XXXII August, 1985 Number 3

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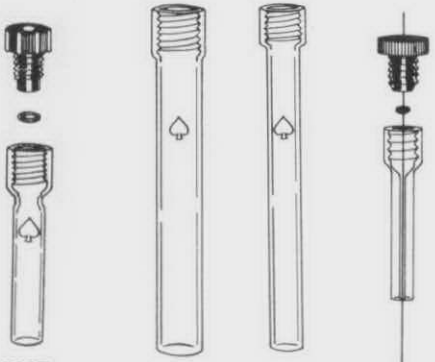

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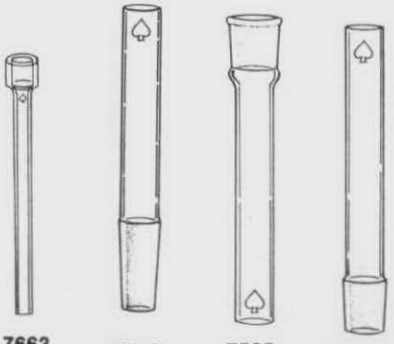

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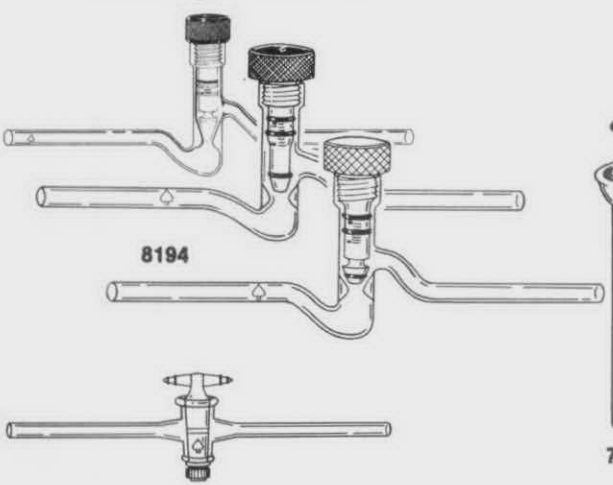

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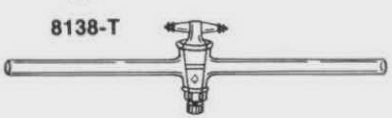

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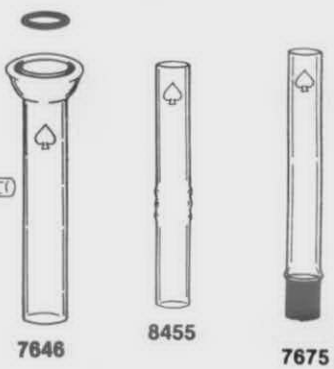

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AWARDS COMMITTEE REPORT

THE MEMORIAL AWARD

The purpose and objective ot this award. The criteria for judging, and voting procedure are as follows.

For the Deceased Member:

To commemorate those individuals whose contributions to the advancement of both the Science/Art, and the A.S.G.S. were of outstanding importance.

For the Junior Member:

To stimulate, and encourage active and continued participation in the field of glassblowing by outstanding junior members.

To encourage education in the Science/Art by recognition of the member's employer or institution.

Requirements for nominees must include active participation and attendance at Section level meetings.

Any institution, company, or employer who has a successful junior recipient for this award would not be eligible to nominate a person in the following year.

Nominations for junior member nominees would be accepted using the same format as for the J. Allen Alexander, and the Helmut E. Drechsel Award. The deadline for nominations is February 1st each year.

For deceased members being added to the scroll of honour, the same nomination form would be used, and presented in the form of a motion at the B.O.D. Meeting.

A scroll will be displayed each year at our annual symposium, listing the names of our Honoured Deceased Members.

The junior member recipient will receive an expenses paid trip to our annual symposium. The expenses are to include travel expenses, the most economical manner. Four nights at the hotel symposium site, (room rate only). Meals would not be included, and registration fees will be waived. A certificate would also be presented.

There will be no substitutions allowed for this award.

A fund in name of the A.S.G.S. Memorial Award would be established. It is hoped that the fund would become self-supporting.

David Chandler,
Awards Committee Chairman

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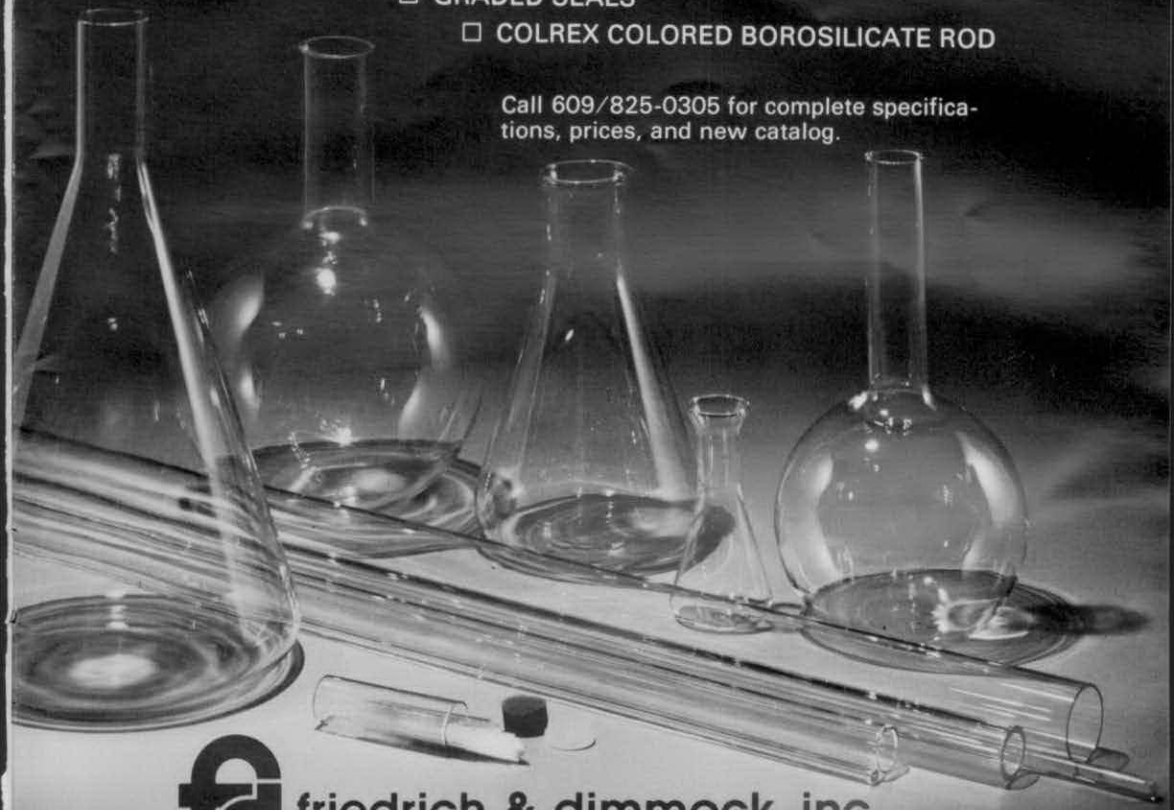

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30TH ANNUAL SYMPOSIUM AND EXHIBITION

JUNE 16 - 21, 1985
TORONTO, CANADA

The word and picture story of the 30th Symposium and Exhibition can now be presented on the pages of Fusion as well as being tucked away in the archives of the Society. Five hundred people attended and the weatherman was very co-operative.

At the registration desk.

Keynote speaker, Dr. John Howard.

KEYNOTE ADDRESS:

The keynote address by Dr. John Howard on managing stress was well received. In order to explain the effects of stress on one's well being and longevity, people were divided into two categories: A's being workaholics, taking little time for relaxation and paying little attention to diet. A's also tend to run up and down escalators and push the button for the elevator several times in order to speed up the service. B's are opposite to A's. The pastime for the balance of the symposium was to watch and categorize people using escalators and elevators. Dr. Howard's presentation, laced with humour, will not be easily forgotten.

Dr. P. Pappas, Seminar No. 1.

Dr. Josef Francel, Seminar II.

Dr. J.P. Harrison, Seminar III.

Dr. Martin High, Seminar IV.

Dr. R.L. Schneider, Seminar V.

Dr. D.E. Calvert, Seminar VI.

TECHNICAL PAPERS:

The technical papers program had an international flavour with presentations by Mr. J.A. Frost of Berkshire, United Kingdom, Mr. I.C. Dur of Holland, and Mr. Coe Gotoh of Japan. Mr. Gotoh was uable to attend and his paper was read by the audio visual chairman, Bruce Harwood. In total, fifteen papers were presented. Gary Coyne and Anne Hostetter demonstrated their described techniques in the workshop program. Mr. Wayne Hawk, who was to have presented a paper on the subject of Scoring and Breaking of Glass, cancelled his presentation at the last minute, but he has agreed to give it at the 1986 symposium.

President, Wilbur Mateyka.

Mr. J.A. Frost

Mr. Donald Lillie.

Mr. Henry E. Hagy

Mr. William Shoup

Mr. Gary Coyne

Mr. I.C.J. Dur

Mr. Frederick R. Birkhill, Jr.

Ms. C. Barry

Mr. Allan B. Brown

Dr. L.H. Gevaert

Mr. Czes Deminet

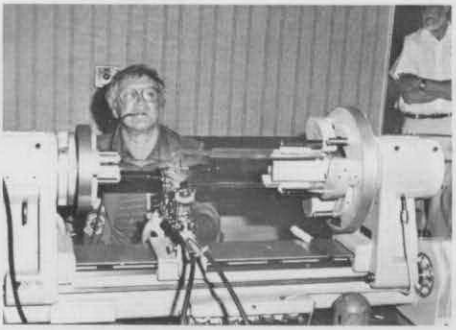
Mr. Robert Platt II

Ms. Anne Hostetter

WORKSHOPS:

Fourteen demonstrations were provided by twelve participants in the workshop program, and as a result of the co-operation by the Office of the Ontario Fire Marshall, we were able to present, for the first time, a demonstration of machine hot forming of 40/50 outer joints.

Artistic Demonstration, Kathy Harper.



John Legge, 4" Ring Seal.

Robert Ponton, Rectangular & Square Tubing.

Anthony Velluto & James Bertwell, 40/50 Outer Joints, Stillmeadow Glassworks.

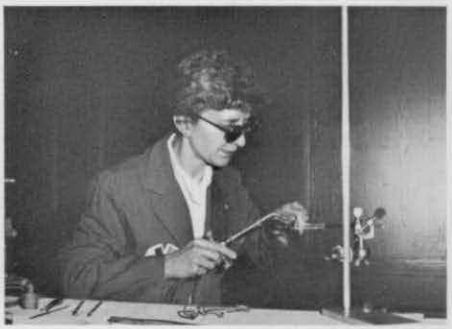
George Sarfi, 4" Kovar to Pyrex.

Owen Kingsbury, 38mm Mullite to Pyrex.

William Langley, Ace Glass Inc., Friedrich Condensers.

Dieter Damrow, Friedrich Chemical Co., Inc, Cold Trap with 50mm "O" Ring Joints.

Frank Peoples, Ace Glass, Inc., Fritted Disc Sealing.



T. Anne Hostetter, Quartz E.S.R. Cells.

EXHIBITS:

I would like to express my appreciation of the thirty-three companies who undertook to exhibit their products in Toronto. A special 'thank you" to those exhibitors who sponsored events, personnel, equipment or materials. This support enhanced the overall quality of the program presented and added to everyone's enjoyment. No less than thirty companies, organizations and individuals provided sponsorship this year.

I would also like to offer my sincere apologies to Friedrich and Dimmock, Inc. for not being able to provide a photograph of their booth in the exhibit area.

Opening the Exhibits, Chairman, Frederick Leslie: President, Wilbur Mateyka and Exhibits Chairman, David Chandler.

Booth No. 1 – Ace Glass, Inc.

Booth No. 2 – Wilmad Glass Co.

Booth Nos. 4 and 5 – Kontes Glass Co.

Booth No. 6 – Xorbox

Booth Nos. 8 and 9 – Wale Apparatus Co.

Booth No. 10 – Robu Glasfilter

Booth No. 11 – B.D.H. Chemicals

Booth No. 12 – G.M. Associates, Inc.

Booth No. 13 – Lurex Mfg. Co.

Booth No. 14 – B & C Glastechnische Maschinenbau - Und Vertriebs GmbH, Stillmeadow Glass Works, Inc.

Booth Nos. 15 and 16 – Peter Petersen, Scientific Glassblowing.

Booth No. 17 – Nortel Machinery, Inc.

Booth No. 18 – Elgin Precision Glass

Booth No. 19 – Pegasus Industrial Specialties.

Booth No. 20 – Johns Scientific, Inc.

Booth No. 21 – G.T.E. Products Corp.

Booth No. 22 – Schott America

Booth Nos. 23 and 24 – Wilt Industries, Inc.

Booth No. 25 – Corning Glass Works

Booth No. 26 – Lunzer Industrial Diamonds, Inc.

Booth Nos. 27 and 28 – Litton Engineering Laboratories.

Booth No. 29 – Starlite Industries, Inc.

Booth No 30 – Chemglass, Inc.

Booth C-1 – Safe Lab, Inc.

Booth C-2 – General Electric Co.

Booth C-5 – George Behm & Sons Co.

Booth C-6 – Witeg Scientific

Booth C-7 – Dynacut, Inc.

Booth C-8 – Texsaw, Inc.

Booth C-9 – Verteq, U.S. Quartz Div.

Booth C-10 – Richland Glass Co.

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ARTISTIC DEMONSTRATIONS:

The Tuesday evening artistic demonstrations were well attended by people outside the Society due to written invitations and local advertising. I would like to extend my gratitude to all those who participated in the evening. The auction which followed generated $1,158.00 for The Hospital For Sick Children Foundation (Toronto).

BLACK CREEK:

The visit to Black Creek Pioneer Village on Wednesday evening had the added interest of a display of 1,100 oil lamps from the Kerosene Era. They represented part of the 2,000 lamps in the Thuro Collection.

Kerosene became available commercially from the world's first oil well dug at Oil Springs in Southwestern Ontario in 1858. Lamps using kerosene provided the primary source of illumination for domestic lighting in North America into the early 1900's and some lamps were still in use in rural Ontario until the 1950's.

The development of the wide variety of lamp designs, colours, and production techniques coincided with the rapid expansion of the glass industry in North America and matched the demand for patterned glass tableware.

We wish to thank the owner of the lamp collection, Catherine M. W. Thuro, lighting historian and author, who accepted our invitation to dinner that evening and who graciously agreed to answer questions about the lamps and the collection.

Catherine M. W. Thuro, Lighting Historian and Author. Owner of Lamp Collection on display at Black Creek Pioneer Village. Wed. Evening Program.

Later in the evening, under the direction of Morley Batt, everyone had the opportunity to learn to square dance. The members of the New York Section contributed to the enjoyment of the evening with their participation in the singing and dancing. Werner Theiss and Gunther Boepple, visiting from B & C Glastechnische Maschinenbau-und Vertriebs-GmbH in Germany, didn't let their difficulties with the English language stand in the way when they were on the dance floor doing the Virginia Reel.

BANQUET:

The annual banquet held a couple of surprises for those who attended. The City of Toronto and The Municipality of Metropolitan Toronto acknowledged the fact that this was the first time an A.S.G.S. Symposium and Exhibition had been held in Toronto by co-sponsoring a financial grant toward the cost of the banquet. It was stipulated that the money received from them could not be used as profit with the end result that, at the conclusion of the banquet, each ticket purchaser received a $10 rebate in exchange for their ticket stub. As well as the grant, The Municipality of Metropolitan Toronto provided table favours for all in the form of either a monogrammed brass book mark or an enamelled lapel pin, which are normally presented only to visiting dignitaries at City Hall.

The Toronto Trio

30th Symposium Chairman, Frederick Leslie.

Address by Alderman, the Reverend Derwyn Shea.

Alderman, the Reverend Derwyn Shea presents plaque on behalf of Mayor Arthur Eggleton to Symposium Chairman Frederick Leslie.

Plaque presented to 30th Symposium & Exhibition Chairman from Mayor of Toronto, Arthur Eggleton.

President Wilbur Mateyka – Presidential Address.

Treasurer David Daenzer reaffirming Oath of Office.

Secretary Joseph Gregar reaffirming Oath of Office.

Installation of President-Elect David Chandler.

Installation of President Jerry Cloninger.

Passing the Gavel.

Presentation of Presidential Plaque.

Presentation of Past President's Pin by Maxine Lillie.

Jerry Cloninger – Presidential Acceptance Address.

Presentation of 29th Symposium Chairman's Plaque to Ray Carew.

Presentation of J. Allen Alexander Award to William A. Wilt.

Helmut Drechsel Award to James F. Morris.

Presentation of No. 2 Helmut Drechsel Award to Robert B. Tobin.

Kermit Fischer Award to Gary Coyne.

Michael Olsen receives Dana Sampson Award from Owen Kingsbury.

Chester A. Swopes presents the Mid-West Section Achievement Award to William A. Sales.

Receiving Presidential Steuben Bowl from Corning Glass.

Thomas Kern – Welcome to 31st Symposium & Exhibition in Cincinnati, Ohio.

Piper & Drummer for Gladys Forrester Highland Dancers.

Gladys Forrester Highland Dancers.

Gilbert & Sullivan Singers of Toronto.

Alderman Derwyn Shea, represented Mayor Eggleton and the chairman of Metropolitan Toronto, Dennis Flynn, at the banquet. At the conclusion of his address he presented Fred Leslie with a plaque on behalf of the mayor of Toronto.

GREETINGS
THE AMERICAN SCIENTIFIC GLASSBLOWERS SOCIETY
30TH ANNUAL SYMPOSIUM AND EXHIBITION
June 20, 1985

On behalf of the Council and the people of the City of Toronto, I am pleased to welcome delegates to the 30th Annual American Scientific Glassblowers Society Symposium and Exhibition.

"Toronto" is a native Canadian word, believed to mean "Place of Meeting". It is therefore appropriate that it will serve as the site of your symposium. During breaks in your busy conference schedule, I hope that you will find the opportunity to discover the many points of interest in our meeting-place City, to explore our neighbourhoods, shopping districts and parks, and to visit our many restaurants, theatres and other attractions.

May I offer you my sincere wishes for a successful symposium and an enjoyable stay in Toronto.

WOODBINE RACE TRACK:

At the Woodbine race track on Friday, the fourth race was named in honour of the American Scientific Glassblowers Society. The trainer of the winning horse of that race was presented with two glass trophies. One was presented by Meryl and Fred Leslie for the jockey, and a special trophy, created by Wolfgang Eberhart, was presented by President and Mrs. Wilbur Mateyka, for the owner of the winning horse.

Meryl Leslie, Fred Leslie, Mr. F. H. Merrill (Trainer), Wilbur Mateyka, Helen Mateyka – Presentation of two trophies to the winner of 4th race. One to owner – one to jockey.

