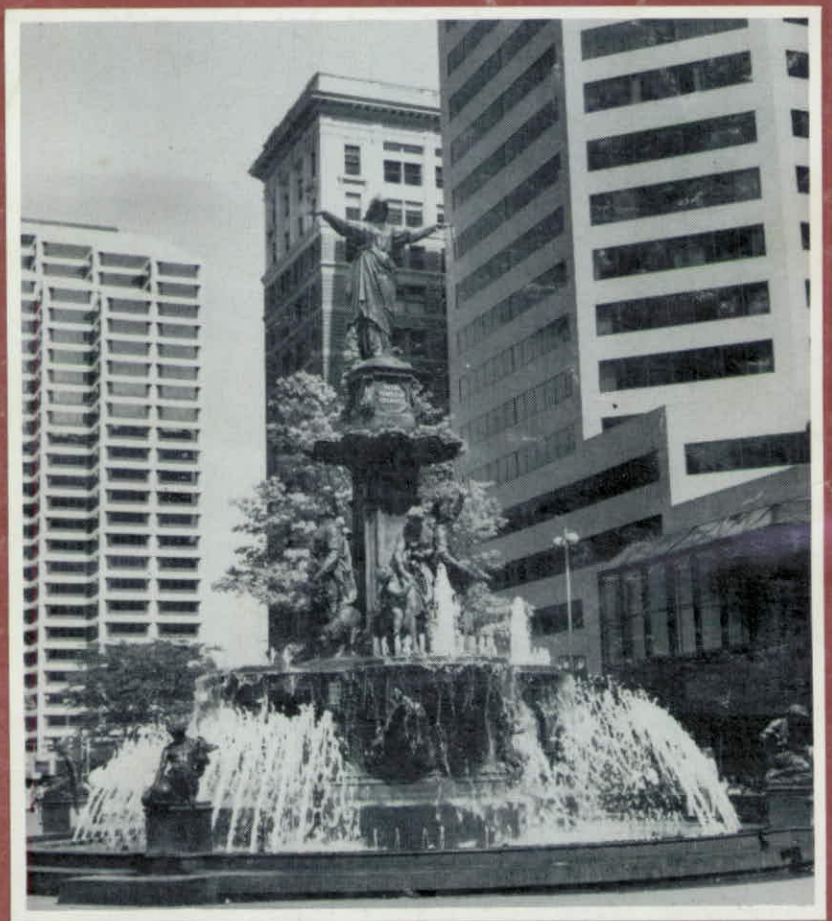
MAY, 1986

FUSION

JOURNAL OF

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



FOUNTAIN SQUARE in the heart of downtown Cincinnati.

Photo: Bart Johnson – Gr. Cinti. Chamber of Commerce

PRESIDENT'S MESSAGE

The time for our annual symposium is drawing near and the Ohio Valley Section has done an excellent job in its preparations. They will host our 31st Annual Symposium and Exhibition at the newly remodeled Cincinnati Marriott. The hotel has all the amenities to make your stay very enjoyable and comfortable.

I would like to thank the symposium committee and the home office for their efforts in the preparation and mailing of the registration material as early as it was accomplished. I feel this should greatly enhance the prosperity of the symposium come June. Thanks are also in order for Larry Harmon for presenting us with an excellent selection of seminars at such an early date. This should provide everyone with ample time to make course selections.

One of the many events that will take place at our symposium is the Section Chairman's luncheon. Please ensure that your section is represented and that the representative is prepared to discuss matters of importance to your section. Hopefully, this meeting will bring up useful and helpful comments to all sections.

The one thing our annual symposium must have to be a success is the attendance of our members. All the activities and planned events will not be successfull unless you (the members) actively participate. The members of the Ohio Valley Section have put forth a tremendous effort to make this year's symposium successful; let's help them realize their goals. With your help, it will be an educational and enjoyable event for all who attend. Make your plans promptly. Ya'll come – see you in Cincinnati!

Jerry A. Cloninger
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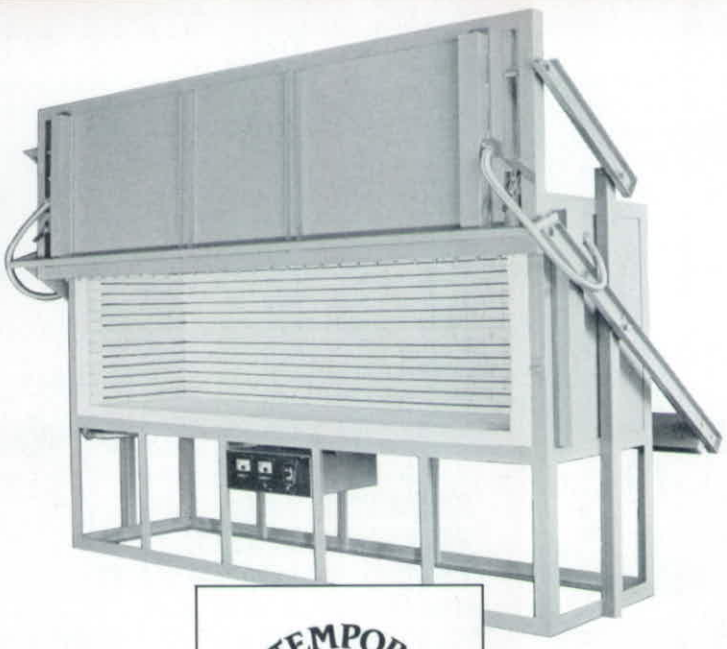

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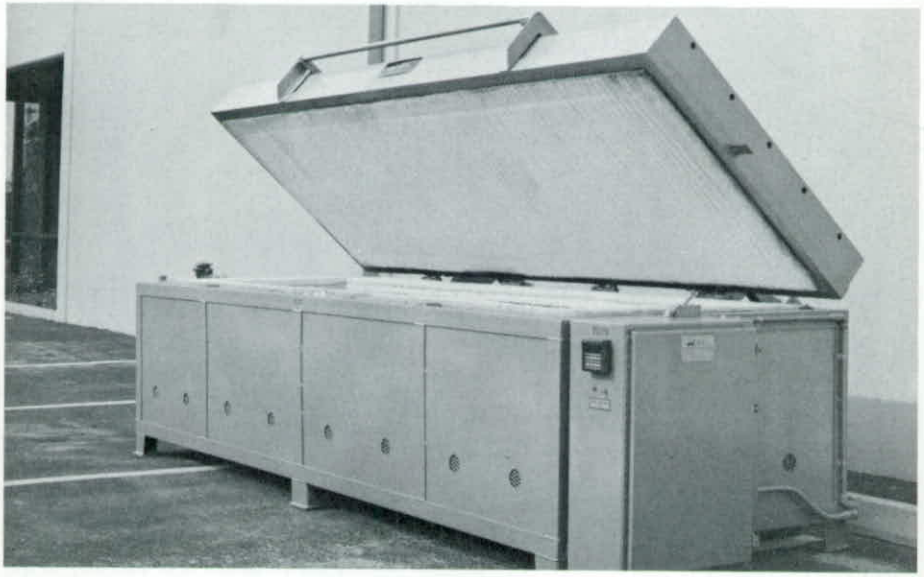