SPOUSES TOURS:

A wide variety of interest was planned into the organization of the spouses tours and we hope they enjoyed the trolley tour, the chocolate factory, Cullen Gardens, the boat tour, and lunch at the "Old Mill". I can safely say that the two ladies that I saw gleefully comparing the contents of their bulging handbags after returning from the chocolate factory, thoroughly enjoyed themselves.

Monday – Bus tour to Parkwood & Cullen Gardens. Bus driver, Meryl Leslie, Spouses Tours; Shielah Rogers, Hospitality Toronto.

Spouses departing on trolley tour.

Treasure Gibb - "Handwriting Analysis", Meryl Leslie.

Attendees at Friday breakfast – "Handwriting Analysis".

Attendees at Friday breakfast – "Handwriting Analysis".

Attendees at Friday breakfast – "Handwriting Analysis".

CONCLUSION:

In planning the 30th Symposium and Exhibition, it was our intent to provide the best possible technical program and, in addition, provide something extra to make everyone's visit to Canada, Ontario, and the City of Toronto, a memorable one. Only those who attended can decide if we were successful in our intentions.

30th Symposium and Exhibition jacket and briefcase – Retired.

Respectfully Submitted,
L. Frederick Leslie, Chairman
30th Symposium and Exhibition

PATHWAY TO THE FUTURE

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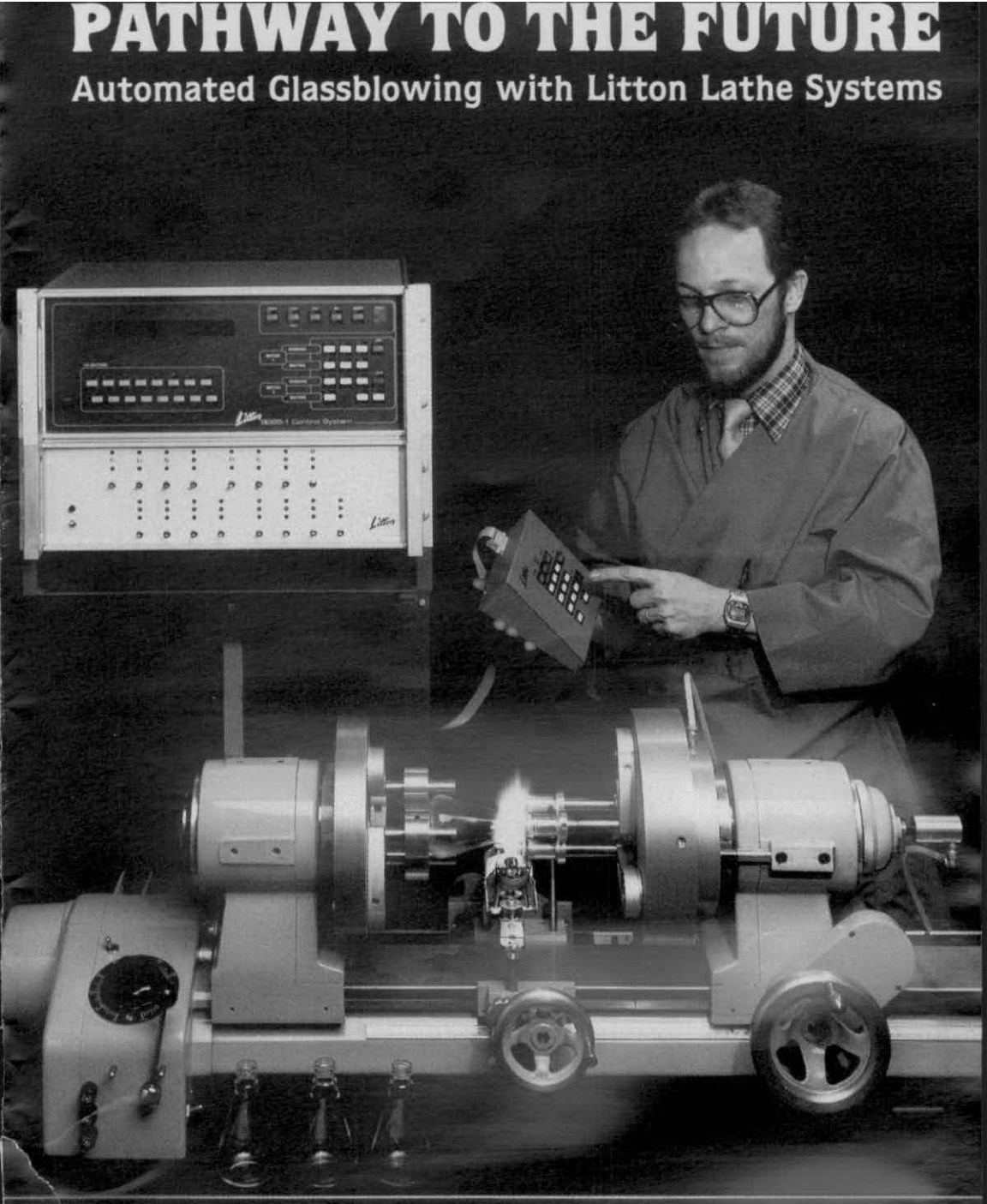

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1. Introduction

In our laboratory, we do extensive work on glass to metal seals, mainly in Ni-Co-Fe alloys for vacuum devices. The treatment for Kovar alloy before sealing it to glass is intended to remove carbon dioxide from the surface, to eliminate the formation of bubbles in the glass at the glass and metal interface. This decarburizing process is done in wet Hydrogen atmosphere, and the metal items are heated to a temperature that should be slightly higher than the temperature of the sealing process.

Heating temperature should be as high as 1100°C for at least 20 minutes, but to my experience, lower temperature will be sufficient if longer heating period is performed. A Hydrogen "firing" process of 45 minutes at 950°C is satisfactory.

In the systems described, we made an effort to minimize the heat up and the cool down periods for the following reasons:

(1) Glass sealing should follow decarburizing treatment within a few hours. A short process enables us to proceed with glass sealing the same day. (In the past, we used to keep Nitrogen purging overnight, and seal the glass the next day.)

(2) Retort system is economic in consumption of Hydrogen and Nitrogen gases, also because there is only one Hydrogen burn-off station, and there are no Nitrogen "curtains" or barriers usually used in conveyor belt furnaces.

(3) Exposing Kovar alloy to high temperatures for prolonged time may increase the tendency of Kovar to develop phase transformation when afterwards exposed to very cold temperatures under -150°C (like liquid Nitrogen in Dewar vessels). This phase transformation means change in the properties of the metal, like linear coefficient of expansion, and may result failure of the glass to metal seal.

2. Methods of Controlled atmosphere Furnaces.

To make decarburizing process short and successful, four methods are available:
1) Conveyor belt furnace which is best for high volume production.
2) Pusher furnace where small boats containing the Kovar items are pushed through the heated zone. This type may be used for smaller production volumes. Both conveyor and pusher furnaces, have openings on two sides of the furnace tube, and employ gas barriers to prevent ambient air to penetrate into the heated area. There are usually two Hydrogen burn off stations in this type.
3) Box furnace with special alloy retort for controlled atmosphere. This type is economic in gases supply, we use it in our laboratory for production of small quantities daily. Detailed description will follow.
4) Tube heating by means of tube furnace of R.F. induction heating. The tube may be made of Fused Silica or Alumina. In the case of clear Fused Silica tube and R. F. heating, a sleeve of Molybdenum is heated by the R.F. power. The Kovar items are placed inside the Molybdenum sleeve. This is done to prevent devitrification of the Fused Silica when exposed to glowing Kovar parts.

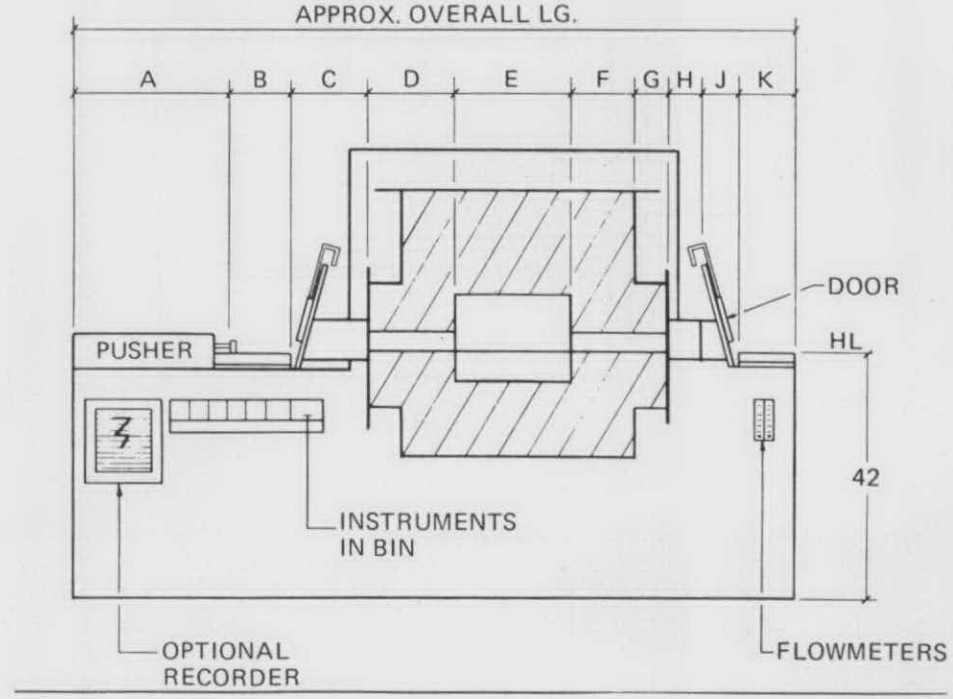


Fig. 3: Pusher Furnace

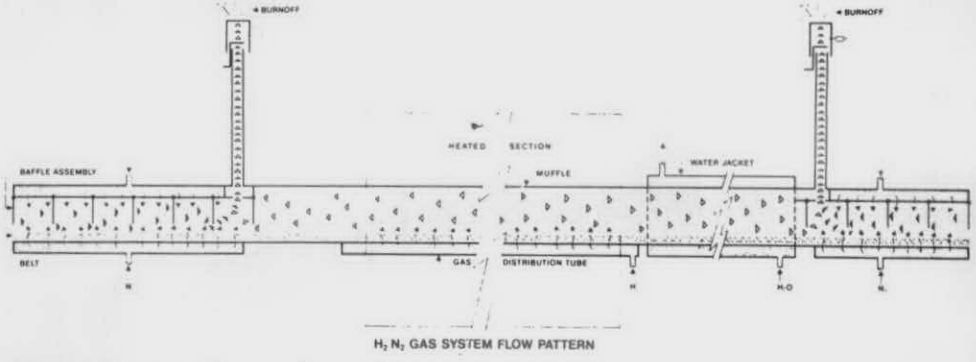


Fig. 4: Conveyor Furnace burn off

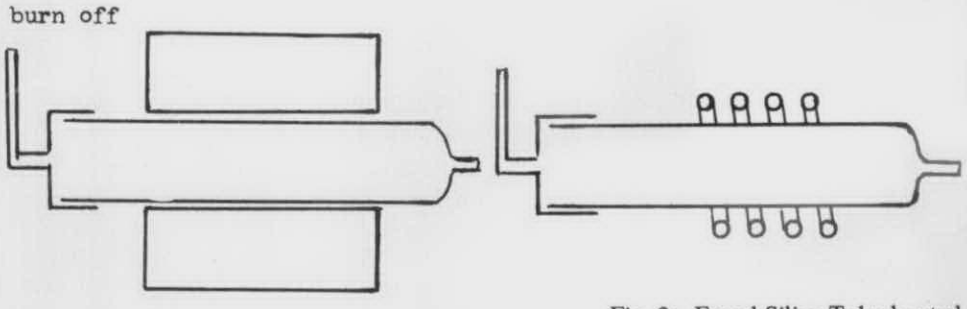


Fig. 1: Fused Silica Tube heated by Tube Furnace

Fig. 2· Fused Silica Tube heated by R. F. coil

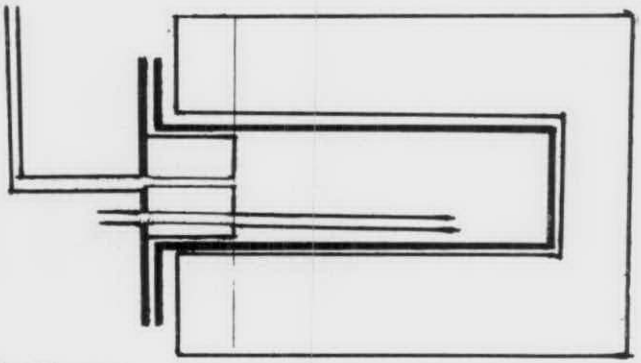
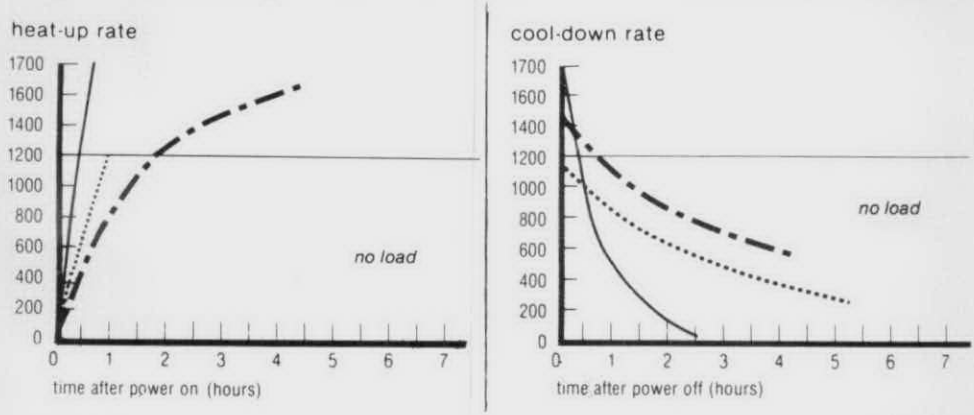


Fig. 5: Retort Box Furnace

3. Safety

Performing Hydrogen heating process may become hazardous if strict precautions are not followed. Extreme care must be taken that under no circumstances air or Oxygen will penetrate into the heated Hydrogen zone. For this reason, Nitrogen purging is essential. Hydrogen outflow must burn off, and not left to run into the room; it can become explosive. Temperature of the furnace should not exceed 1100°C, and additional over temperature protection is advisable. Supply of Hydrogen must not fail during operation unless Nitrogen backup is provided.

Fig. 6: Shows Heat up and Cool Down rates. The undotted line is the 1700°C furnace



4. In the past, we used a box furnace with special alloy retort, and used to purge with Nitrogen, then open the Hydrogen bottle that was connected to the retort with a T coupling. Ingnition of the Hydrogen was done manually. Heating up and cooling down rates were long; the whole system required a lot of attention.

To achieve fast heat up and cool down cycles, and still use a retort, a 1700°C laboratory box furnace was chosen. In this particular type, heating up rate is very fast (because of special heating elements), and cooling down is also fast because of thin insulation and cooling fans (see fig. 6). Since this furnace was originally built for 1700°C, and not to be used with a retort, certain modifications were done to fit the furnace for retort use. A hole was cut into the door to receive the retort, and heavier insulation was provided in the door.

The heavy plug door of the retort is hung on ball bearing sliding cart for easy handling. (see fig. 7). On this fixture, the burn off torch station with its electrical ignitor is mounted.

Another modification that is neccessary, are two barriers made of Silicon Carbide plates that are placed inside the furnace between the heating elements and the metal retort. This is done to prevent overheating of the retort walls when the heating elements glow and radiate at full current capacity.

In the temperature controller, additional over-temperature protection was ordered, to shut off the furnace if, for some reason, temperature will rise above 1100°C. This is the highest temperature recommended for this retort by the supplier.

An automatic controlled atmosphere system provides Nitrogen purging before and after the Hydrogen process. Flow of the gases can be adjusted through flow meters. The system also automatically ignites the outflowing Hydrogen at a single burnoff torch. (see fig. 7,8). Hydrogen is moistened by bubbling through a simple trap.

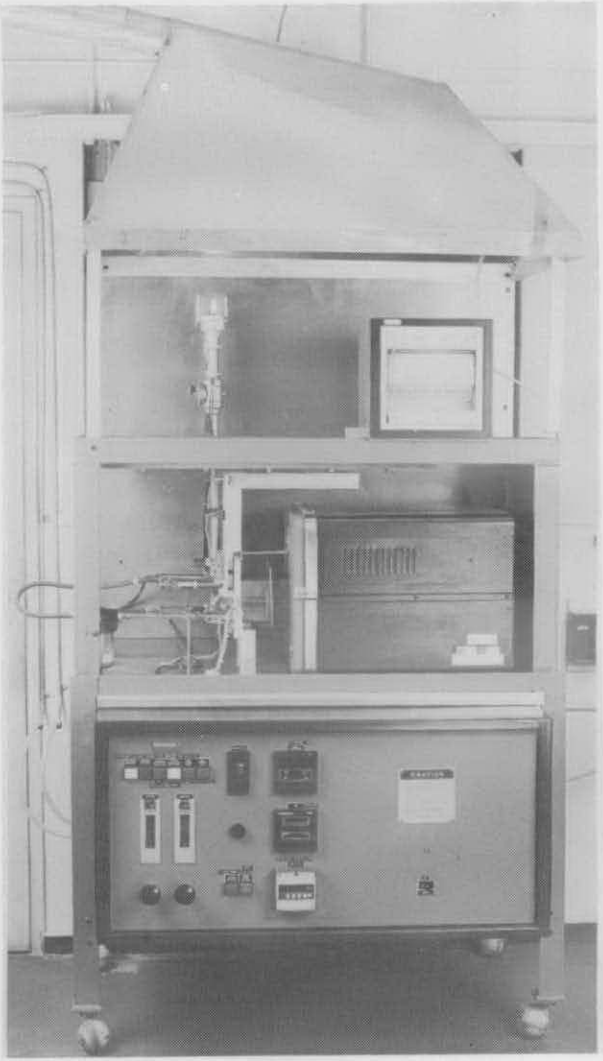


Fig. 7: Retort Box Furnace With Controlled Atmosphere System

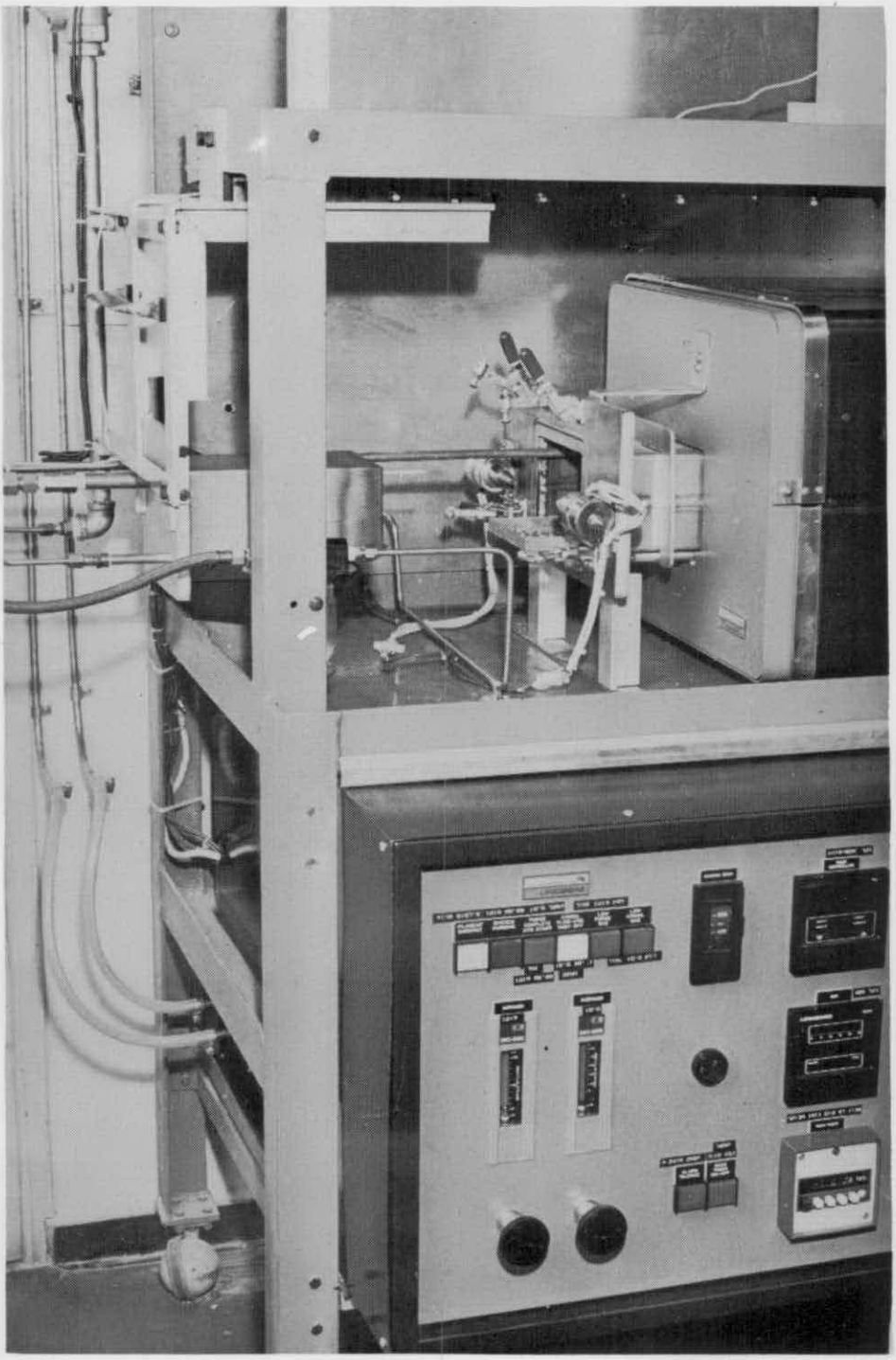


Fig. 8: Plug Door Hung on Roller Cart

For safety, the system switches to Nitrogen purging whenever Hydrogen or electricity supply fails.

In addition, a separate chart recorder gives information on the temperature inside the retort through thermocouple.

5. Other uses

This controlled atmosphere retort furnace is also very useful for a variety of sealing jobs that have to be done in protecting atmosphere.

6. References:

1.) "Kovar Alloy" Form No. 5134 by The Carborundum Co., Latrobe plant Latrobe, PA.

2.) "Kovar Expansion Alloy" technical data 52460, 1965, page 5, by Westinghouse Electric Corporation, Material Manufacturing Division, Blairsville, PA 15717.

3.) Handbook of Materials and Techniques for Vacuum Devices, Reinhold Publishing Corporation, by Walter H. Kohl, page 427.

4.) Annual book of ASTM Standards 1979 F-14 page 102, F-15 page 106.

5.) "Einschmelzlegierungen Vacon, Vacovit" firmenschrift ausgabe 3/1974 by Vacuumschmelze GMBH, 645 Hanau, Germany.

7. Suppliers of equipment:

1.) Lindberg GS, 304 Hart Street, Watertown, WI 53094 – For 1700°C Box Furnace, Tube Furnaces, and Controlled Atmosphere System.

2.) Pereny Equipment Co., Inc., Columbus, Ohio 43212 – For Pusher Furnaces.

3.) Watkins Johnson Co., 440 Mt. Hermon Road, Scotts Valley, CA 95066 – For Conveyor Furnaces.

4.) BTU Engineering Corporation, Esquire Road, North Billerica, Mass. 01862 – For Conveyor Furnaces.

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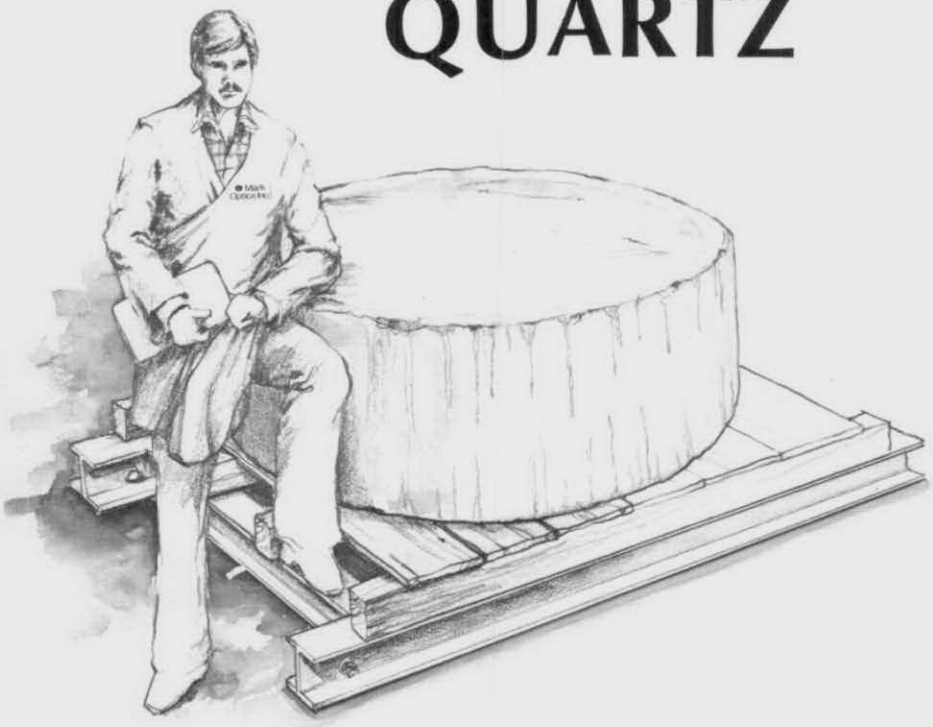

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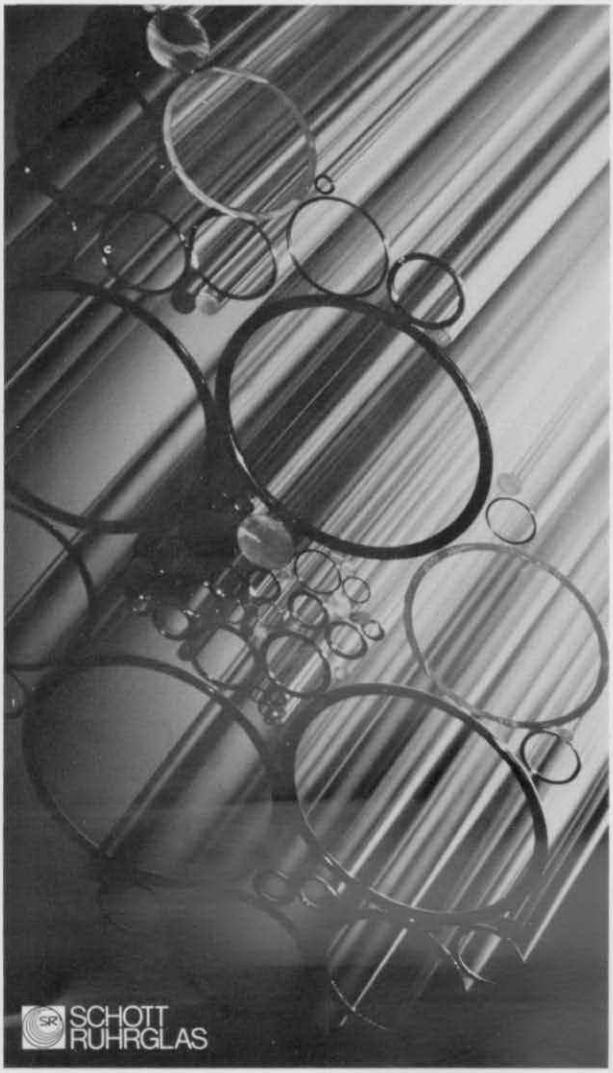

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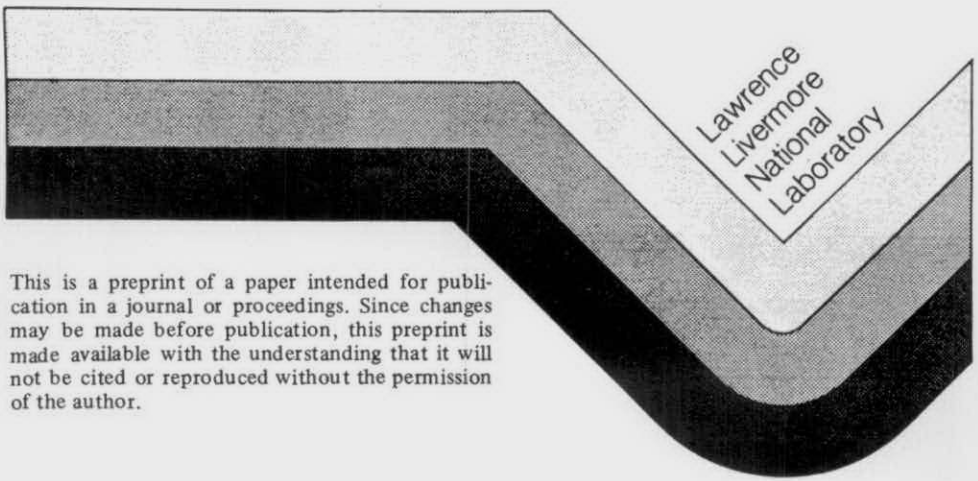
PREPRINT

SLUMPING OF NEUTRAL DENSITY GLASS

Melvin O. Bishop
Linda C. Smith
David F. Edwards

April 15, 1985



SLUMPING OF NEUTRAL DENSITY GLASS*

MELVIN O. BISHOP, LINDA C. SMITH AND DAVID F. EDWARDS

LAWRENCE LIVERMORE NATIONAL LABORATORY
LIVERMORE, CALIFORNIA 94550

The glassblowing laboratory was recently requested to fabricate a number of cylinders from a neutral density glass. These cylinders serve as laser radiation shields in the diagnostics sections of the LLNL NOVA fusion laser system. The smaller cylinder surrounds a calorimeter cup and absorbs stray light striking the back and sides of the calorimeter. The cup and split shield, shown in Figure 1, are 3.5" in diameter and 3.72" tall. The other two cylinders are truncated at 45° at one end, split along the axis to facilitate assembly around a pick-off mirror and are shown in Figures 2 and 3. Both cylinders are 5.5" in diameter, the taller one is 8.5" tall and the other 5.5". These truncated cylinders protect a mirror adjustment fixture from the intense laser light. Both shield applications required a durable volume absorbing material such as the neutral density glass rather than an anodized metallic surface, which would be vaporized by the incident laser radiation. This vaporized metal could then deposit on optical surfaces seriously degrading their performance.

Discussion with one manufacturer indicated that the filter glasses were not easily reshaped under heat. With a bit of experimentation we have discovered a slumping method and have applied it to neutral density glasses from two manufacturers. NG-4 glass from Schott[1] and NS-9 glass from Sovoptiks[2] have been successfully slumped using the method described here. We have used both polished and matte finish pieces 165 mm x 165 mm x 2 mm. The yield for the polished pieces has been nearly 100% and about 80% for the matte pieces.

For each case the glass is slumped over a stainless steel mandrel shown in Figure 4. A Wilt Model 225, Electric Quartz Annealing Furnace[3] was used. The procedure is the following. The contact surface of the mandrel is uniformily coated with graphite[4] and is centered inside the furnace. A four-sided stainless steel box (top and bottom open) is placed around the mandrel. The box is several inches larger than the mandrel or glass piece so as not to contact either. The glass is carefully balanced on the mandrel as illustrated in figure 4 and a stainless steel plate is placed on top of the box. This box acts as thermal ballast to smooth out the temperature cycling of the furnace. Without the box we experienced almost 100% failure.

Once the parts are safely inside the oven and the lid in place, the controls are set for 600°C and the power is activated. The furnace reaches 600°C in about 35 minutes. We hold it at this temperature for at least 90 minutes at which time we deactivate the power and let it return to room temperature – usually overnight. These conditions are sufficient to slump the glass as illustrated in Figure 4.

*Work performed under the auspices of U. S. Department of Energy by the Lawrence Livermore National Laboratory under Contract No. W-7405-ENG-48.

The glass appears to be strengthened by the heat treatment. We see no color and only minor surface texture change. Using a curvature measuring instrument[5], the radius of the glass is typically about 0.050 inches greater than that of the mandrel. For greater precision we would suggest using a press to conform the glass to the mandrel. Up to now we have not tried such a press. For a typical piece, the rms surface roughness was measured[5] to be about 3.9 micro-inches which is approximately the roughness of the starting surface.

The slumping technique described here has been used for Schott NG-4 and Sovoptik NS-9 neutral density glasses. We believe the method to be applicable to neutral density glasses from other manufacturers as well as other types of filter glasses.

References

1. Schott Optical Glass, Inc., Duryea, PA 18642
2. Sovoptiks, USA, Inc., Altadena, CA 91001
3. Wilt Industries, Lake Pleasant, NY 12108
4. Crown 8078 Dry Graphite Lubricant, Crown Industrial Products Company, Hebron, IL 60034
5. Cross-track Curvature Surface Instrument, Rank-Taylor-Hobson, Leicester, England

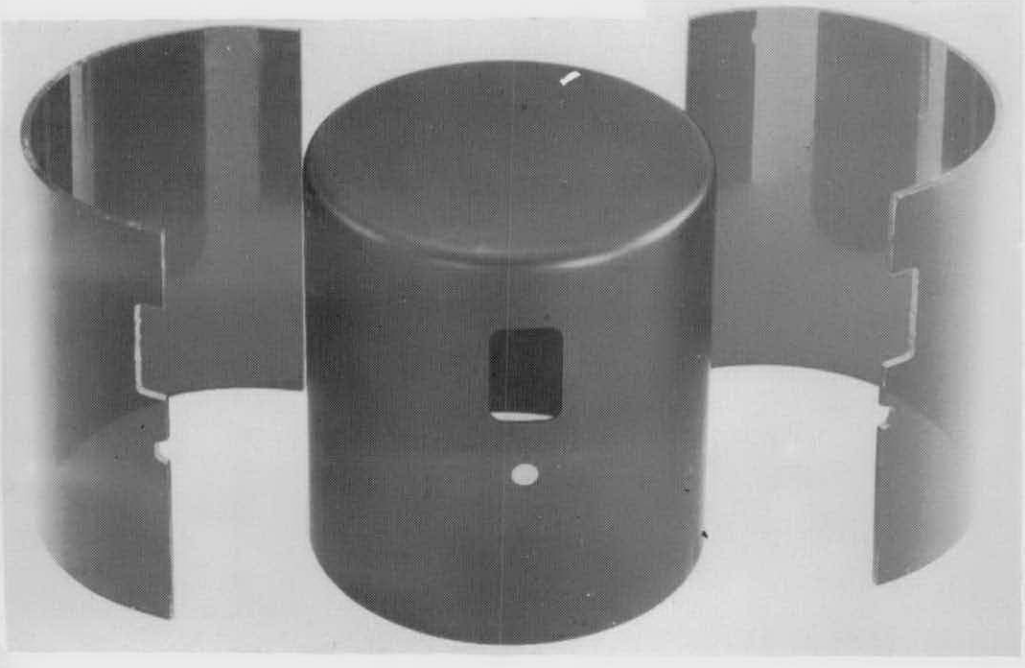


Figure 1. Calorimeter cup, center, and split NG-4 radiation shield.

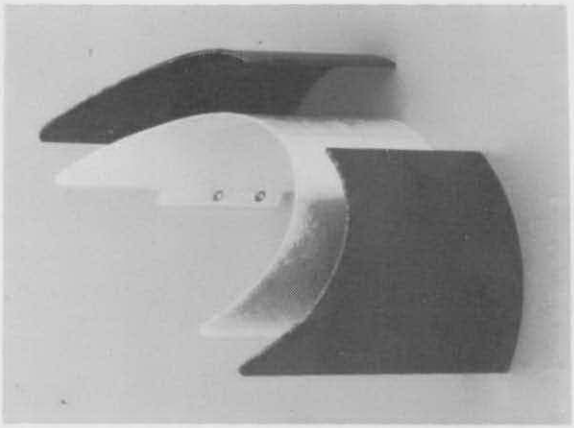


Figure 2. Truncated cylinder half of NG-4 glass used as part of a radiation shield surrounding a mirror adjustment fixture. Also shown is an aluminum form used for attaching the glass to the mirror.

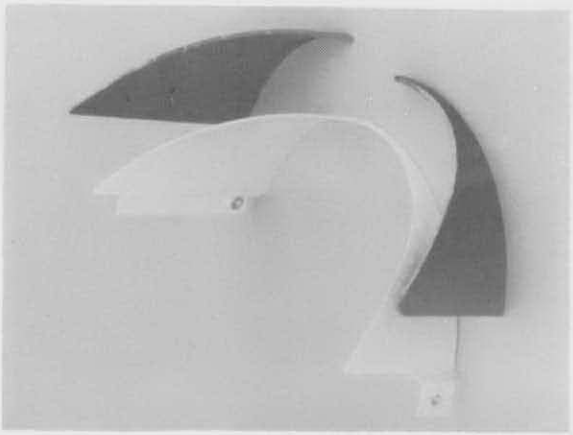


Figure 3. A second part of the radiation shield of Figure 2.