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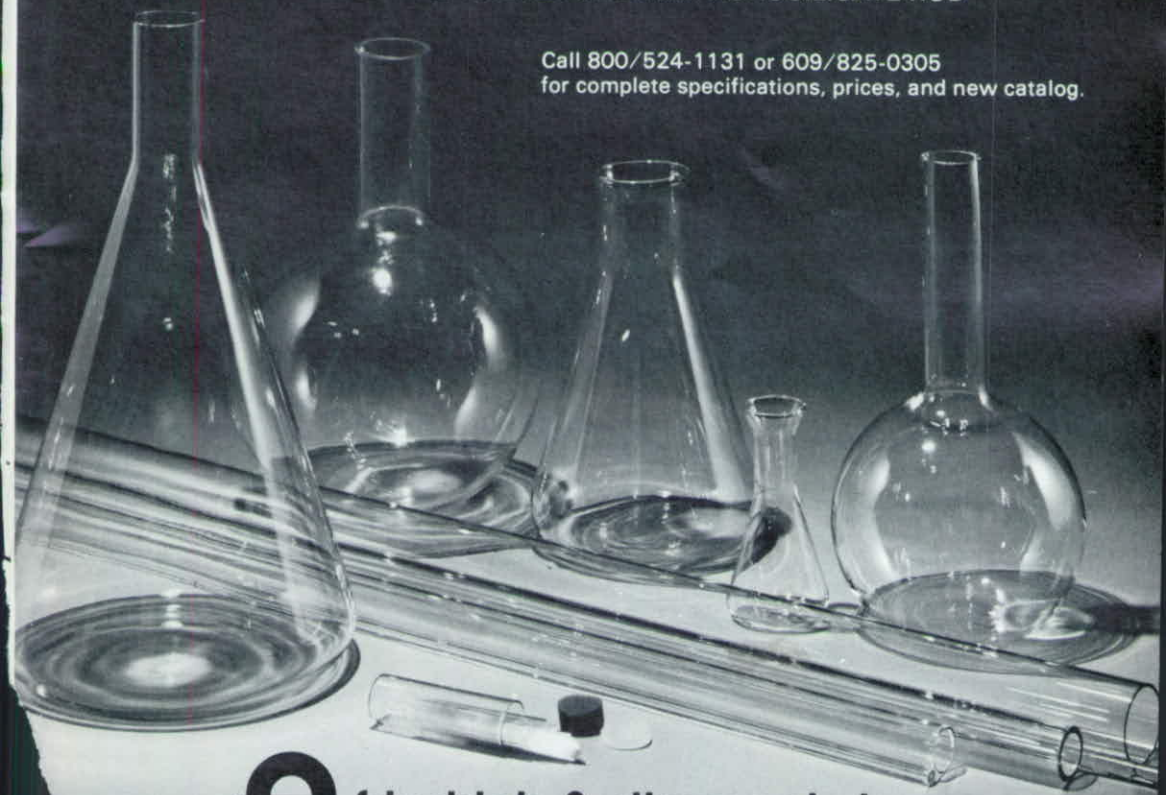

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THE AMERICAN SCIENTIFIC GLASSBLOWERS SOCIETY 31st SYMPOSIUM AND EXHIBITION

Preparations for the 31st symposium program are just about complete. The exhibit area is nearly sold out and registration for the seminars is going very well.

Some questions that have come up since my last FUSION article concern the table reservation system at the banquet. One person cannot reserve an entire table for their group unless they have all the tickets with them. This should not be a problem since, if you wish to assure your group is at the same table, all you need to do is purchase the tickets which will be available at the registration desk. Tables will each seat eight guests.

For those of you who would like to take advantage of the facilities of a health or racquet club, there is a small facility in the Marriott. Also, your Marriott room key will allow you the use of the Queen City Racquet Club located directly across the street. They have indoor and outdoor tennis courts, racquetball courts, Nautilus equipment, etc.

The Cincinnati Reds will be in town Sunday, June 22, playing Atlanta, at 2:15 p.m. After the symposium, on Friday, Saturday and Sunday, the Reds will play San Francisco. If you are interested in purchasing tickets you can call the Reds ticket office at 513-421-4510. Riverfront Stadium is an easy 20-minute drive via I-75 from the Marriott.

For other after-symposium activities, I will include information about the Cincinnati area in the folders which will be distributed at the registration desk.

Following is a complete list of sponsors. I wish to take this opportunity to thank all of them for their generous support for the functions at our symposium.

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Very truly yours,
Thomas Kern, Chairman
31st Annual Symposium and Exhibition

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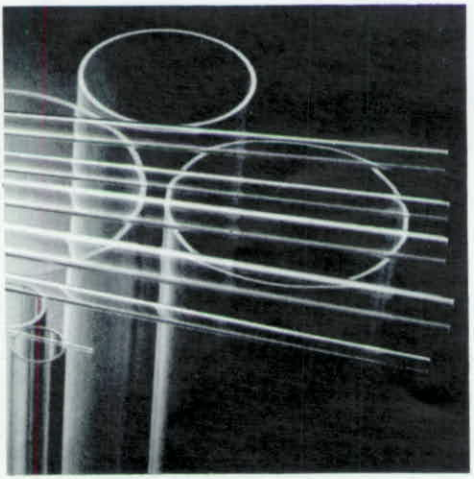

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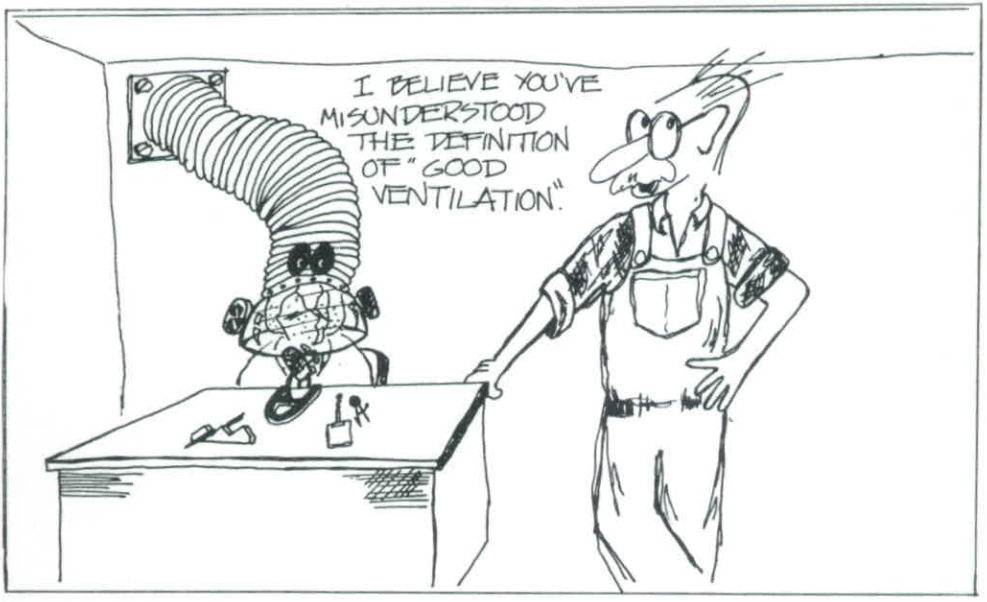