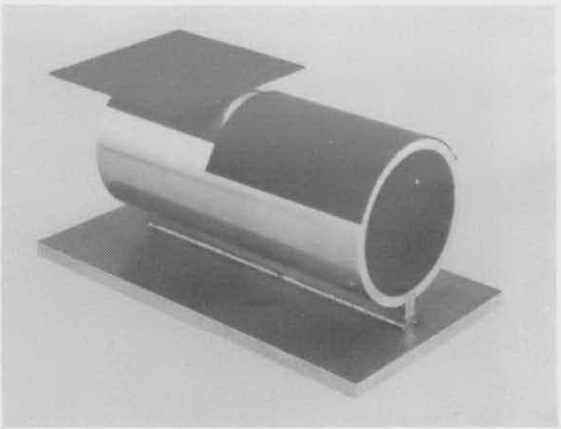


Figure 4. Mandrel used for slumping the glass. A 165mm square NG-4 sample, shown balanced on the rear part of the mandrel, is in a position prior to slumping. In the foreground is a piece after slumping.

FROM THE EDITOR'S DESK

As I sit here at the editor's desk, preparing this report to the members, you can't know the joy and fun I am getting out of typing. It all comes from the fact that the Directors, at the June meeting, approved the purchase of a new typewriter. After trying out four different machines, I decided to go with the IBM Wheelwriter 3. It has many features that my old machine did not have. I wish to thank the Board of Directors very much for their approval. Also, at the same time, approval was given to replace the old folding machine. This too has been done. We are now the owners of a MBM Fastfold #17 folding machine. Again thank you to the Board. Now when we want to fold up 1000 sheets of a report we will not have to print up 1500, because the old machine used to EAT some of our papers.

This month I am pleased to report to the membership that, for once in a long, long time, I have received more material than we can print in this issue. The material not used this month will be run in the November issue. Now, this doesn't mean that you do not need to send in more material. Now that you have started sending in material, PLEASE, by all means, keep it up. We are even receiving material from our friends and members overseas. We are trying to activate the PAST-PRESIDENT'S POINTS, and Past-President Arthur Dolenga has sent in an article for this issue. Past-President Wilbur Mateyka has consented to fill the page for the November issue. Now where do I go from there? Will it die out again or will all the past-presidents start to write up articles? We also like to hear from some of the committee chairmen, as to how their different committees are making out. You do not have to be a member of the A.S.G.S. to send in material.

Along with sending in material to print, I am always being asked about pictures. They can be black & white or color. Size is not important; just a good clear picture. However, on the subject of pictures, I have received some where SAFETY has been ignored, like a picture of someone breaking glass without having on a pair of safety glasses or gloves. Pictures that come in that show a lack of safety WILL NOT BE PRINTED. In this copy of FUSION you received a safety page to be displayed where it can be readily seen. We can thank the Wale Apparatus Co. for having enough printed to send to all of our members.

I would also like to bring to the attention of all of our readers the new COLOR ads that have started to appear in FUSION. More and more of our advertisers are asking about going over to color. When you talk to these sales representatives, let them know how you like to see their ads in color. After all, I am always looking for ways to make our FUSION bigger and better, and with the help of the membership we will do it. Thanks again to the BOARD OF DIRECTORS.

Jim Panczner
Editor

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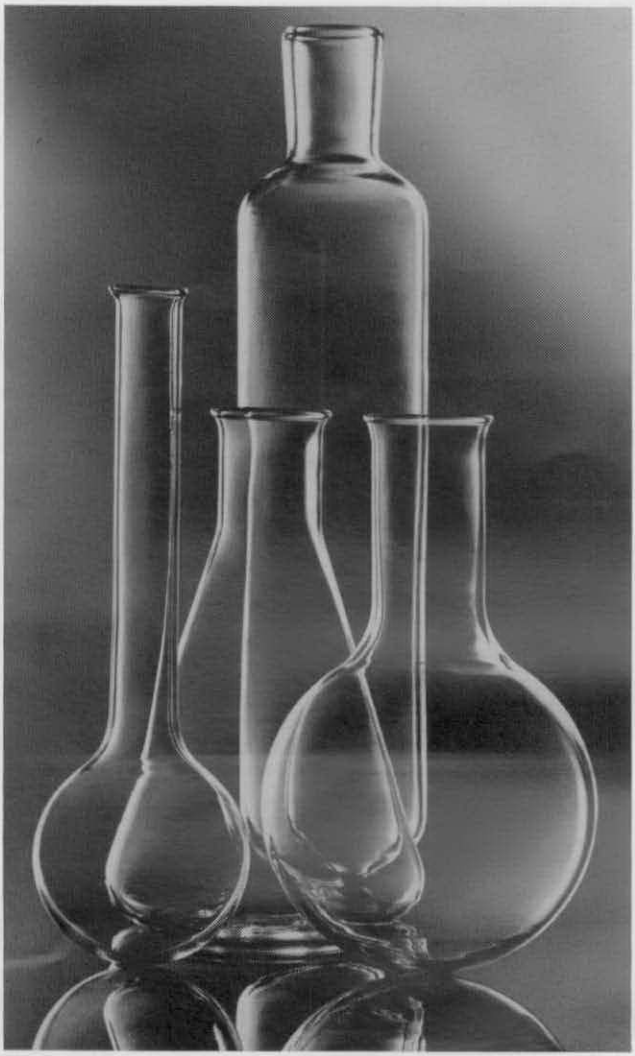

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SAFETY AND HAZARDS REPORT

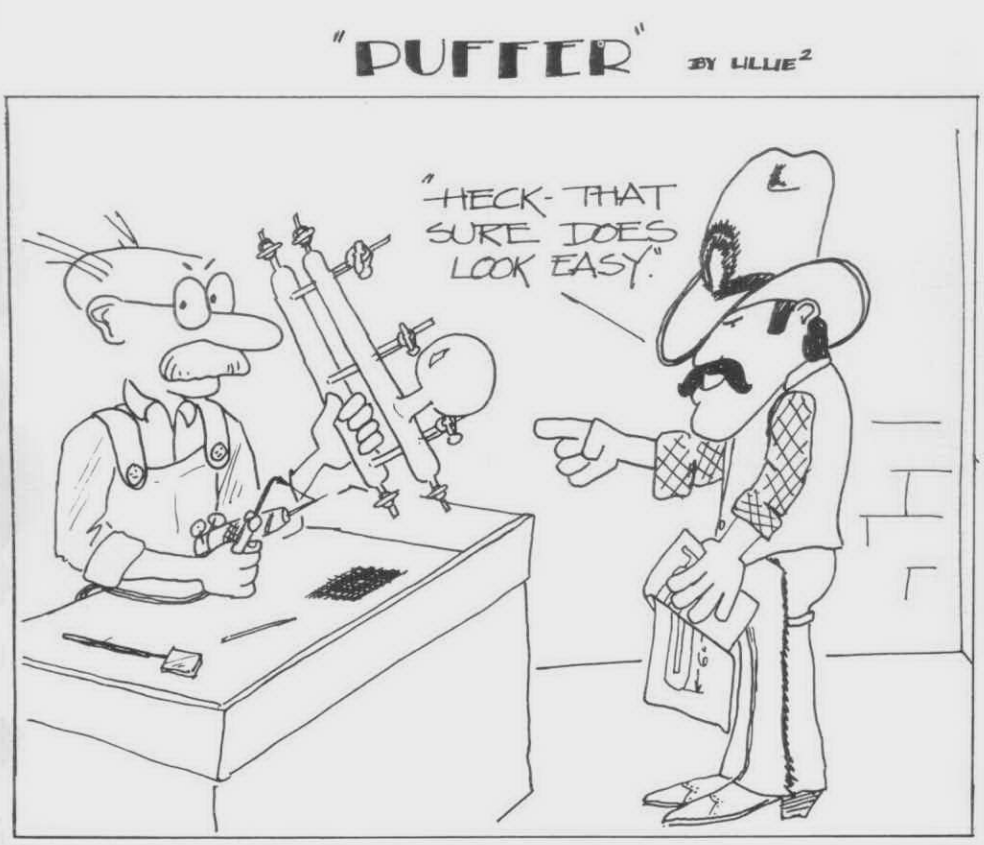
GLASS CUTTERS BEWARE

AIR conditioners and humidifiers are not the only sources of Legionnaire's disease. People using static water and cutting equipment in their hobbies – such as glass engraving – "represent a hitherto unrecognized risk group of legionellosis", according to Dr. G. M. Scholfield of the Public Health Laboratory Service's Porton Down Centre, and Dr. N. J. Martin of the West of Scotland College of Agriculture.

Dr. Martin's hobby is glass engraving, using a siphon to maintain a flow of water to cool diamond engraving wheels and minimize dust. Slime builds up in the silicone tubes carrying tap water from the reservoir to the wheel. This orange-brown slime contained large numbers of *pneumophilia*, he found.

Diamond wheels are very efficient at producing aerosols, Drs. Schofield and Martin point out – the known route of transmission of *L pneumophilia*. (*Lancet*, 1985, May 11, i, 1101).

Thanks to L. W. Ratcliffe, Glassblower, The Imperial Cancer Research Fund.



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ULTRA HIGH VACUUM BAKEABLE ZnSe WINDOW SEAL

C. Deminet

Martin Marietta Aerospace, Laser Systems Technology
Albuquerque, NM

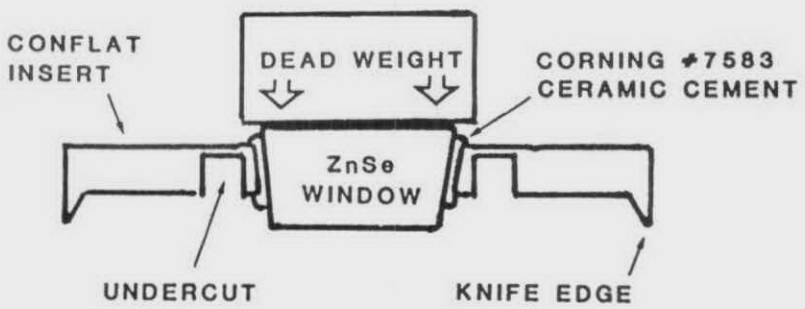
ABSTRACT

A Co_2 laser is used for refractory oxide coating of laser mirrors in ultrahigh vacuum. The laser energy is introduced into a UHV chamber through a zinc selenide window. The chamber has to be baked to 250°C to attain the required pressure; thus, the need arises for bakeable window seals.

This paper describes the development of a ZnSe-to-stainless steel seal using glass ceramic cement. To avoid the direct welding of alloys with dissimilar coefficients of thermal expansion, the window is sealed into a Conflat insert which allows for repolishing of the ZnSe window in the event of contamination by evaporant material.

A Co_2 laser is used for refractory oxide coating of laser mirrors in ultrahigh vacuum. The laser energy is introduced into a UHV chamber through a zinc selenide window. The chamber has to be baked to 250°C to attain the required pressure; thus, the need arises for bakeable window seals.

The ZnSe window is bonded under compression to a stainless steel (SS #410) window frame by means of glass ceramic cement (Corning Code 7583). These materials have a close coefficient of thermal expansion (8.5×10^{-6}). Compression of the ZnSe window to the frame is achieved by making the seal with a 9-deg taper under a controlled dead weight (see figure below). The SS #410 window frame is incorporated into a standard Conflat knife edge insert flange to avoid the welding of alloys of dissimilar coefficients of expansion. Frequent thermal cycling may cause cracking of the weld. The SS #410 insert is also undercut by a circular groove around the window frame. This provides a flexible diaphragm between the window surround and the Conflat interface. This prevents window stress due to forces imposed by Conflat bolts.



The thickness of the ZnSe window is greater than the SS #410 insert. Thus, the optical surfaces can be repolished in the event either of accidental oxide deposition from inside the vacuum chamber or of damage to the surfaces.

The insert is oxidized at 600°C for 1 hour. The 7583 frit is then suspended in a Corning-supplied vehicle and applied to the window frame. After drying at 150°C for 30 minutes, the dry frit is cut on the lathe for uniform thickness to about 0.25 mm. The insert is then heated slowly to 425°C to glaze the frit. As soon as the glass melts, the furnace is turned off and opened to prevent premature cyrstallization of the frit. Another thin layer of the frit paste is then applied to the window frame, and baked to 325°C to burn off the binder. The ZnSe window, which has a 9-deg taper, is cleaned with methenol and gently pressed into the tapered frame. The frame is then placed on a short length of quartz tubing and placed on the quartz plate in the furnace. The assembly is adjusted to a horizontal plane with a leveling gauge. The dead weight employed for a 25-mm diameter window is 240 gr.

Bonding is performed by holding the temperature at 325°C for fifteen minutes, then raising the temperature to 500°C. Since the quartz weight absorbs heat, the temperature must be raised slowly. After 30 minutes at 500°C, the furnace is turned off and left to cool overnight. This process results in oxidation of the ZnSe to a depth of about 0.5 mm; thereby necessitating regrinding and polishing of the optical surface. The window is then checked with a helium leak detector. A window fabricated in this fashion has been thermal cycled frequently to 250°C over a 3 month period.

REFERENCES

Michael A. Mozelski and Gerhard Lewin, Princton Plasma Laboratory, "Bakeable Optical Windows for the Tokamak Fusion Test Reactor", Proceedings of the IEEF Engineering Conference of Fusion Research, Chicago, Dec. 26-28, 1981.

ACKNOWLEGEMENTS

Acknowledgements are extended to Mr. Graham Flint for suggesting the diaphram undercutting of the window frame; to Mr. Curt Lampkin for suggesting SS #410, as Carpenter 49 alloy was not available; to the Martin Marietta Model Shop and Optical Shops for preparing the window frame and ZnSe window and for vacuum testing; and to Dr. Howard L. McCollister of Sandia National Laboratory for measurements of the coefficient of expansion of the ZnSe sample.

This work was sponsored by Air Force Weapons Laboratory, Air Force Systems Command, United States Air Force, Kirtland Air Force Base, New Mexico, 87117.

Presented at American Ceramic Society Symposium, in Cincinnati, March, 1985.

NOTICE FROM THE BSSG

"The British Society of Scientific Glassblowers announces that from the 14th September, 1985 all persons wishing to join the Society as Full Members will be required to fit the Society's Standard of Competance Examination."

Further information from the: Honorary Secretary, Society Office, 21 Grebe Avenue, Eccleston Park, St. Helens, Merseyside, WA10 3QL.

3RD INTERNATIONAL SYMPOSIUM —GERMANY—FRANCE

For the tour we have (3) busses sold out and have people on the waiting list for (1) more.

All items listed will be included in the tour price.

We will be arriving in Frankfurt where our busses will await us for transfer to Bad Durkheim – approximately one hour away.

We will be staying there for four nights. Included will be:

1. Buffet breakfast every morning.
2. A tour into the Black Forest.
3. A tour to Heidelberg including a visit to the Castle and the Max Plank Institute Glass Shop.
4. Local sightseeing and a possible stop at the BASF in Ludwigshafen.
5. An evening in the Big Barrel.
6. Optional – there is also casino gambling in Bad Durkheim.

For the next three nights we will be staying in beautiful Freiburg. Continental breakfast only, with a free day for rest and relaxation (shopping).

7. A one day tour into Switzerland via the Rhine Falls at Schaffhausen into the Zurich area – Swiss Alps and Lake of Constance.

We will then travel through the Hollental (Hells Valley) to Fussen – with a visit to King Ludwig's famous castle "Neuschwanstein". That evening we will check into our Munich hotels for a five night stay.

1. From here we will tour the beautiful Romantic Street through Augsburg Ulm and Nordlingen.
2. A day trip to Berchtesgaden and the Austrian Alps.
3. A tour to one of the many choice spots like Salsburg or Garmisch.
4. A city sightseeing tour – ½ day.
5. A night at one of the famous beer halls.
6. With 1½ days of rest and relaxation (shopping).

Now it is time to leave for Nurnberg and the joint symposium – four nights.

The symposium hotel cost is included. A unified symposium fee which includes an evening with entertainment and dinner – The International Gala Banquet – ladies program will be additional.

The exact program is being worked out by the German Glassblowers Society.

A Schott-Glass Factory visit is included. Paper and Meeting session will be held in the Meistersinger Halle with instant translations of papers, etc. One or two ladies tours will be included in the registration fee.

On our way to Mainz we will stop at Wertheim, a large glass center, with a visit to the Glass Museum.

The last four days in Germany will be spent in Mainz from where we will be visiting Schott Glassworks Mainz and, if possible, some other Glass Shops, Glassblowing School and Tool Factory.

A Rhine tour by boat and a stop at a famous wine town, Rudesheim, will conclude our stay. About 120 people will then continue on to Paris and Lyons.

We will be staying in medium-sized three or four star hotels with in and outdoor pools in some.

Our air-conditioned busses feature side-sliding reclining seats, radio and tape recorder, refrigerator and services for drinks, and on-board toilet and washroom.

Your bus captains will be: Mr. Karl Walther, Mr. O. Safferling and Mr. Fred Kummer.

This itinerary is subject to change, but it is our intent to make changes only for the better.

Sincerely,
Rudolf W. Schlott
3rd International Symposium Chairman, A.S.G.S

P.S.

There is a call out for papers, or would you like to participate in demonstrations, etc? The estimated Deluxe Tour Cost August 14th through September 4th will be approximately $1400 to $1500 at present exchange rates. For Paris add approximately $200.

Airfare included – New York - Frankfurt; Frankfurt or Paris - New York

---

2ND KIMBLE AWARD PRESENTED TO SCC

CARNEYS POINT – Sally Prasch, an Elmer resident, has been awarded a $200 scholarship to continue her studies in Scientific Glassblowing Technology.

The Kimble Division of Owens-Illinois has donated funds to Salem Community College to present the second annual Kimble Award for excellence in scientific glassblowing.

The check, presented by Jeff Mencken, a regional sales representative for Kimble, will be used as a scholarship.

"We very much appreciate the continued support given to our scientific glass program by Kimble," said college president William Wenzel.

The $200 scholarship is awarded annually to a Salem Community College student who exhibits outstanding achievement in scientific glassblowing.

The recipient of the award is chosen each year by Joseph Luisi, scientific glassblowing instructor at the college.

Last year, the Kimble Division presented Salem Community College with a plaque, which displays the names of all award recipients.

The Kimble Division manufactures products for the Healthcare Division of Owens-Illinois and is an outgrowth of the Kimble Glass Company, which was founded by Evan Kimble in Chicago in 1901 and relocated in Vineland in 1914.

CHAIRMAN-ELECT ROBERT T. CAHILL

The Scientific Apparatus Makers Association (SAMA), the national trade association representing the scientific instrument and apparatus industry, held its 67th Annual Meeting. Outgoing SAMA Chairman Gaynor N. Kelley of the Perkin-Elmer Corporation turned over the leadership of the association to Chairman-Elect Robert T. Cahill of the Corning Glass Works.