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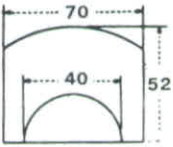

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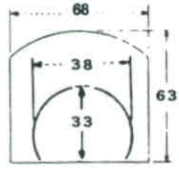

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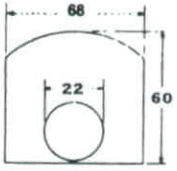

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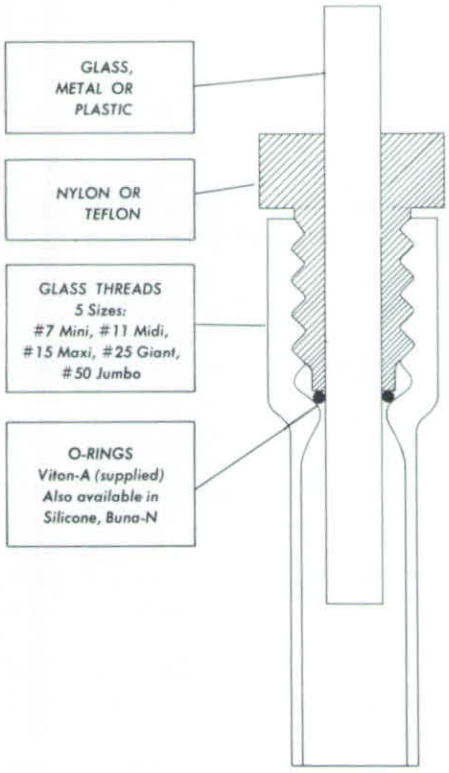

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CONDUCTIVITY CELLS AND THE GLASS TECHNIQUES

Th. W. Rejda and H. de Jong
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Next to pH and redox measurements, the glassblowing science contributes a great deal to the measurements of conductivity in fluids in the laboratory as well as in the industry.

To be able to understand the phenomenon conductivity we have first to make clear what the concept of "electrical resistance" is.

It was the German physicist Georg Simon Ohm who in 1927 first established the connection between the electrical entities "potential", "current" and "resistance". He had shown in his experiments that the quantity of the electric current through a number of materials was directly proportional to the potential applied over the length of the material. In this way, when the potential difference E (in Volts) between two ends of a conductor (e.g. a piece of wire,) increases twice, the current I (in Amperes) subsequently also doubles. The ratio E/I remains in such a case unchanged. This ratio is in analogy with hydraulics (the science of pressure energy of water called electrical resistance and its unit was named after Ohm. Mathematically Ohm's law is defined as:

$E = I \cdot R$ where:

E – the potential in Volts

I – the current in Amperes

R – the resistance in Ohms

In the above said form this law is valid only for direct current. With some modification Ohm's law is applicable for alternating current, one speaks here about impedance (from Latin impedo = I impede) though.

The conduction in a solid conductor or a metal is based on the movement of tiny mass particles – electrons – which per definition carry negative charge. In such a conception the electrons move from the place of higher potential toward a place with lower potential.

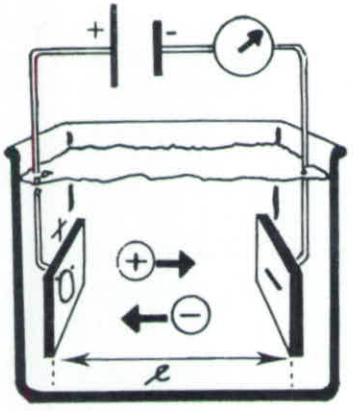
As already said, this occurs mainly in metals and solid conductors. In fluids, however, conduction is caused by the presence of other kinds of elementary particles, ions. One discerns here positively charged particles, which are attracted by the negative electrode (cathode) and are subsequently called cations and the particles which carry negative charge are attracted by the positive electrode (anode) and are analogically called anions. As the ions can move freely through the fluid and transfer their charge to the electrodes, an electrical circuit is closed and current can flow. Fig. 1 depicts this situation in a very simple way.

We would like to mention a third kind of conduction, semi-conduction where the conduction is mediated by jumping over the charge in crystallinic matrix. For this kind of conduction another law applies. It is exploited in transistors and chips.

For the conduction in fluids Ohm's law also applies, though with restrictions. With respect to fluids one speaks about conductivity G, which is another matter of fact nothing else than reversed resistance R. In this way we can write also:

$$G = I/R$$

The unit of conductivity is named after the German industrialist Siemens as a token of appreciation of his pioneer work in the field of galvanotechnics. One Siemens is equal to I/Ohm or Ohm^{-1}.



ℓ : distance between the electrodes

"O": surface of the electrodes

Fig. 1

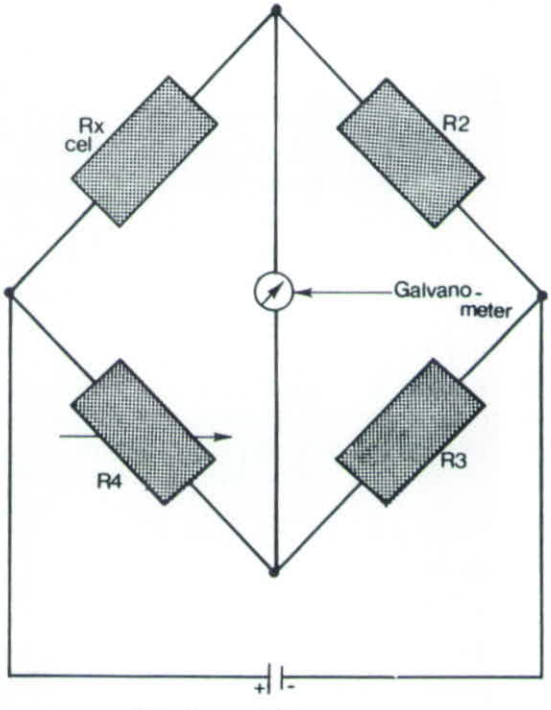


Fig. 2

Wheatstone bridge

Formerly the unit mho (reversed ohm) was used, we advise however strongly against the use of this obsolete unit.

The reader would be curious what makes the conductivity of a fluid so interesting and to what aim it is useful.

So far it is clear, that if there are more ions present in a solution, per time unit more charge transport takes place and subsequently more current can flow. The quantity of ions present is closely related to the concentration. In this way is the conductivity, respectively the specific conductivity a measure of concentration of all present ions in the fluid to be measured. Specific conductivity conductance K (kappa) is the conductivity of a volume unit of a fluid between the electrodes which are situated at a given distance and have a given surface. Usually the volume is expressed in cm^3 or m^3, but other units are also known (e.g. cub. ft.). Specific conductivity is expressed in Siemens per meter or Siemens per centimeter (S/m or S/cm).

If we again refer to Fig. 1 for assistance, we see that the specific conductivity of the fluid between the two electrodes in our measuring set-up can be expressed as:

$$K = G.\ell/O$$

where G is the total conductivity of the fluid between the electrodes in Siemens

ℓ is the distance of the electrodes in cm or m

O is the surface of the electrodes in cm^2 or m^2

The ratio ℓ/O is so called cell constant C and is

$$m / m^2 = m^{-1} \text{ or } cm^{-1}$$

We can then rewrite the equation for specific conductivity as:

$$K = G.C$$

Cell constant C is determined by the construction of the cell. In the practice it varies from 0.01 to $10cm^{-1}$, but other cell constants are possible.

We assume for simplicity's sake that the cell constant does not change during the whole measurement and also at different temperatures it remains virtually unchanged.

As C is given and we can choose it ourselves, there remains only to establish the value of G to be able to know the value of K.

We have already said the G is a reciprocal quantity of the resistance and as such it is easy to measure. An unknown resistance can be determined by means of a Wheatstone bridge (Fig. 2), although more modern methods are used nowadays.

We have stated that the influence of temperature on cell dimensions can be neglected in our calculations. What we cannot neglect however is the change of the conductivity itself with temperature. At a higher temperature the fluid is less dense the viscosity decreases and the ions can move more easily through the fluid. We observe an increase in conductivity, i.e. the resistance of the fluid decreases, this in contrast with metals and other solid conductors, whose resistance with increasing temperature also increases.

For this reason the conductivity is either measured at the same temperature or the cell is equipped with a temperature sensor for temperature compensation.

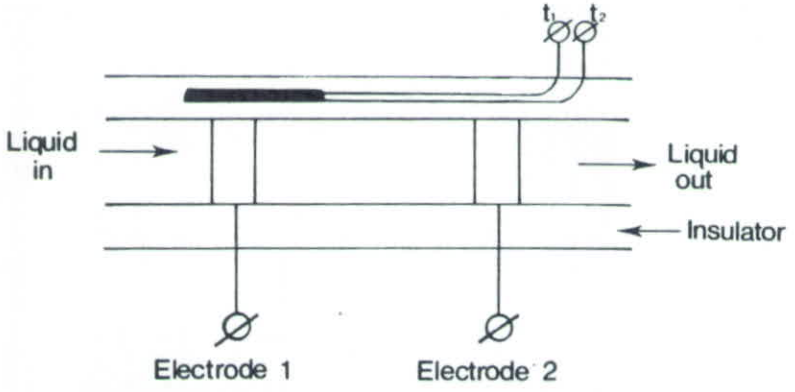
Construction aspects of the conductivity cells.

We have already given in Fig. 1 how the conductivity can be measured by means of a set-up with two electrodes, which are placed in a fluid. Such a measuring arrangement, often complemented with a temperature sensor is called a conductivity cell. In most cases the fluid to be measured is water, where various chemical substances are dissolved. These chemicals form generally ions and can consequently be measured by conductivity. They are often the most aggressive substances such as inorganic or organic bases or acids, but also salts and dissolved gases which form ions can be determined by the conductivity measurements.

One can certainly realize that this makes high demands upon the construction materials for the cells, glass is one material of choice.

Schematic diagram of a conductivity cell is presented in Fig. 3.

Fig. 3



The first cells, which were developed for precise laboratory measurements were made from soft glass, in which platinum electrodes were sealed (Fig. 4). As a counter-measure against polarization the platinum was electrolytically blackened. This very sensitive layer had to be periodically renewed. Polarization is an electrochemical phenomenon, which arises due to the interaction of the ions with the surface of the electrode materials. It is always undesirable as it influences negatively the accuracy of the measurement. By choosing a greater number of electrodes, other electrode materials and measuring current frequency the polarization can be suppressed to a large extent. In Fig. 5 an industrial conductivity cell is shown, which was especially designed for the conductivity measurements in oleum (fuming sulfuric acid). The casing of the cell is of PTFE. For better temperatures response the sensor is imbedded in thermoconductive grease.

Oleum is one of the most agressive substances and it is the combination of glass an platinum together with glass blowing skill, which makes the measurement of such a corrosive medium even at temperatures above 100°C at all possible. Such cells find wide applications in other chemical processes too. For less aggressive media other material combinations are known. An often encountered construction is based on graphite rings enbedded in an epoxy-resin. Stainless steel is also a good construction material especially for low cell constant where the distance with respect to the surface is subject to narrow tolerances.

Applications

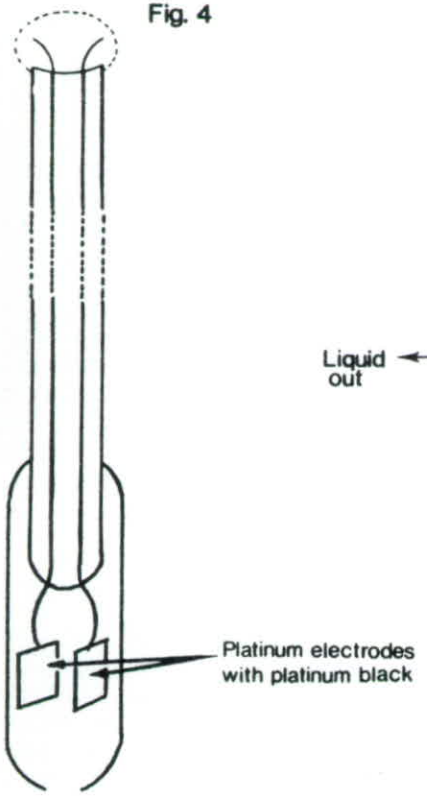
Conductivity measurements are frequently encountered in industry and laboratory. A typical example is the monitoring of demineralization installations in water-treatment plants, boiler feed water for steam fabrication, steam and condensate control etc. Another example has been already mentioned: sulphuric acid and oleum, acid concentration measurements in galvanoplastic industry, ore extracting and processing.

Very often is the so called CIP-(cleaning in place) process controlled by means of the conductivity in the food and dairy industry (beer, milk, soft drinks).

In the medical world too are the conductivity measurements carried out e.g. for the salt content control of the dialysate in the artificial kidneys, in blood or plasma.

We close this paper about the quality measurements in the industry in the hope that the glass-blowing science and its executors, the glass-technicians remain also in the future as inventive as in the past and that we can look forward to applications of new materials and material combinations. In this connection we think namely about the new techniques such as the laser-beam welding, chemical vapor deposition on glass and ceramics, the techniques which make technical solutions possible for the problems, which until recently must have remained unsolved.