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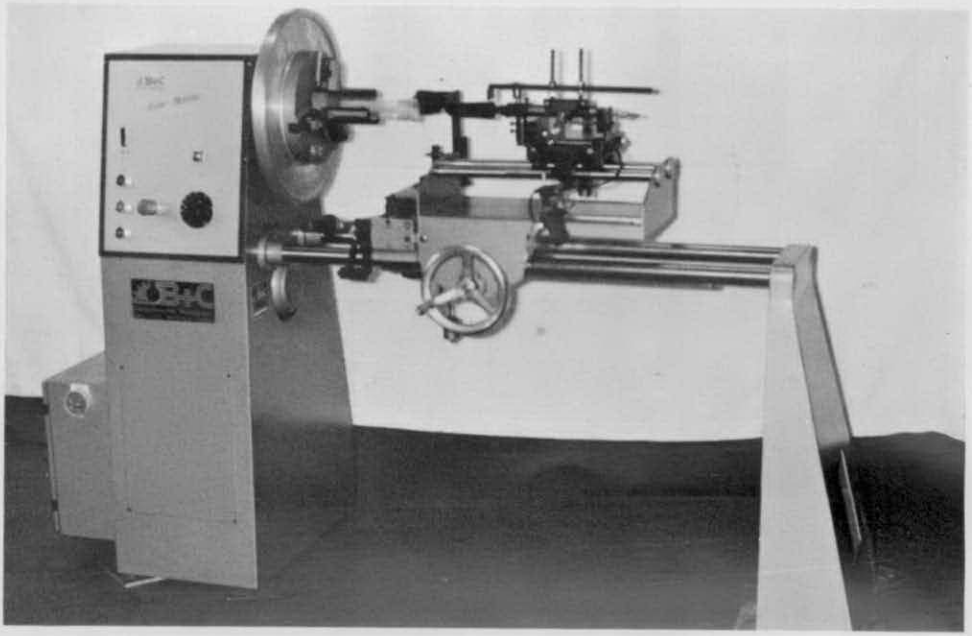

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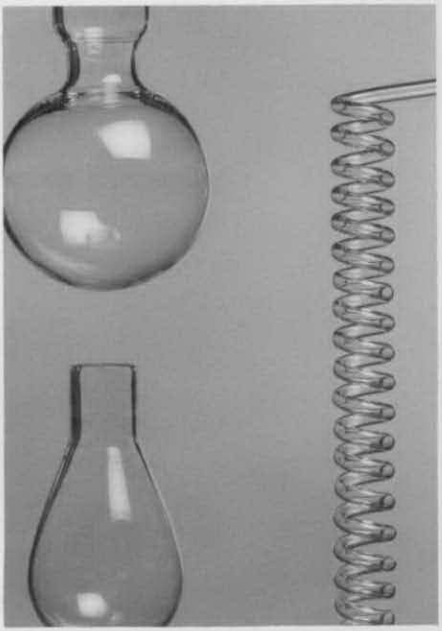

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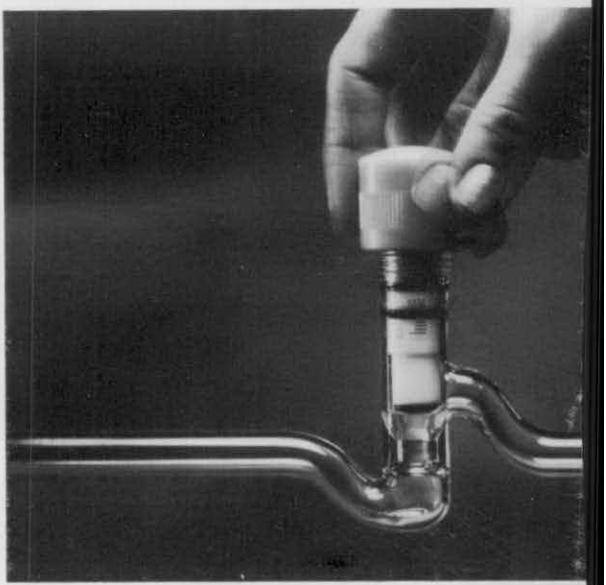

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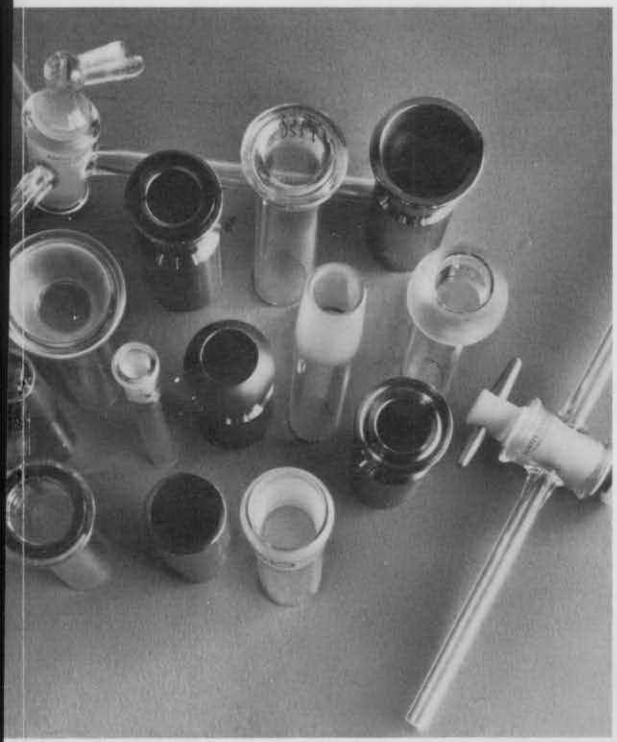

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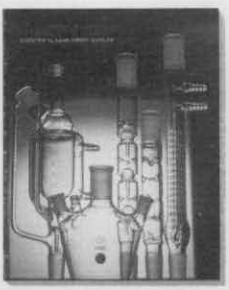

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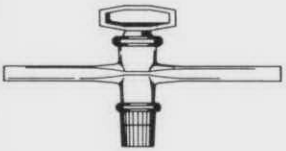


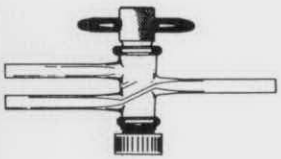
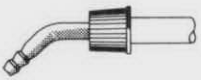

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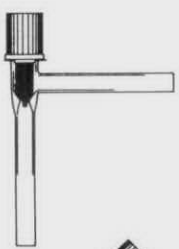


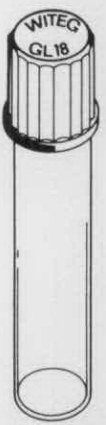

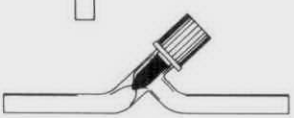


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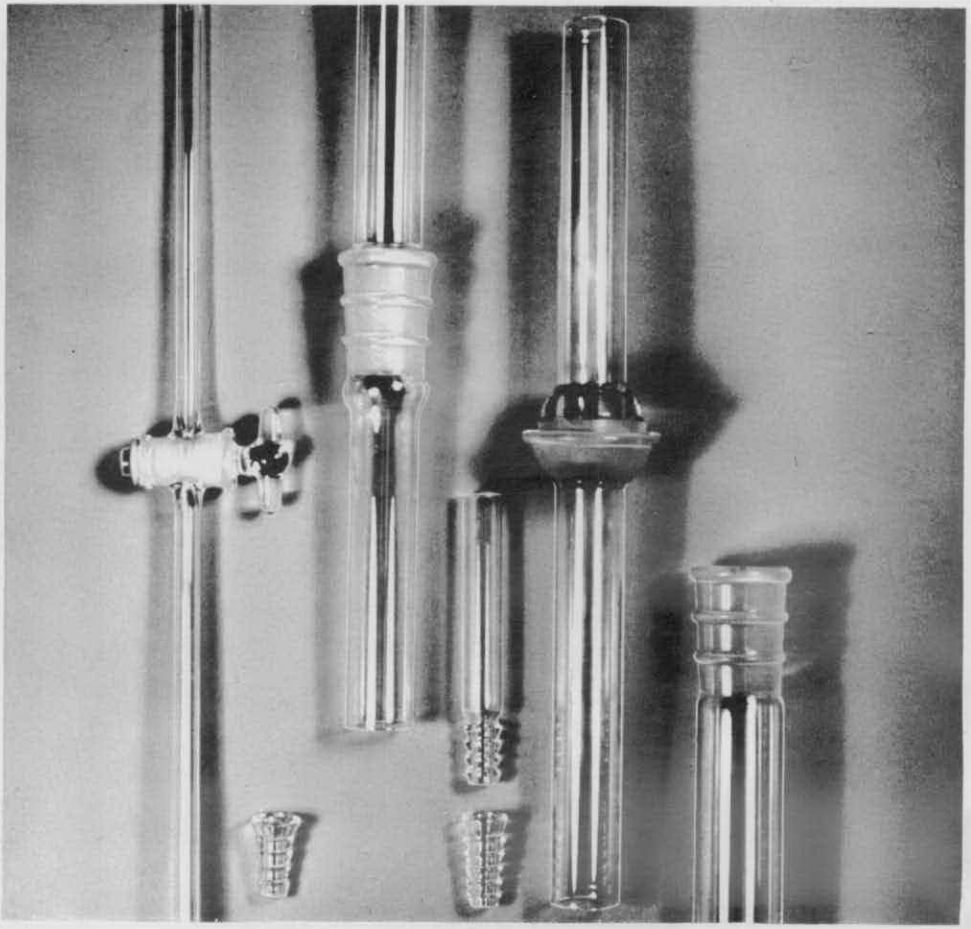

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SECTION NEWS

New England Section

Our 4th and final business meeting of 84-85 was held at Bill and Pat DeFlorio's Yankee Glassblower in Carlisle, MA on Thursday, June 6th.

A sandwich buffet was served before the meeting. The business meeting began at 7:30. The secretary and treasurer's reports were given as the "Year in Review". Since this was the final meeting of 84-85, the business was to elect officers to serve for the 85-86 year. The results were: Director (2year) – David Hovey, MIT Lincoln Labs; Chairman (1 year) – Gary Anderson, Corning Glass Works; Co-Chairman (1 year) – Peter Gale, HNU Systems Inc.; Treasurer (1 year): Andrea Kennedy, R.V.A.; Secretary (1 year) – Edward Mitchell, DuPont, N.E.N. Products.

The business meeting was followed by workshops by Bill and Pat DeFlorio, which included induction sealing of glass windows to glass tubing, a refinishing machine for restoring damaged glassware and how to make a fixture to hold Ace threaded glassware.

This year we tried to make our section meetings informative, unique, interesting and enjoyable. I wish to thank our hosts, sponsors, demonstrators and membership who participated and made this year a success.

Gary L. Anderson
Secretary

NOTICE

The New England Section Roster was completed in May. Copies are now available for our section members. If you would like a copy, please contact Gary Anderson.

NEW ENGLAND AND HUDSON MOHAWK VALLEY SECTIONS

On Saturday May 11th the New England and Hudson-Mohawk Valley Sections held a joint meeting. The meeting took place at the beautiful UMASS campus in Amherst, MA. This was a first for our sections, which brought together 94 members and guests for a day of technical and artistic glassworking demonstrations, technical discussions, a tour of the UMASS campus and time for socializing.

We were fortunate to have Ace Glass Inc. represented by Don Sellar; Wale Apparatus Co. represented by Dennis Wargo and Wilt Industries Inc. represented by Bill and Dan Wilt as sponsors for the day. Without their financial support this meeting would not have been possible. Each company had a display of tools, equipment or glassware. Catalogs of their whole product line were available for those who were interested.

National President, Wilbur Mateyka, from the University of Kentucky and President-Elect, Jerry Cloninger, from Georgia Inst. of Technology, were among our special guests who traveled many miles to attend this event.

Our workshops were held in the spacious Graduate Center Glass Shop of Gordon Good, Tim Landers and Larry Williams. A special thanks is in order to these three members for their extra effort in preparing their shop so well.

The meeting began at 10 A.M. with coffee and pastries and some time to get acquainted. At 10:30, the workshops began. We had eight talented demonstrators who were willing to share with us their technical skills and ideas. The workshops included: Gus Abel, GTE Laboratories – Artistic animals, etc.; Ted Bolan, Philip Labs – Stained glass and plate glass cutting; Allan Brown, Unversity of Conn. – Silvering techniques; Peter Hawkett, G. Finkenbeiner, Inc. – Artistic flowers, etc.; Kevin Reynolds, Digital Equipment Corp. – Quartz boat fabrication; Bob Senecal, GE Research Laboratories – 2" Kovar seal; Joe Walas, Olin Corp. – Quartz .5mm capillary seal and Don Wilson, Digital Equipment Corp. – Quartz flange to tubing seal.

The New England and Hudson-Mohawk Sections thank all who participated in the workshops for their willingness to take part in this special meeting.

The spouses tour, guided by Jane Good and Pam Williams, was taking place while we were busy at the workshops. I understand that the tour of the UMASS Campus and Amherst was enjoyed by all. Jane and Pam did an excellent job.

By 12:30 the workshops and spouses tour were complete, and we all went to the Top of the Campus Restaurant. There was a cash bar available for the thirsty, and lunch of Chicken Breast Supreme or Roast Sirloin of Beef was served. After lunch the Hudson-Mohawk Section held a business meeting, while many of us finished our day by enjoying the beautiful campus.

The success of this meeting exceeded our expectations. We learned a lot from this combined effort. It was hard work! But, everyone was willing to help out when called upon. Regional efforts like this are especially important for our membership who are unable to attend our national symposia. The New England Section looks forward to working with the Hudson-Mohawk Valley Section in the future. Thanks again to everyone who took part in this occasion.

Gary L. Anderson
Secretary, New England Section

DISPLAYED BELOW IS A PICTORIAL REVIEW OF THE COMBINED MEETING OF THE NEW ENGLAND AND HUDSON-MOHAWK VALLEY SECTIONS.

Demonstrators at the workshop session: L to R - Don Wilson, Ted Bolan, Gus Abel, Joe Walas, Peter Hawkett, Kevin Reynolds, Keith Winston. Missing at time of photo - Al Brown, Bob Senecal.

Meeting sponsors: L to R - Don Sellars (Ace Glass), Dan Wilt (Wilt Industries), Andy Wargo (Wale Apparatus).

Officers enjoy dinner: L to R - Wib Mateyka (Past President), Jerry Cloninger (President), Mrs. Cloninger, Corolyn Ryan, Bill Ryan (Past President).

Sealing quarts flange: Don Wilson.

Fabricating wafer holder: Kevin Reynolds.

Silvering: Al Brown.

Fabricating quartz box: Keith Winston.

Kovar sealing: Bob Senecal.

Lampworking: Peter Hawkett.

Lampworking: Gus Abel.

The Metropolitan New York Section

The spring meeting of the Metro New York Chapter was held April 12th at the Ehring Tavern in the Bronx, N.Y. Chemglass, one of our regular contributors, sponsored our business meeting and buffet dinner. Special thanks to Jim Carson and Walter Surdam of Chemglass for their backing and interest. 25 people attended and Rudy Schlott (as usual) was our 50/50 winner. Ted Bolan helped discuss plans for the upcoming symposium in Toronto.

Our final meeting of the 1984-1985 season was also held at the Ehring Tavern and attended by 30 members. The host for the evening was Corning Glass Works. After dinner, Tom Hanlon and Bob Gramarossa introduced Levi Thomas, a Corning representative. Mr. Thomas, who furnished a slide presentation, also gave a very informative and articulate talk on Corning's commitment to quality products. He said Corning is taking a leadership role top to bottom and every employee is treated as a potential customer.

The 50/50 winner was Ray Brengs Sr. and the group took in $31.00 total. Again, many thanks to Corning Glass Works.

Our first meeting for the 1985-1986 season is tentatively scheduled for September 27, 1985 at the Ehring Tavern.

Sincerely
John Pucylowski
Secretary

Midwest Section

The Friday, May 17, meeting of the Midwest Section was held at the Caravelle Restaurant in Rosemont, Ill. The social hour was sponsored by the midwest section and by Kontes Glass Co., represented by Mr. Bob Reese.

Chairman Bob Ponton opened the meeting at 8:45, thanked us for coming and then introduced us to Bob Reese.

Bob Reese handled the drawing of door prizes which were won by John Squeo, Caroline Gardner and George Jahn.

Bill Sales was nominated as the recipient of the Midwest Section Achievement Award.

Passing the gavel, new Chairman Chester Swopes (L), Past Chairman Robert Ponton (R).

Robert Ponton (L) receiving Meritorious Service Award from Joe Gregar.

Chester Swopes (L), Bob Reese and wife (C), Russ Bartmess (R Center), George Jahn (R).

Midwest Section Members. Don't they look happy after you feed them?

The following new officers were installed: Chairman, Chester Swopes; Vice Chairman, Dennis Greunke; Secretary, George Jahn; Treasurer, Joe Gregar; Director, Bob Ponton; Alt. Director, Jim Morris and as midwest board director, John Squeo.

Chester Swopes gave a humorous acceptance speech which was followed by a vote for having fewer meetings per year, as recommended by Joe Gregar. Joe said that these meetings would be workshop meetings. Bob Ponton concurred with having fewer meetings as we had to cancel a meeting in Chinatown last year because of low turnout.

Bill Schulze was nominated for the Board of Directors at large by Joe Gregar, seconded by Jim Morris and approved by those present.

Joe Gregar praised and thanked Bob Ponton for serving as chairman from 1983-1985 and presented him with a plaque from the Midwest Section for his services.

The treasurer's report was passed out, followed by a motion from Bob Ponton that we accept it; seconded by Jim Morris.

Chester Swopes thanked Bob Reese and Kontes for their generous sponsorship.

Bob Ponton made the motion to adjourn at 9:08; seconded by Jim Morris.

George Jahn
Secretary

Southeastern Section

The 29th annual meeting of the Southeastern Section of the American Scientific Glassblowers Society was held on April 12th and 13th. The location was the Ramada Inn at Spartanburg, South Carolina. There was a very good turnout by the members. After registration on Friday, we toured the Spartanburg Steel Products Plant. Mr. Roger Eggena of Spartanburg Steel showed us the various products that they manufacture which range from beer kegs to automobile panels. The machinery it takes to produce these products is incredibly large. Friday night a social gathering was sponsored by Autokey Systems. Needless to say, this was enjoyed by all.

The annual business meeting was held at 9:30 A.M. on Saturday. Chairman Bill Caldwell started the meeting by recognizing the national officers present. They were: Past-President Don Lillie, President Wib Mateyka, President-Elect Jerry Cloninger an

Executive Secretary Ted Bolan. New members recognized at the meeting were Donna Rice, David Lovins, Klaus Widmann and Donald Woodyard. 1985-86 officers were confirmed as:Chairman Bill Caldwell, Vice-Chairman Willy Shoup, Secretary-Treasurer Rick Smith and Director Owen Kingsbury. The Southeastern Section agreed to volunteer to host the 1989 or 1990 national symposium in Atlanta, Georgia. The members also decided to make Randy Searle, George and Dolores Sites and Dorothy Drechsel lifetime members of the Southeastern Section. The 30th annual meeting of the section will be in Atlanta, Georgia.

The Southeastern Section Family.

Chairman Bill Caldwell addresses the members at the annual banquet.

Bradley Smith, youngest in the group, shows his mom Autokey's neon signs.

Southeastern members try their hand at neon bending.