Fig. 4



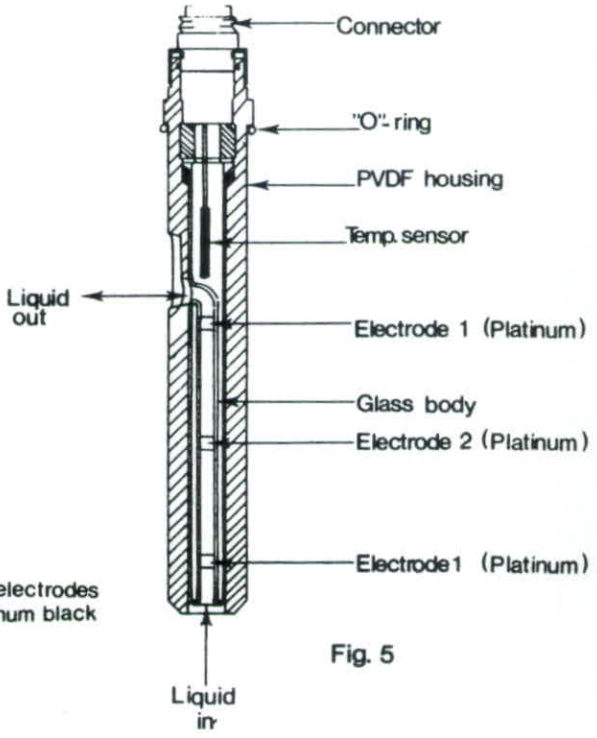


Fig. 5

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We are indebted to the authors of this publication, Th. W. Rejda and H. de Jong, Electrofact B.V. Amersfoort, Netherlands.

Editor

Thanks to B.S.S.G. Journal Vol. 22, No. 4

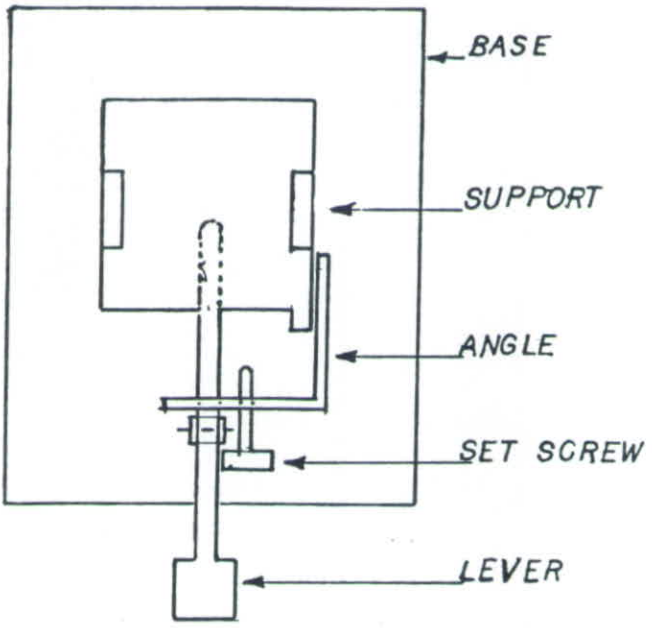
LAMP SHOP HINTS

FIXTURE FOR WELDING QUARTZ PLATE

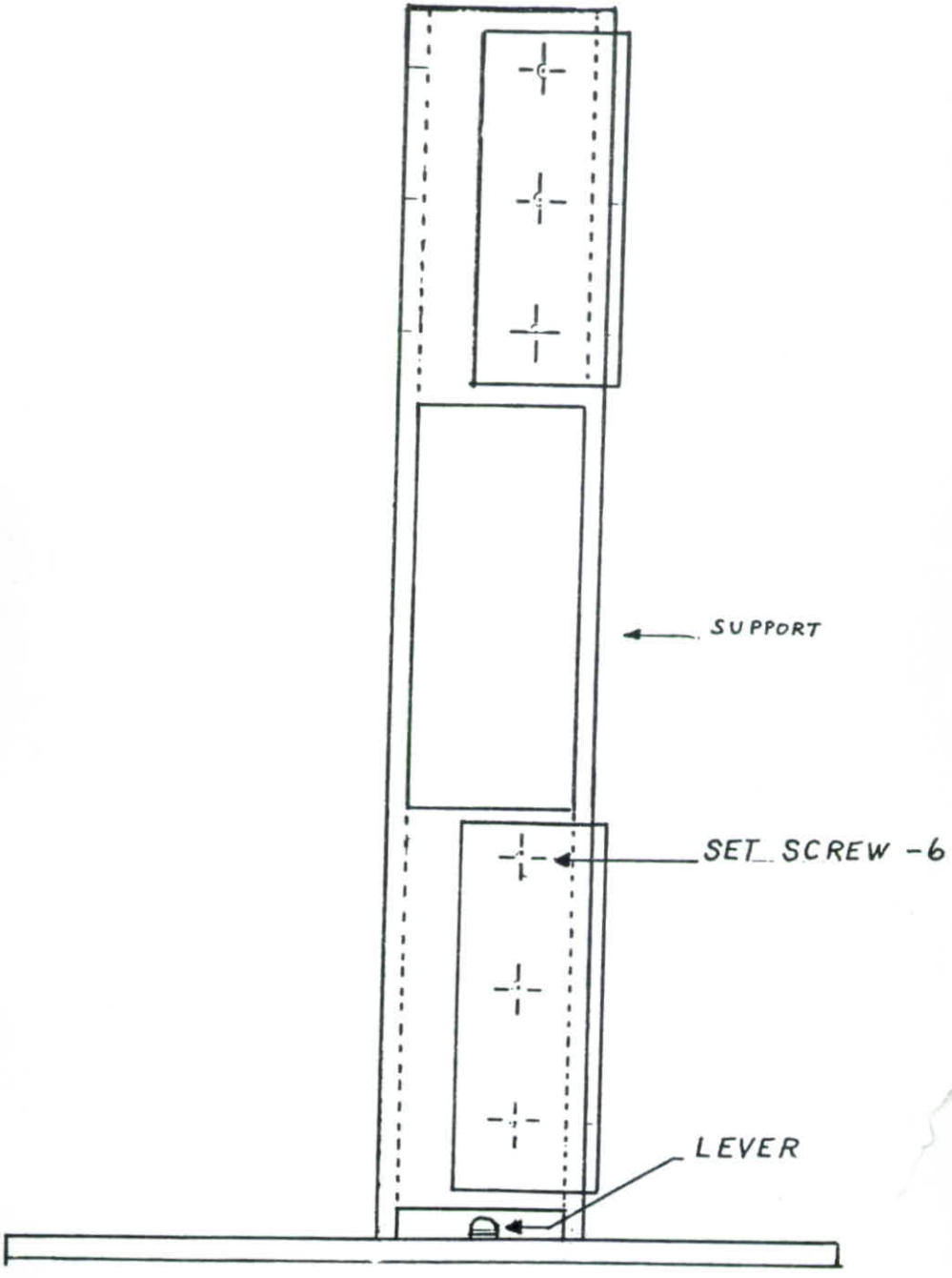
Many times a glassworker is required to fabricate items from quartz plate. Occasionally the stock available in the shop is too short or there are leftover pieces from a previous job.

To salvage the short pieces of quartz plate (.125-.250 in. thick, I placed both pieces on a flat graphite plate and welded, using a hand torch and quartz rod to fill the gap. This method works, but always left a visible line of air bubbles in the weld. This method is also more time consuming than the method I will describe to you.

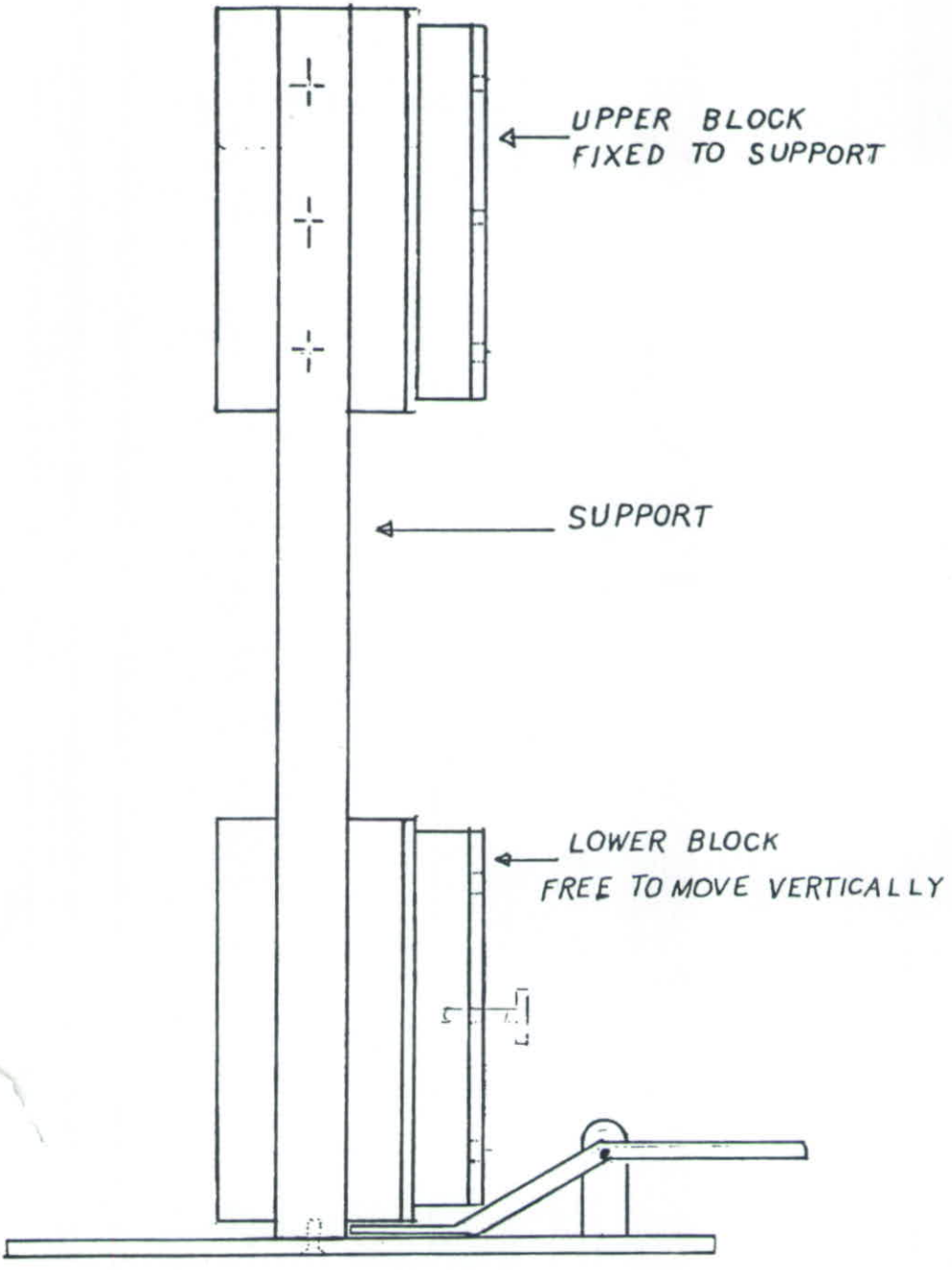
This fixture was designed by myself and has been in use at the Motorola Semiconductor Products Sector glass shop for several years.



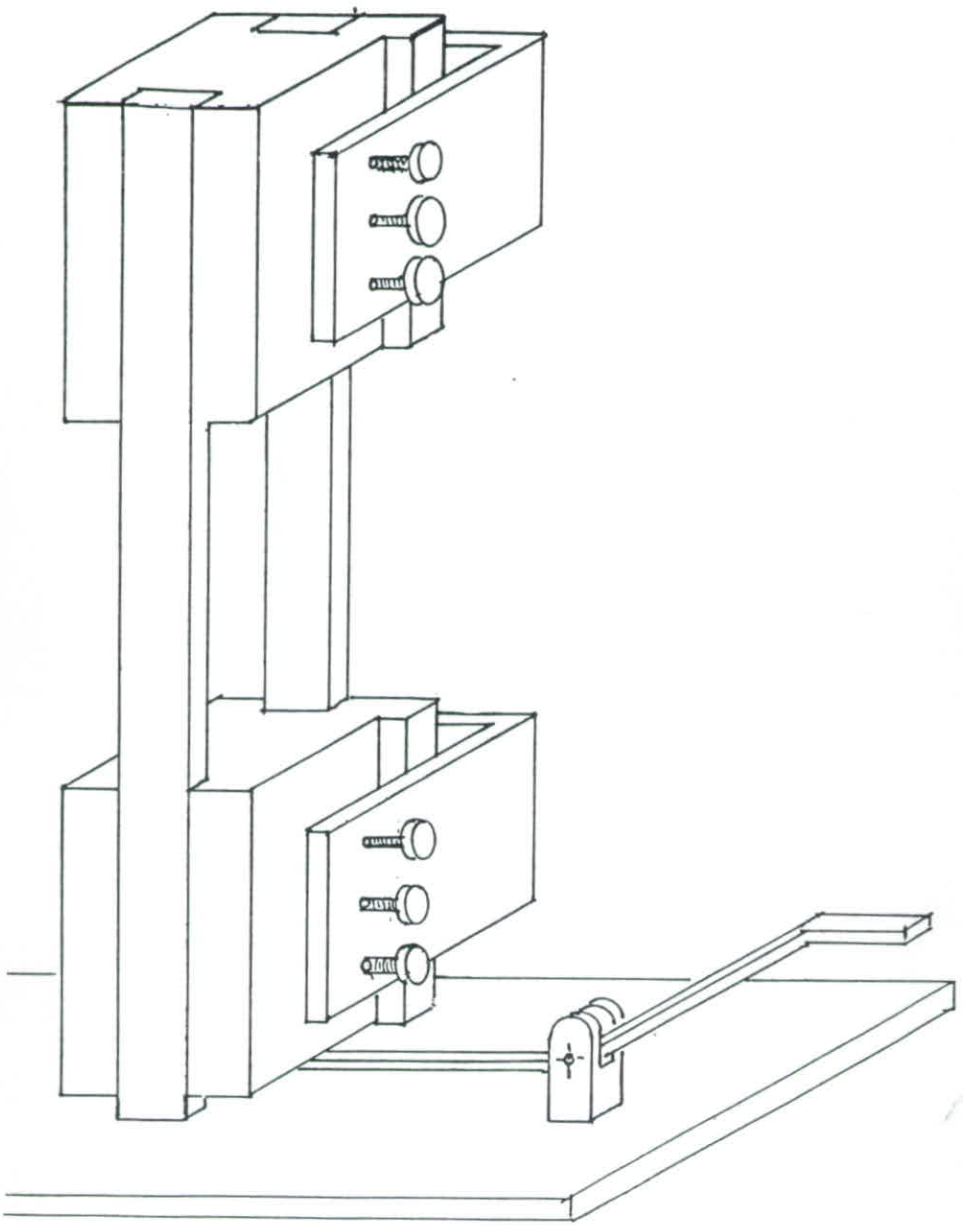
TOP VIEW



FRONT VIEW


UPPER BLOCK
FIXED TO SUPPORT
SUPPORT
LOWER BLOCK
FREE TO MOVE VERTICALLY

SIDE VIEW



From the diagrams it should be noted the upper portion is stationary, being supported by the two side rails. The lower portion is allowed to slide up and down on the supporting side rails. The set screws on both the upper and lower halves hold the quartz plate square and parallel against the fixture.