At 1:30 P.M. on Saturday we toured the facilities of Autokey Systems. They make neon signs for beer companies and also make the valves that go on the kegs. The members were allowed to try their hand at neon bending. This turned out to be a very interesting demonstration. Joel Babbitt gave a workshop on U.V. cured optical cement. There was also bulb processing demonstrations for neon argon Hg units. At 6:30 P.M. there was a cocktail hour sponsored by Ace Glass. This hit the spot after trying to bend soft glass tubes all afternoon. The banquet and installation of officers was held at 7:30 P.M. Bill Caldwell provided the impromptu entertainment after dinner. Saturday night marked the close of another meeting in the Southeastern Section tradition, which closely resembles a good ole' southern family reunion.

Respectfully submitted,
Richard Smith
Secretary-Treasurer

Ohio Valley Section

The spring meeting of the Ohio Valley Section was hosted by Len Johnson and John Magera at Ace Glass in Louisville, Ky. on April 20, 1985. After a great lunch provided by Ace Glass, the glassblowers went into the shop for a demonstration by Bill Langley from Vineland, and the ladies went shopping in downtown Louisville. Bill showed us how a Friedrichs condenser is fabricated at the bench burner.

Bill Langley at work

Enjoying a hearty lunch at the Ace Glass.

At the business meeting, Tom Kern filled us in on the progress of the plans for the 1986 Symposium. Elections were held for all officers in our section. The new officers are: Bob Russell, Director; Tom Kern, Chairman; and Pete Clarke, Secretary/Treasurer. The Vice Chairman is Mike Burchfield, and the Alternate Director is Pete Clarke.

The ladies returned and the meeting was adjourned for dinner.

Respectfully submitted,
P. Clarke
Secretary/Treasurer

Great Lakes Section

Come help us celebrate!

The Great Lakes Section will be celebrating our 25th Anniversary on September 14th, 1985.

Plans are underway to make this event one to remember. We would like to invite all sections to our celebration.

Details have not been finalized but more information will be sent to your local directors in time for us to receive your reservations.

Mark your calendars!!

Delaware Valley Section

MARCH MEETING

The March meeting of the Delaware Valley Section of the A.S.G.S. was held on Thursday, March 28, 1985, at the Five Points Inn, Vineland, NJ. Corning Glass Works sponsored our cocktail hour, which was followed by a buffet dinner. **Ninety-two** members and guests were in attendance.

Corning representatives - Bill Jackson, Jim Griffin, Levi Thomas, Dick Greiner, Vincent Osekoski.

Following dinner, Chairman Ken Everingham introduced Corning Glass Works representatives Bill Jackson, Product Manager-Glassware; Levi Thomas, Quality Manager-Science Products; Jim Griffin, Quality Control Manager-Big Flats; Dick Greiner, Distributor Sales Representative; Vincent Osekoski, Sales Development Manager/OEM. Bill Jackson conducted a drawing of Corning products with winners being Leroy Whitson, Rich DiRenzo and Nancy Barker. Vince Arena was a winner of a fine Steuben olive dish. Levi Thomas gave an excellent slide presentation on "Total Quality in Today's Market Place". Levi Thomas explained Corning's total quality commitment to meet customer requirements for its products and services.

Levi Thomas explains total quality.

Members and Guests enjoying cocktail hour.

A short business meeting followed. Dave Edson was chosen as chairman of the 1988 symposium. Nominations for new officers were opened and the following slate was formed: Chairman - Robert Goffredi; Vice-Chairman – Norman Neil; Secretary/Treasurer – Cindy McNellis-Eberwine; Section Director – Joe Luisi and Ken Everingham; Alternate Director – E. Victor Pesce. Ballots for the election of new officers would be sent out by the secretary.

The Delaware Valley Section would like to thank Corning Glass for sponsoring our meeting, and especially the excellent program given by Levi Thomas.

Edwin Powell
Secretary/Treasurer

APRIL MEETING

The April meeting of the Delaware Valley Section of the A.S.G.S. was held on Thursday, April 25, 1985 at the Five Points Inn, Vineland, NJ. Schott America sponsored our cocktail hour, followed by a buffet dinner.

After our dinner, Schott America representatives Andrew LaGrotte, Group Marketing Manager, Juergen Kramer, Technical Glass Engineer and Janine Tompkins presented a video tape entitled "Total Capabilities". Andy La Grotte provided all those attending with a gift, which was follwed by a drawing of some fine Schott products.

New Officers Bob Goffredi, Vic Pesce, Cindy Eberwine, Ken Everingham.

Following the program was a short business meeting. The results of the election of new officers were read and they were sworn in by Executive Secretary, Ted Bolan. The new officers are: Chairman - Robert Goffredi; Vice Chairman - Norm Neil; Secretary/Treasurer - Cindy McNellis Eberwine; Section Director - Ken Everingham; Alternate Director - E. Victor Pesce.

Juergen Kramer, center, discusses Schott America.

Andy LaGrotte, Janine Tompkins and Juergen Kramer of Schott America.

Our thanks to Schott America for providing the Delaware Valley Section with a very informative program.

Edwin Powell
Secretary/Treasurer

NOTICE FROM HOME OFFICE

If you want to see your name in the 1985-1986 Roster, your **DUES** must be in the home office by October 1, 1985. Any received after that date will not be included

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BOARD ACTIONS TAKEN

BOARD OF DIRECTORS MEETINGS

JUNE 16, 1985
TORONTO, CANADA
WILBUR MATEYKA, President

The meeting was called to order at 8:33 a.m., Sunday, June 16, 1985.

Board of Directors present were: Wilbur Mateyka, Jerry Cloninger, Joseph Gregar, David Daenzer, Richard Ryan, William Wilt, Rudolf Schlott, Larry Harmon, Joseph Luisi, Owen Kingsbury, Larry Novak, Robert Ponton, Robert Russell, Donald Moody, James Merritt, Fred Kennedy, and David Chandler.

There were 17 members present and 3 members absent.

There were 8 guests present: Theodore Bolan, David Hovey, Richard Elvin, Thomas Kern, Gary Coyne, Kenneth Everingham, Mr. Fred Leslie, and Mrs. Fred Leslie.

1985, June B.O.D. Motions, Toronto, Canada
Wilbur Mateyka, President

MOTION:
Don Moody, Move we accept the minutes as corrected. 2nd by Owen Kingsbury.
MOTION PASSED

MOTION:
Larry Harmon, Accept Treasurers report as presented by treasurer David Daenzer at B. O. D. meeting, 6-16-85. 2nd by Jim Merritt
MOTION PASSED

MOTION:
Don Moody, Move we move our E. F. Hutton accounts to the National Bank of Detroit, Michigan. 2nd by Rudolf W. Schlott.
MOTION PASSED

MOTION:
Robert Ponton, To accept Awards Committee Procedures as corrected, B. O. D. meeting 6-16-85. 2nd by Fred Kennedy.
MOTION PASSED

MOTION:

Owen Kingsbury, That we establish a Junior Member Memorial Award. 2nd by Jim Merritt.

MOTION PASSED

MOTION:

Larry Harmon, To accept temporary adjustment to by-laws for one time only in 1987 for the Symposium in Boston, Mass. 2nd by Robert Ponton.

MOTION PASSED

MOTION:

Larry Harmon, A director will be eligible for reimbursement as long as a section holds a charter in good standing. Article VIII, Section 7. 2nd by Robert Ponton.

MOTION PASSED

MOTION:

Joe Luisi, I make a motion that David Edson of Lurex Glass, Vineland, New Jersey, be approved as chairman for the 1988 Scientific Glass Symposium. 2nd by Robert Russell.

MOTION PASSED

MOTION:

Richard Ryan, To add a yearly line expense item to the budget allowing for partial reimbursement for travel expenses for the President, President-Elect, and Executive Secretary in the amount of $1,000.00 each. To be non-transferable except upon mutual consent of said named officers within line item of budget. Unused monies can not be carried over to future budgets. 2nd by Don Moody.

MOTION PASSED

MOTION:

Jim Merritt; Move to adjourn. 2nd by Robert Russell.

MOTION PASSED

ANNUAL BUSINESS MEETING

TORONTO, ONTARIO, CANADA
JUNE 20, 1985

The meeting was called to order at 12:17 p.m. on June 20, 1985, by President Wilbur Mateyka.

The Secretary indicated to the President that we had a quorum and that the meeting was a legal meeting and we could conduct the business of the American Scientific Glassblowers Society.

The minutes from the Annual Business meeting in Newport Beach, Ca. were read and accepted as written in Fusion.

MOTION:

By Owen Kingsbury, 2nd by William Schulze, to accept minutes from Newport Beach, Ca. as written. MOTION PASSED

MOTION:

By Leo Dusek, 2nd by Gary Coyne, to accept the Treasurer's report as presented by Treasurer David Daenzer. MOTION PASSE

President Wilbur Mateyka called for any 'Old Business'. There was no old business.

Under New Business a concern was mentioned about the rising numbers of retired members presently in our society and this will be increasing in the future. The retired members pay a reduced fee for membership. This will reduce the amount of income the society generates from dues. A study may be in order to prepare the society's treasurer for this occurence.

The news of the new MEMORIAL AWARD was announced. This award is to be presented to a Junior member of outstanding accomplishments and contributions to the American Scientific Glassblowers Society.

M. Howe Smith was granted a "LIFETIME MEMBERSHIP" in the A.S.G.S.

President Mateyka asked the membership for nominations for the offices of President-Elect and Secretary. Nominations are due by the November Board of Directors Meeting.

William Wilt urged section members to participate and be active in their sections. This is the way to benefit from the society.

Motion to adjourn the meeting by Peter Clarke, 2nd by John Bivins.

MOTION PASSED

Respectfully submitted,
Joseph S. Gregar, Secretary

COMMITTEE CHAIRMEN 1985 - 1986

Audio-Visual	Owen Kingsbury
Awards	David Chandler
By-Laws	Wilbur Mateyka (Past President)
Education	Robert Ponton
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Safety and Hazards	Willy Shoup
Section Liaison	David Chandler (President-Elect)
Steering	Wilbur Mateyka (Past-President)
Seminar Coordinator	Larry Harmon

Letters to the Editor . . .

Dear Jim & Beverly,

Just a few lines to say Hi to you and keep in touch with the A.S.G.S. Mary and I are just about settled in our new house and presently busy, organizing the garden. You both must be busy with the preparation of the next symposium in Toronto. We must let this one pass us, but hope to be able, next year, to attend the 3rd International in Germany. We miss all of our friends very much and please give our regards to all of them.

Weather here has been nice, with some rain at times, but last week was glorious and lovely temperatures. Have so far enjoyed retirement and am busier than ever. I will set up a little workshop to pursue my hobbies in. How have things been in Toledo? Spring has arrived in Ohio too, I expect. Must close now and Mary sends her love. Love and regards, and God Bless.

Andre and Mary Spaan

Dear Mr. Panczner,

At a recent glassblowers meeting I heard a man mention that there were only 14 women glassblowers in the A.S.G.S. When I told this to another glassblower, he said he thought there were even less. For the whole country, such a number seemed too low, so I went through the A.S.G.S. membership roster and counted up the women, judging as well as I could by the first names. This may not be a very accurate method, but the results were interesting.

There are 20 women who are associate members, meaning they have an interest in, or some connection with, scientific glassblowing. Next, there are 23 women registered as regular members, meaning they have had more than five years of active glassblowing experience. And finally, there are 18 women registered as junior members, meaning they have less than five years experience. There are even two women registered as retired. Together, there are at least 43 women in our society who blow scientific glassware.

This still isn't a very high number, but it is roughly 10% of the glassblowers. I hope others find these facts interesting, and now have a more accurate picture of the make-up of the A.S.G.S.

Sincerely,
Jeanne Hoftiezer

THE CHEMISTRY OF GLASS AND OTHER SILICATES . . . .

. . . . I have seen the time when glass makers were in great demand because they made the faces for the windows in the churches. Those who painted such faces did not dare eat garlic nor onions, for if they had done so the paint would not have adhered to the glass . . . . The profession of glass making is honorable and the men who pursue it of good repute. – Bernard Palissy, 1510-1589.

Thanks to Bob Ponto

FUSION

ISSUANCE AND CLOSING DATES

a. Published quarterly – February, May, August, November.

b. Issued 1st of Month of issue date.

c. Copy to set due 1st of preceding month. Complete plates and space reservations due 1st of preceding month. Inserts due at printing plant 5th of preceding month. Last forms close 2 weeks prior to publication date.

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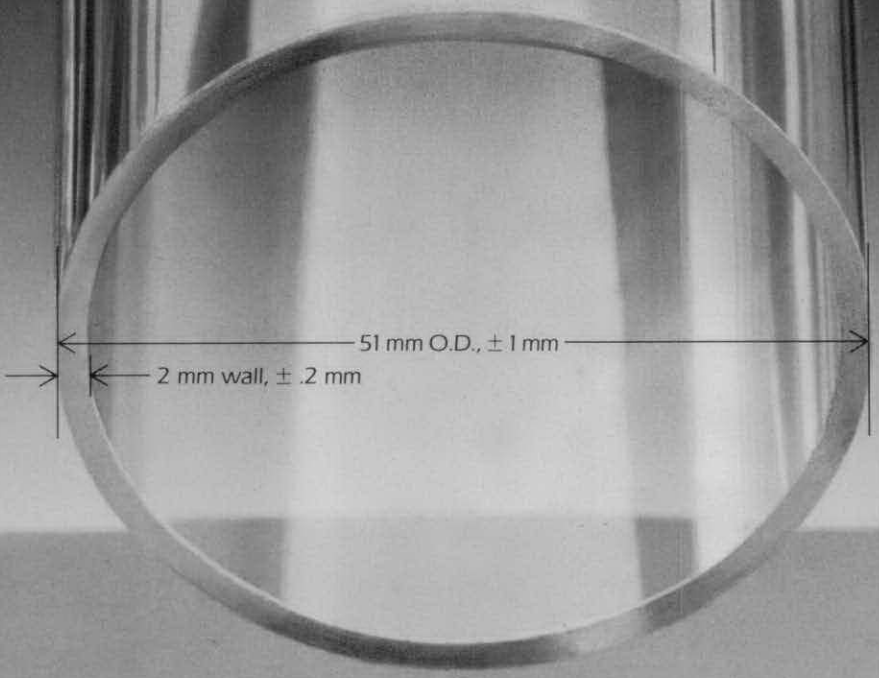

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The meeting will be held at the Marriott Hotel located fifteen miles north of downtown Cincinnati, just minutes off I-75. This is a suburban location but will offer many restaurant choices and several night spots for after-hours relaxation. All are within a ten-minute walk from the hotel.

Exhibit booth sales are proceeding very well. Also, the technical papers and the workshop program are beginning to take shape. Anyone who would like to help by presenting a paper or workshop, please contact the appropriate chairman.

I do respect and appreciate the importance of the formal part of the banquet program; however, I intend to shorten that part of the program wherever possible. An evening of dance music will follow the formal events.

Plans for Wednesday night's evening out are in the final stage. I will be able to give you details in the next FUSION. Help make our efforts a success with your attendance next year.

Respectfully,
Thomas Kern
Chairman - 1986 Symposium & Exhibition

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The Technical Papers Committee of the Society is soliciting papers for presentation at the 31st Symposium to be held June 22-27, 1986, in Cincinnati, Ohio, with subsequent publication in the "Proceedings".

Any member having a subject of interest and who would be willing to prepare and present such a paper at the Technical Sessions is invited to submit a brief summary or abstract of the material to the Papers Committee as soon as possible.

Membership in the Society is not a prerequisite for the acceptance of a paper for the Symposium. Therefore, any reader having knowledge of an authority on a subject pertaining to glass or glassblowing that would be educational to those attending and to readers of the Proceedings, is requested to invite this person to submit a resume of the subject to the Committee for consideration.

All summaries should include

1. Paper title
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3. Author's title
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5. Approximately 150 word abstract and certification that material may be published by the A.S.G.S.

All communications regarding technical papers should be addressed to: **Wilbur C. Mateyka, University of Kentucky, Chemistry Dept.-RM 3-D, Lexington, KY 40506, Phone No. (606) 257-7072.**

The Papers Committee will supply details concerning the requirements for the preparation of the manuscript for oral presentation and publication, upon acceptance of the subject.

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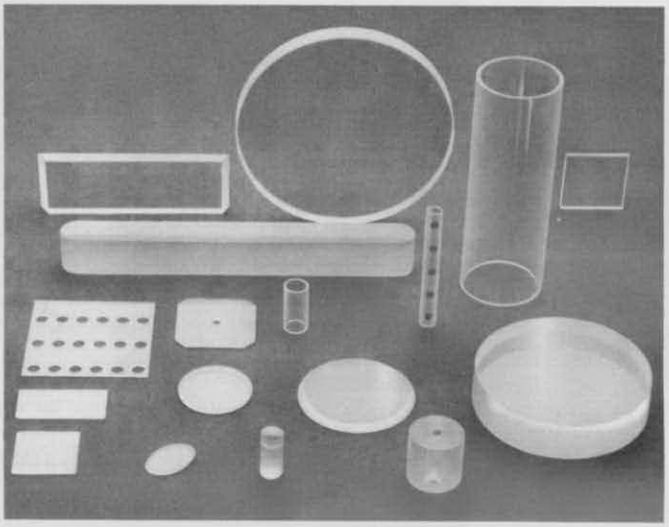

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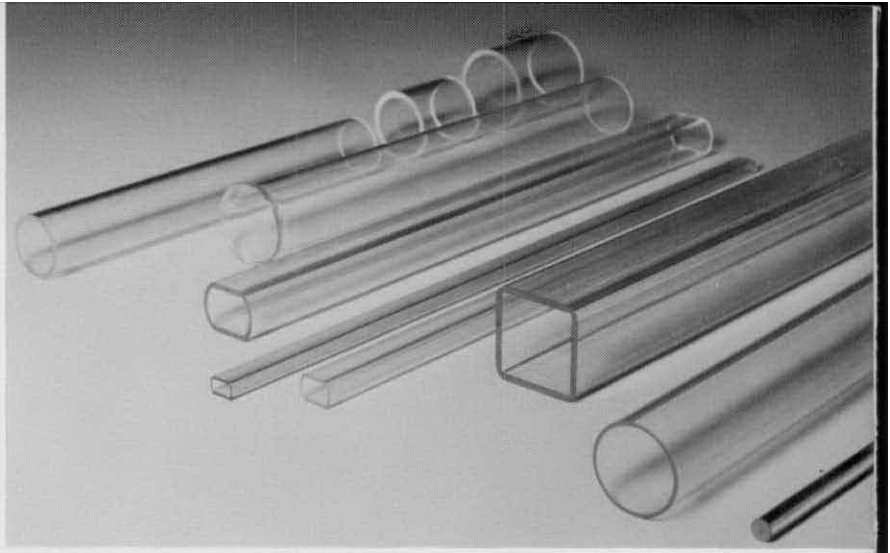

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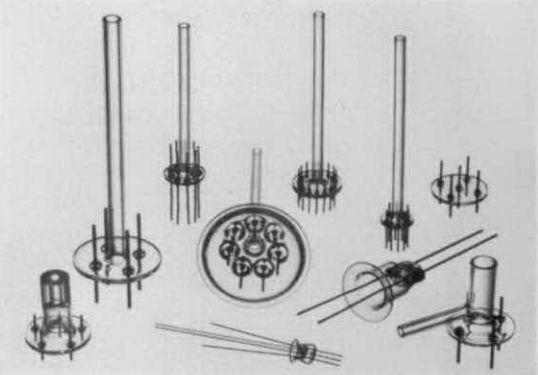

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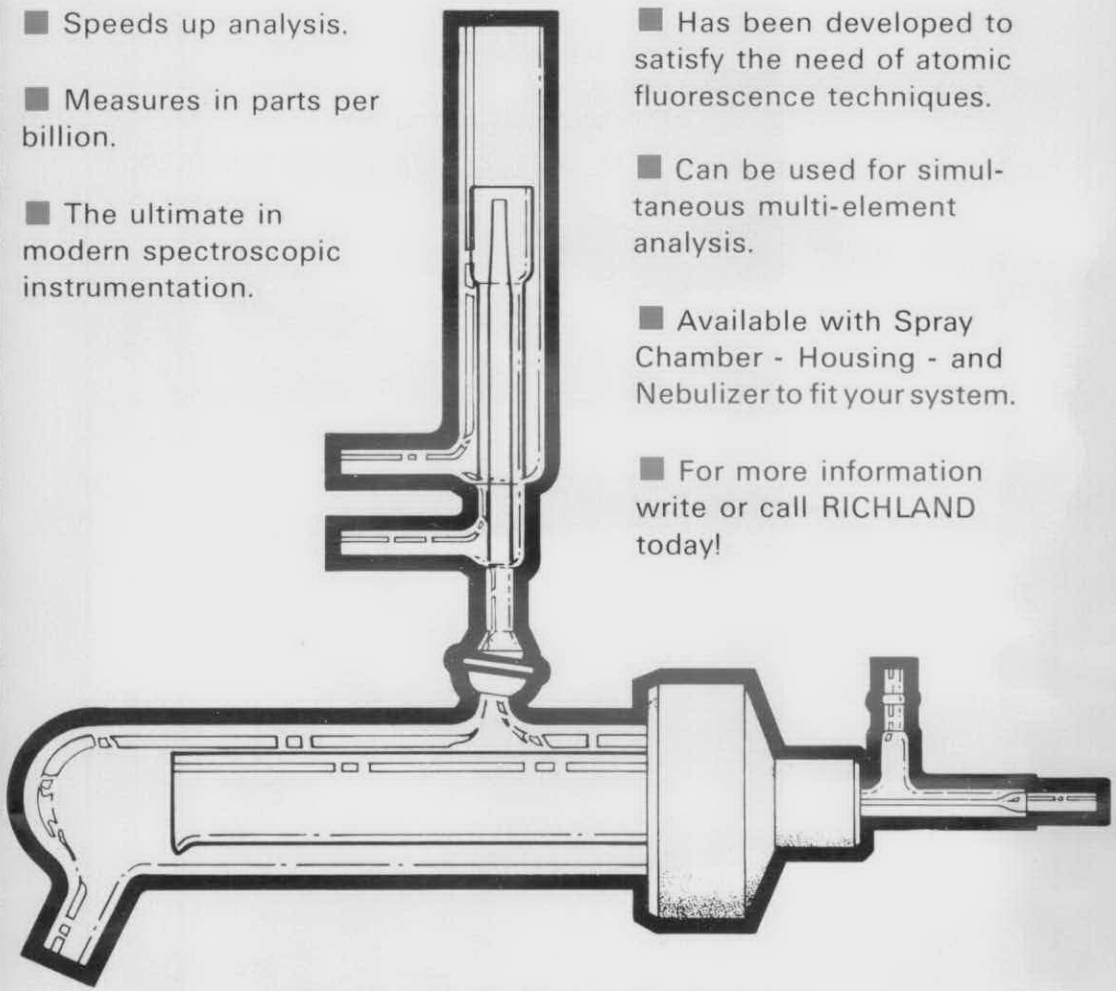

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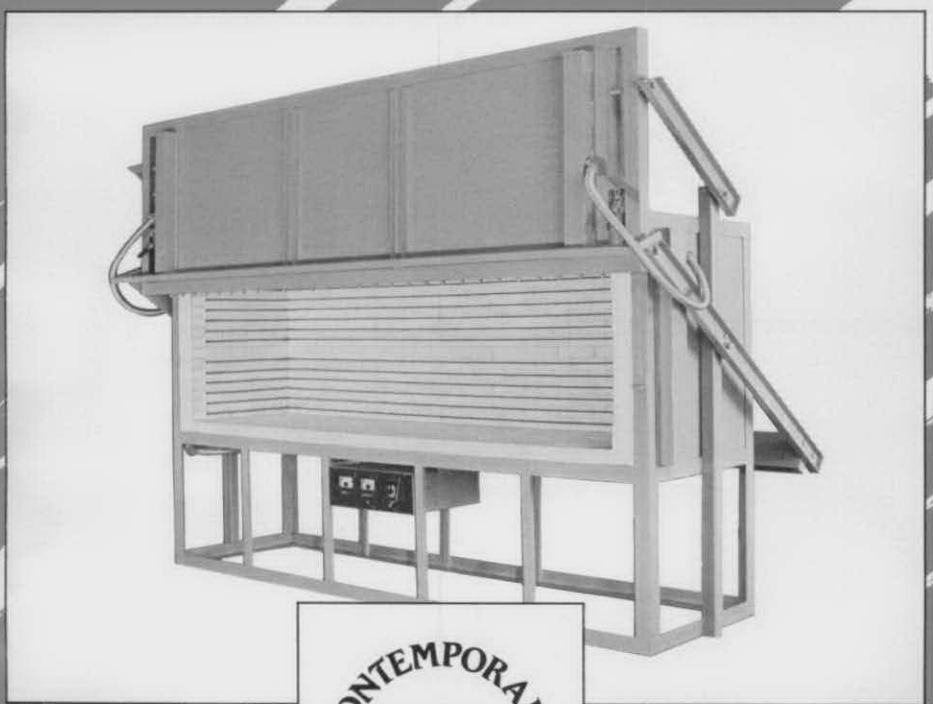

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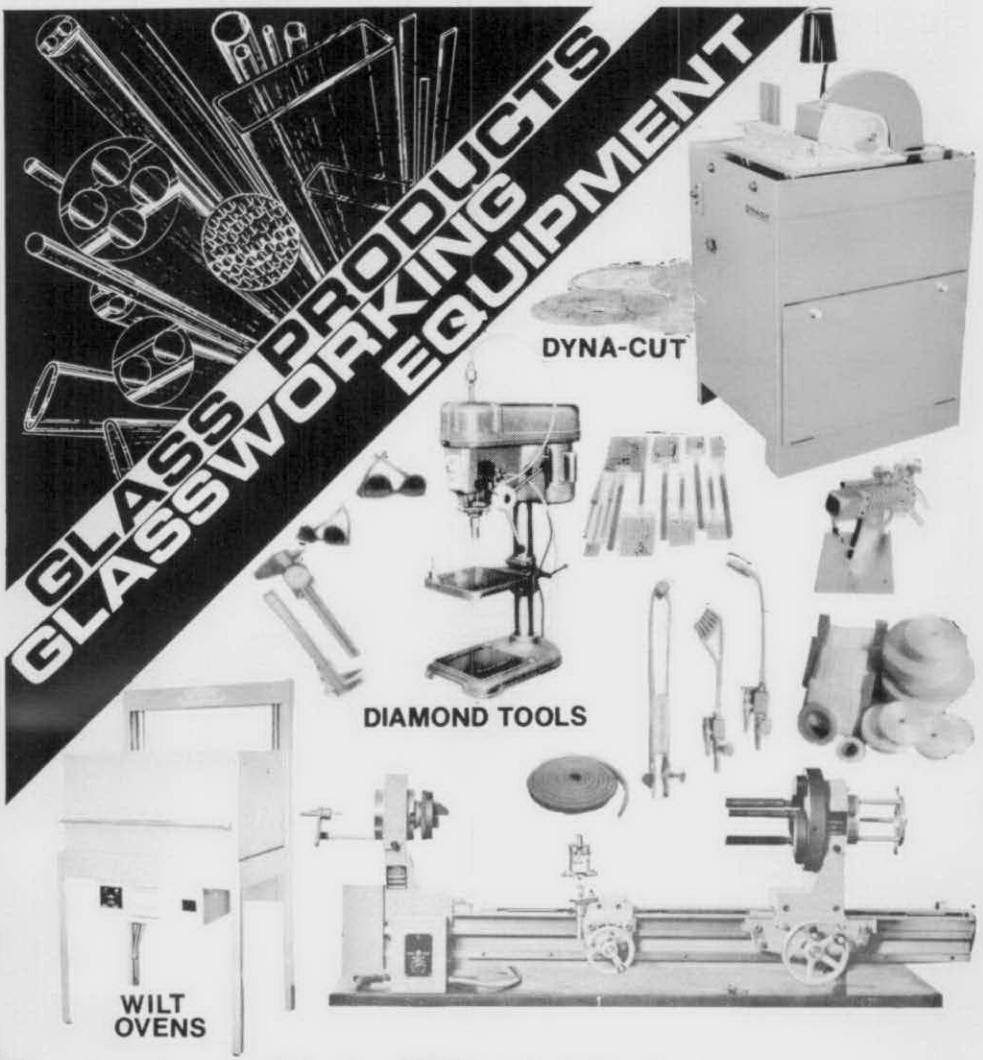

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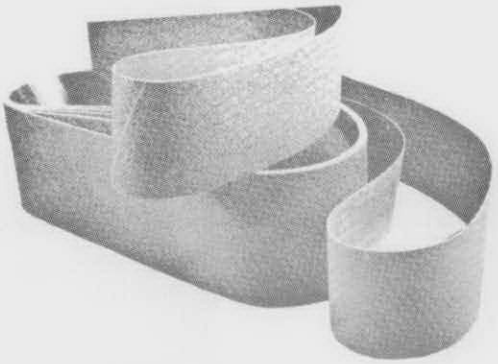

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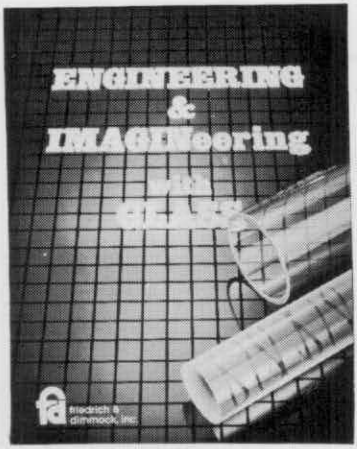

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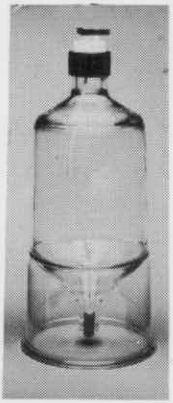

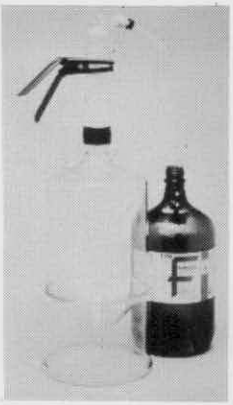

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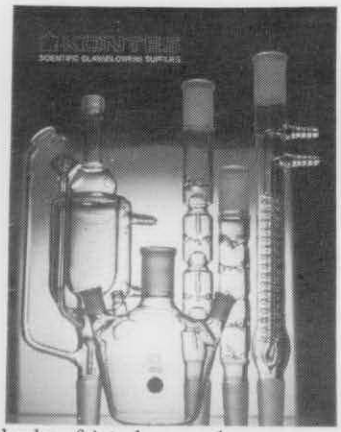

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Reference and Abstract Committee

G.C – Gary Coyne *A.H. – Anthony Hawkins*

E.N. – Earl Nagle

ASBESTOS

Asbestos Monitoring by W. C. McCrone, American Laboratory, April, 1985, pp. 20-28. "Interesting article detailing types and mixes of asbestos as determined by analysis using P.L.M. (Polarized Light Microscopy). Brief remarks on fibre sizes most likely to initiate carcinoma (Cancer). (A.H.)

CHROMATOGRAPHY

Static and Dynamic Headspace Analysis, Pt. 1 by M. E. McNally and R. L. Grob, American Laboratory, January, 1985, pp. 20-31. Discussion of Chromatographic headspace analysis with brief mentions and diagrams of glass apparatus. May be useful to those involved with this area of research. (A.H.)

CRYOGENICS

Cryogenic Principles and Applications, Helmut Springmann, Chemical Engineering, Vol. 92, No. 10, May13, 1985, pp. 59-67. This technology is employed in many operations in the chemical process industries and in many laboratories. Here given are its principles, equipment, and major uses. This subject was just recently used as a subject for an all day seminar in the 30th A.S.G.S. Symposium in Toronto. (G.C.)

GLASS-COATING

Conductive Coatings on Glass by P. Halliwell, BSSG Journal, Vol. 22, April, 1984, pp. 32-33. Describes doping of tin oxide solution with other agents to provide a more conductive coating for heating purposes and a method of applying same to the glass. (E.N.)

GLASS-COMPOSITION

Mass Spectrometric Analysis of Small Bubbles in Glass by Don Goldman, American Ceramic Society Bulletin, Vol. 36, No. 4, April, 1984, pp. 600-604, 609. A technique has been developed for routine quantitative analysis of small bubbles in glass. (As small as 40u in diameter.) Sensitivity is as low as 3-8 x 10^{-4} at STP. The major disappointment is that no glass is identified beyond "non alkali silicate and borosilicate glasses". This could warrant further investigation if 'ghost' data is entering into NMR or EPR sype studies. (G.C.)

GLASS-ELECTRICAL CONDUCTIVITY

Glasses for High Temperature Thick-Film Systems by Bi-Sciou Chiou and Robert Vest, American Ceramic Society Bulletin, Vol. 63, No. 6, June, 1984, pp. 816-820. Two specific glasses were successfully studied for a paper titled "High Temperature Thick - Film Dielectrics" (cited below). This article describes the studies made on the glass mixes. (G.C.)

High Temperature Thick-film Dielectrics by Bi-Sciou Chiou and Robert Vest, American Ceramic Society Bulletin, Vol. 63, No. 6, June, 1984, pp. 811-815. Thick-Film technology provides a logical approach for developing passive elements for microelectric circuts that will perform adequately up to 500°C. This is because thick film processing is conducted at temperatures well above 500°C. (G.C.)

GLASS-GRINDING AND POLISHING

Optical Polishing by T. Butcher, BSSG Journal, Vol. 22, April, 1984, pp. 54-57. Covers some of the methods to make lenses and mirrors. Describes two methods of making a spherical lens and how to polish the surface after grinding. (E.N.)

GLASS-SEALING TO METAL

The Kovar to Glass Seal by John W. Price, BSSG Journal, Vol. 22, April, 1984, pp. 34-40. Very detailed article on Kovar to glass sealing. Covers the kovar metal; composition, pre-cleaning,

methods of forming and annealing. Explains about the oxide, methods of making seals including glass frit and cleaning of metal after sealing, welding to stainless steel and brazing. (E.N.)

GLASS-STRENGTHENING

Abraded and Unabraded Strength of Partially Leached Glass Rods by T. Elmer, American Ceramic Society Bulletin, Vol. 36, No. 5, May, 1984, pp. 711-714. The strength of alkali-borosilicate glass rods prepared by partial leaching depends on heat treatment and acid concentration used for forming the porous surface layer. Subsequent treatment of partially leached rods in flouride-containing solutions markedly improved their abraded strength. (G.C.)

GLASS-SURFACE

Environmentally Enhanced Crack Growth in Soda-Lime Glass by S. Freiman, G. White, and E. Fuller, Jr., Journal of the American Ceramic Society, Vol. 68, No. 3, March, 1985, pp. 108-112. Crack growth data are presented for soda-lime glass in various chemical environments. Also shown is that the same environments that govern crack growth rates in vitreous silica are the same as in soda-lime glasses. (G.C.)

HEALTH AND SAFETY

A Safe-Practice Check List For Handling Compressed Gases by R. P. Brookman, American Laboratory, March, 1985, pp. 76-80. "Unusual article in that it diagrams and explains markings on gas cylinders plus gives useful tips on handling." (A.H.)

LASER

Caracteristiques de la Decharge d'un laser a Argon Multiwatt Continu. (Construction of a 10 mm Bore 60 Watt Continuous Wave Argon Ion Laser) by J. L. Breton and G. Bedard, Canadian Journal of Physics, Vol. 63, No. 2, February, 1985, pp. 240-245. French language article with good diagrams of quartz-tube laser device with high-current density electrodes along with the technical results. Interesting to anyone associated with this field of research. (A.H.)

MASS SPECTROMETRY

An Exceedingly Simple Mass Spectrometer Interface With Application to Reaction Monitoring and Environmental Analysis by Jennifer Brodbelt and R. Cooks, Vol. 57, No. 6, May, 1985, pp. 1153-55. The title says it all, but the "simple" will vary as to how many of the necessary materials you may have on hand. A good piece regardless. (G.C.)

NMR-APPARATUS

Low-Temperature, High-Pressure Apparatus for Nuclear-Magnetic-Resonance (NMR) Experiments by D. van der Putten, K. Prins, and N. Trappeniers, Review of Scientific Instruments, Vol. 56, No. 4, April, 1985, pp. 603-605. A description is given of a liquid-helium cryostat containing a high pressure NMR probe, suitable for hydrostatic pressure up to 15 k bar in a temperature range from 2° - 100°K. (G.C.)

OPTICAL FIBERS

Effects of Moist Ammonia on the Strength of Polymer-Coated Optical Fibers by H. Chandan and S. Perry, Journal of the American Ceramic Society, Vol. 68, No. 3, March, 1985, pp c-90-91. In view of the number of toxic waste sites being reported across the country, it is wise to study the effects of chemicals on the coatings of optical fibers. Here is bad news and good news: ammonia does drastically reduce the effectiveness of the coatings; however, most of the strength lost on aging was recovered when the ammonia was removed. (G.C.)

Liquid Core Optical Fiber Total Reflection Cell As a Colorimetric Detector for Flow Injection Analysis by Kitao Fujiwara and Keiichiro Fuwa, Analytical Chemistry, Vol. 57, No. 6, May, 1985, pp. 1012-1016. A 250um i.d. hollow filter is used as a colorimetric cell

for detecting iodine absorption. A detection limit of 10 ng is achieved using a 5-m cell. (G.C.)

SILVERING

Progress in the Development of a Durable Silver-based High-Reflectance Coating for Astronomical Telescopes. Long, Spraque, Macloed, and Jacobson Applied Optics, Vol. 24, No. 8, April 15, 1985, pp. 1164-70. The problems of silvering dewars are nothing compared to the demands of what optical telescope mirrors require. Perhaps one may get some helpful ideas or concepts from here, such as what part of the spectrum is reflected off of Gold, Silver, and Aluminum. (G.C.)