The lever near the bottom pushes the lower section up. The original thoughts were to operate the lever with one hand holding the hand torch in the other hand. After some use it was evident that thicker and wider pieces of plate could be welded if one could get both pieces hot enough. By using two hand torches, one on either side of the plate, it was possible to get good fusion on the plate up to 10mm thick and 100mm wide.

The lever that brings the two pieces together is no longer operated by hand, instead a light weight chain is attached to the lever. The chain has a loop installed on the lower end to permit you to insert your foot. With the fixture resting on the work bench, the length of the chain is adjusted to permit your heel to rest on the floor. When the quartz plate has been heated enough for fusion, lowering your toe to the floor will bring the two ends in contact.

To operate, mount one piece of quartz plate in the lower section, holding in place with the set screws, the other in the upper section holding in place with its set screws. The ends to be joined should be approximately 5mm apart. With your foot in the loop of the chain, a hand torch in either hand, heat both ends of the plate at the same time, one torch on either side. By moving the flame back and forth over the length of the plate both pieces will become hot enough for fusion in a short time. When the ends are both hot enough, placing the toe of your foot on the floor rapidly will bring them together. With the weld still hot, reheat directly over the center of the weld to make sure of complete fusion on the outside of the joint. The plate is now ready for annealing.

There will be a slight increase in the thickness at the weld which is easy to remove on a standard lap plate. After lapping, the quartz may be cleaned using dilute hydroflouric acid. After a good rinse in water the plate may be fire polished. If everything went well it should be impossible to see the location of the weld.

This fixture was made from aluminum. The dimensions are not critical. The dimensions I used were as follows:

Overall height	24 in.
Blocks, top and bottom	2 in. x 3 in. x 6 in.
Angle to hold set screws	3 in. x 2 in. x 5½ in.
Supports	½ in. x 2 in. x 24 in.
Base plate	6 in. x 12 in. x ½ in.
Vertical movement of lower block	3 in.

The hand torches used are Victor J 27, s with a number 5 tip. The types of gas used are hydrogen and oxygen.

Author
Carl A. Goetz
Motorala Semiconductor Products
7829 E. Plam Ln.
Scottsdale, Arizona 85257

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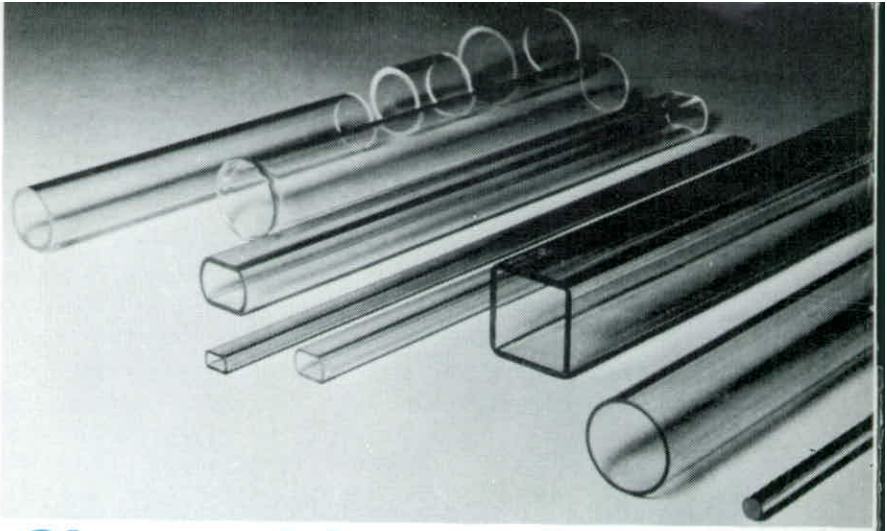

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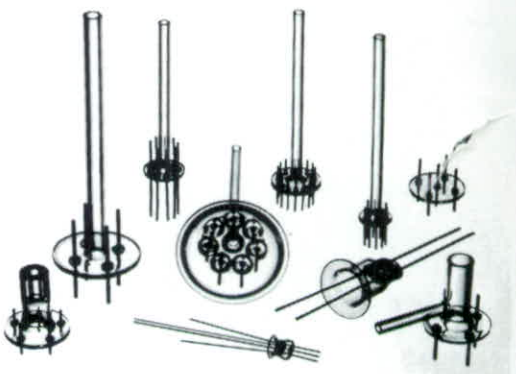