TEMPERATURE MEASUREMENT

Thermodynamic Properties of the Dilute Solutions of Silver Chloride and Aluminum Trichloride by P. J. Tumidajski and S. N. Flengas, Canadian Journal of Chemistry, Vol. 63, No. 5, May, 1985, pp. 1080-1088. Research Paper having good diagrams of high-temperature melting apparatus utilizing fused quartz tubing. Quite useful for anyone faced with same type of problem. (A.H.)

VACUUM-EXHAUST

Neon Pumping by B. A. Jefferies, BSSG Journal, Vol. 22, January, 1984, pp. 25-27. Contains a good description of cold cathode pumping. Describes the electrode, method of sealing it in, evacuation and filling of tube with gas and final seal off. Two Figures. (E.N.)

VACUUM-GAUGE

Why Don't We Have Vacuum Gage Calibration Standards by W. DeTorzi, Research and Development, Vol. 27, 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. (G.C.)

PAST-PRESIDENT'S POINTS

If the numbers are not increasing are you staying even – or are you losing ground? At the symposium in Toronto our President, Jerry Cloninger, asked me to write a Past President's Points article for FUSION on the subject of gaining and losing membership. The one thing that I do know about editorializing is that it's easier for me to write about a subject that I choose, rather than have the subject chosen for me.

For the last number of years it seems the membership numbers for the American Scientific Glassblowers Society (A.S.G.S.) have remained steady. There has been no significant gain or loss in members. Now it would seem that with all of the unique, unusual, and good opportunities that membership brings there should be some reasonable gain in the number of members each year.

I tried to look objectively and subjectively at the work of the Society and its members to determine the advantages of membership. Objectively, I saw the following things which I feel the A.S.G.S. has accomplished for its members and which are presently included as a part of each membership in this Society:

1) A personal copy of FUSION, the quarterly Journal of the A.S.G.S.
2) Flyers or tear-sheets with FUSION to keep each member right up-to-date in areas of concern since FUSION is a quarterly issue.
3) A personal copy of **A.S.G.S. Materials, Methods, Safety and Hazards Manual**, Volume I.
4) A personal copy of **A.S.G.S. Materials, Methods, Safety and Hazards Manual**, Volume II.
5) Updates to these two volumes as needed.
6) A personal copy of the **Symposium Proceedings** of each symposium's technical papers for each member whether he attends the symposium or does not.
7) A Technical Symposium and Exhibition presented by the members each year with reduced fees for members. In effect, a yearly update of technology and equipment.
8) Workshop sessions with knowledgeable people demonstrating techniques and tricks in a hands-on fashion under actual shop conditions.
9) National Educational Seminars across two days preceding the symposium. Full day sessions devoted to specific subjects which glassblowers request. The very economical price includes the seminar, a luncheon, and close communication with hands-on experience in the subject area. Attendance is certified.
10) Regional Educational Seminars on subjects of interest at the local level. The same standards and attendance certification as at National Seminars.
11) Local section membership potential (with Local Section dues payment). You may be a member of more than one section. All of the benefits of membership at the local level immediately accrue.
12) A democratic process of officer elections at the local level as well as at the national level. At the national level, officers may be reimbursed for Board of Directors meeting attendances if they are not sponsored by their own companies.
13) Sectional Directors report to the local membership to keep you apprised of current operations and thinking of the Board of Directors of the A.S.G.S.

14) Potential member input to the national level through the Section Director.

15) Representative, democratic make-up of the National A.S.G.S. Board of Directors.

16) International Symposia presented by other National Glassblowing Societies with help and assistance from A.S.G.S. members.

17) Informative sections in **FUSION** such as: Questions and Answers, Local Section News, References and Abstracts, Editorials, Cartoons, and Classified Ads.

18) Special awards to distinguished members at the local and national level. Awards presented for the many and varied contributions of our members.

19) An active A.S.G.S. junior member award program.

20) An opportunity for each member to: write technical papers, present workshops, serve on national and local committees, serve as local or national officers, discuss problems with local or national distributors of products and equipment.

21) Visitations are made to local sections by our National Officers to help build espirit de corps and to help with local meetings.

22) International representation by members from all over the world at our National Symposia and Exhibitions.

23) Voting privileges for officers and dues at both the local and national level.

24) Potential lifetime membership at reduced dues to regular members who are retired and not working glass any longer. Other requirements are suggested plus A.S.G.S.-B.O.D. approval.

25) A full time A.S.G.S. Home Office Manager.

26) Visitation to the laboratories and glassworking shops of other members and other companies during local and national meetings.

27) Video cassette recordings are available for use at the local level. These cassettes show in detail many of the workshop sessions which have been presented at A.S.G.S. meetings.

In the areas mentioned I have included some of the direct and tangible benefits of A.S.G.S. membership. There are additionally those intangible benefits which accrue such as the warmth of friendships made and cherished through continued years of association with other members of the A.S.G.S. There is the spousal aspect wherein the same friendliness is evident and continuing with each local or national or individual meeting.

Mr. President, I don't know why every glassblower and glassworker isn't a member of the A.S.G.S. There are so many advantages in being a member. The rewards of getting to know one another as unique and distinct individuals and as a part of the whole organization, the A.S.G.S., are immeasurable.

If someone who is not a member were to ask, maybe we could give them some of the real and intangible reasons from above or some of our own reasons why we are active members of the A.S.G.S. and extend to them the hand of A.S.G.S. fellowship.

Respectfully Submitted,
A.S.G.S. Past-President
Arthur Dolenga

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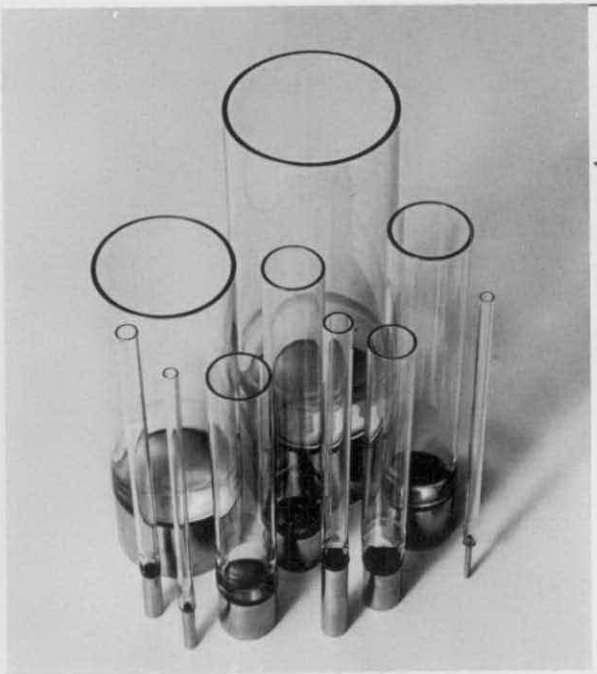

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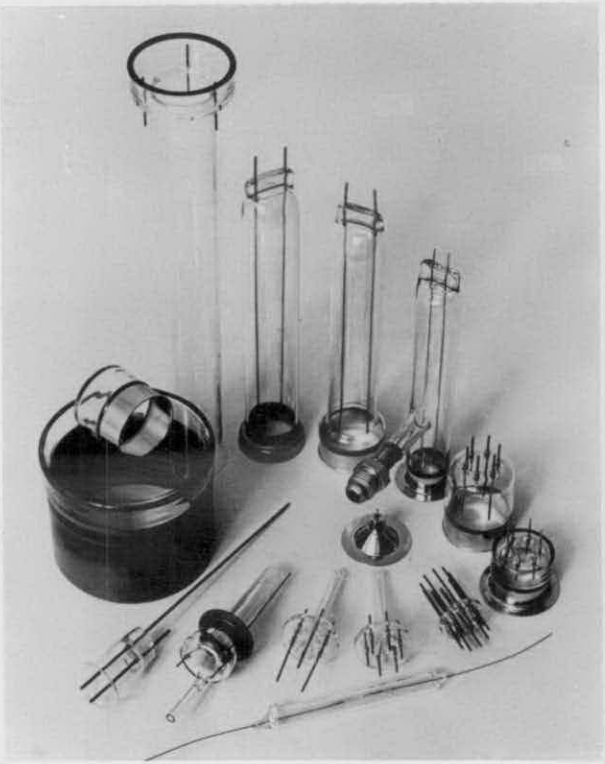

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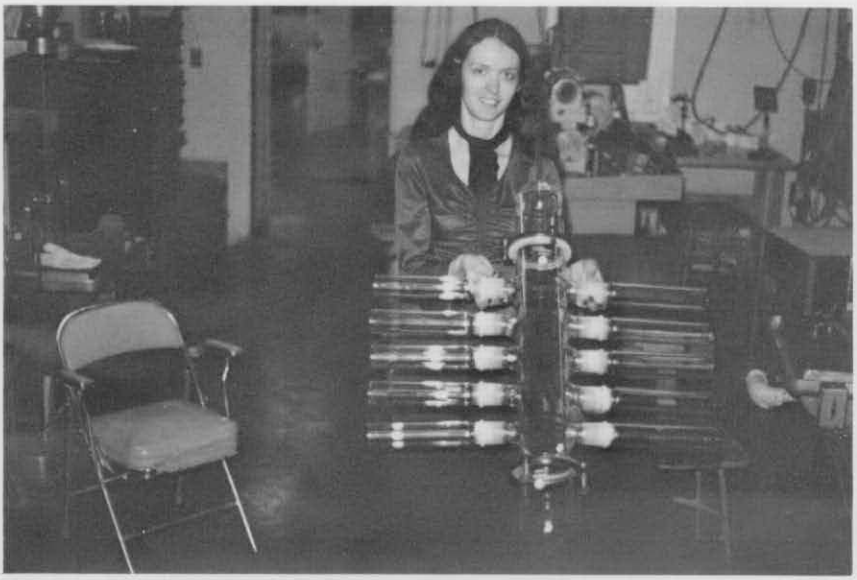

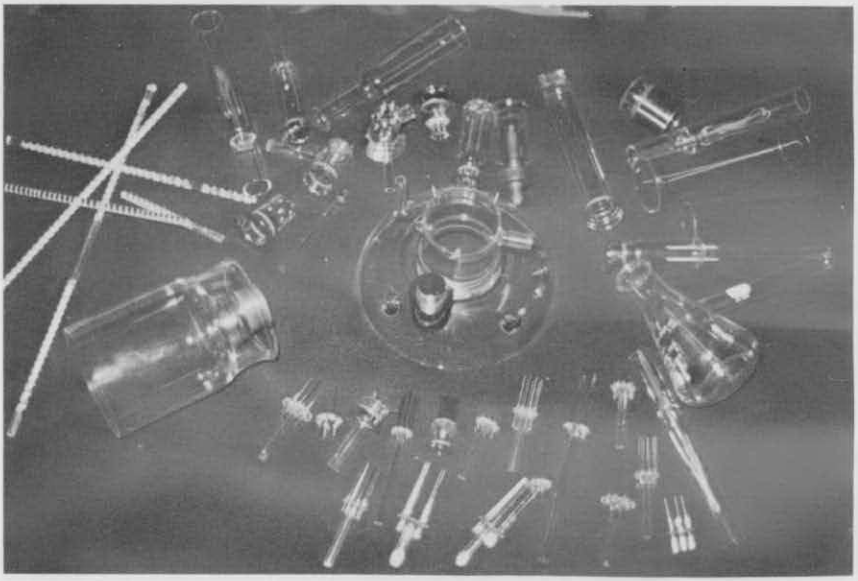

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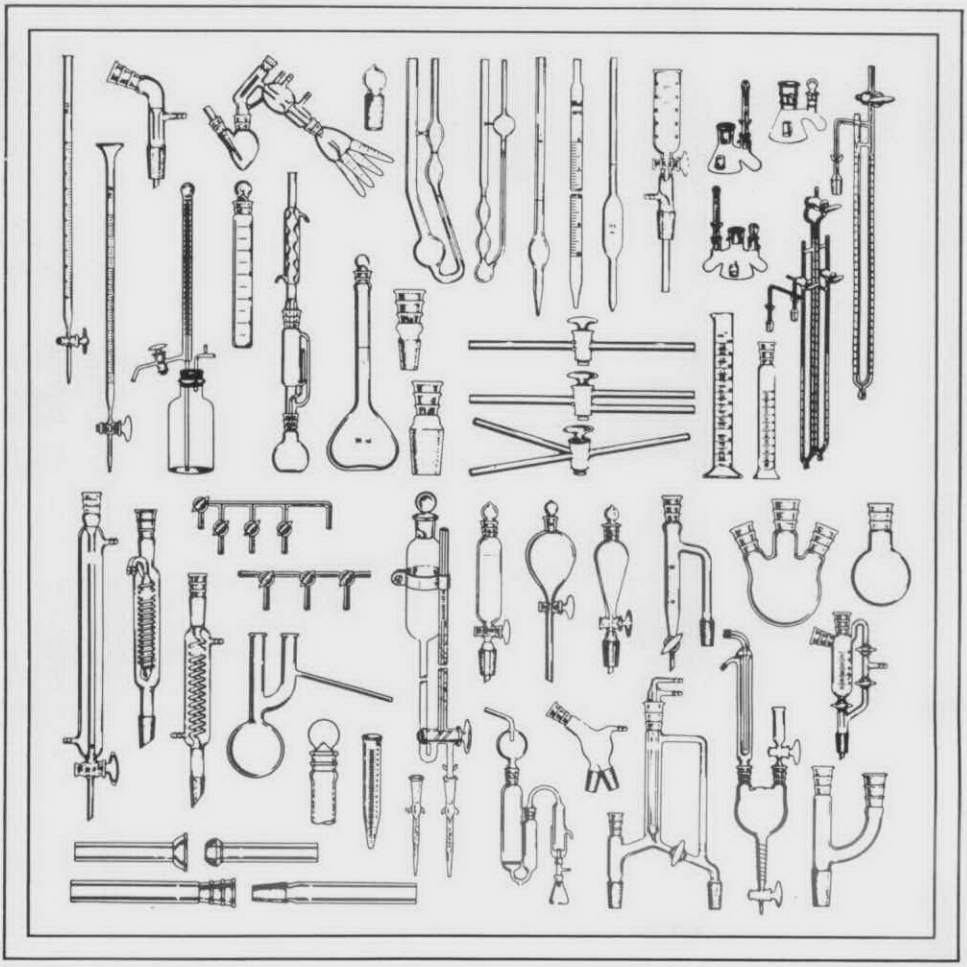

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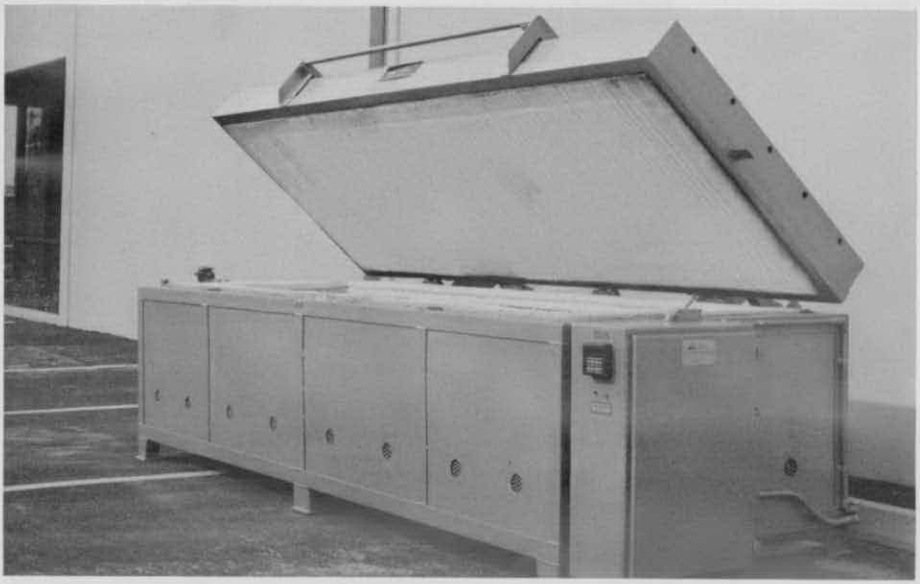

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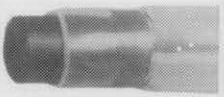

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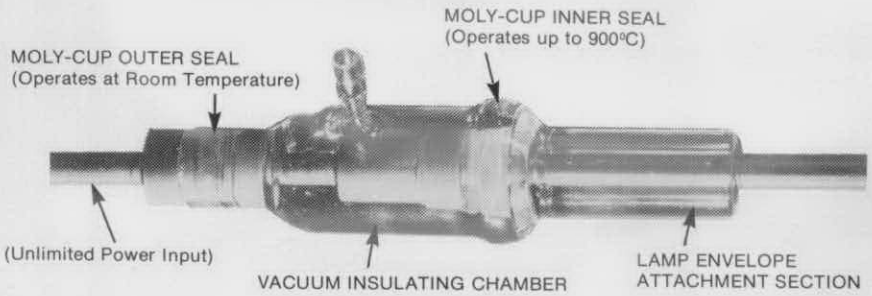

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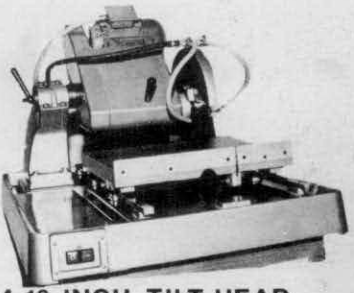

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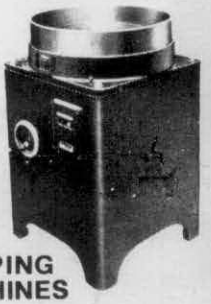

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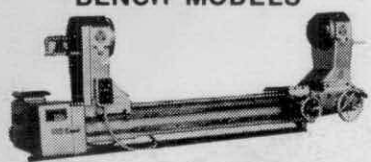

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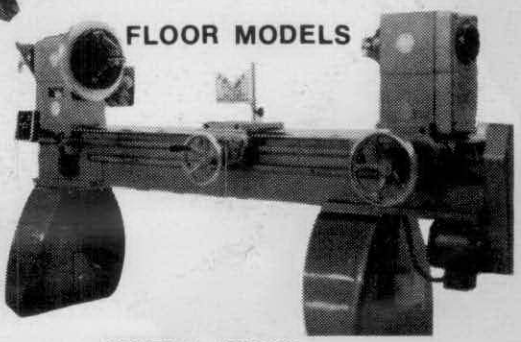

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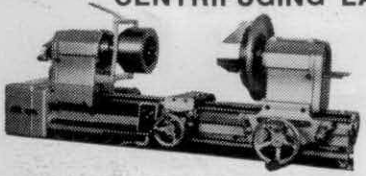

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