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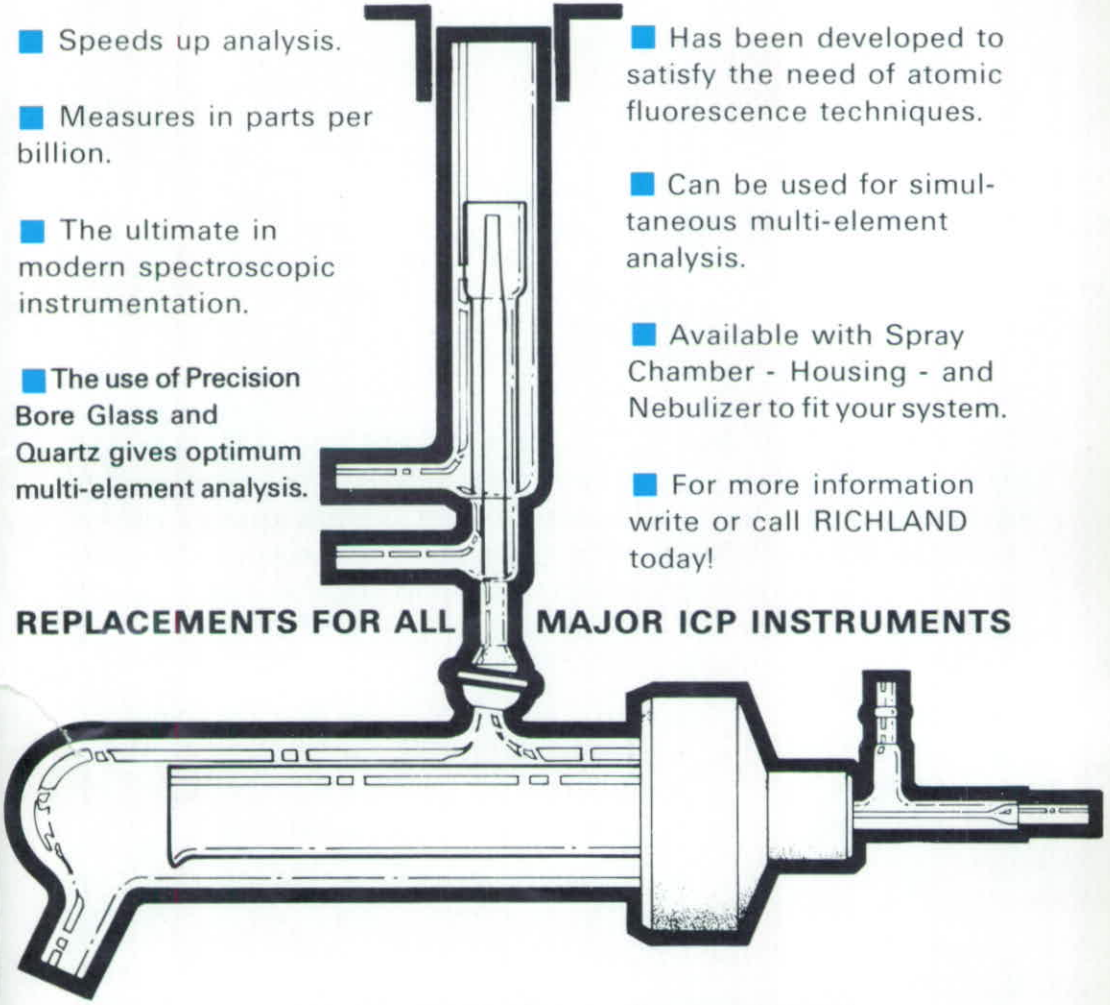

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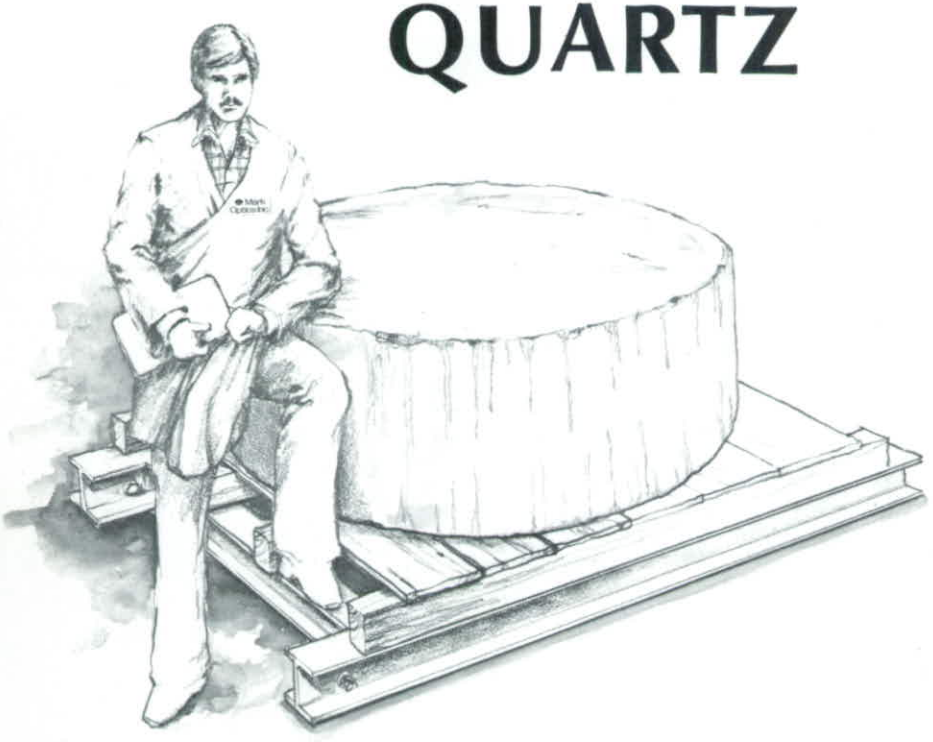

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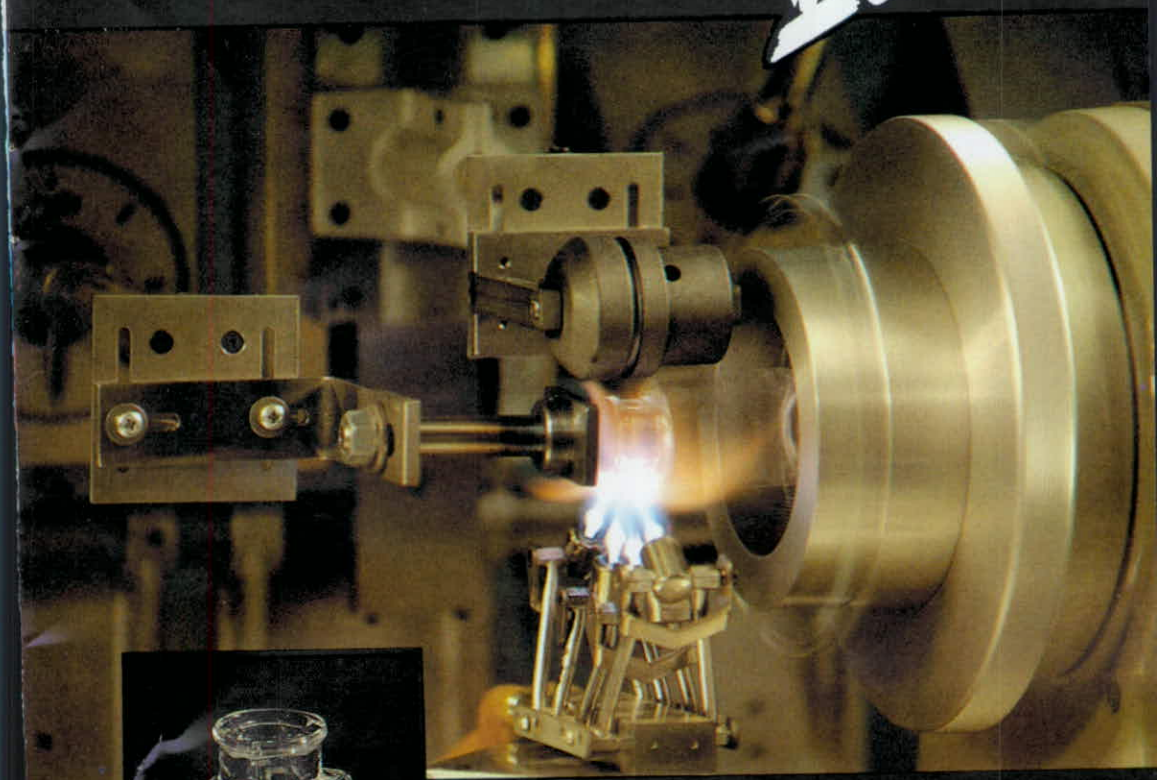

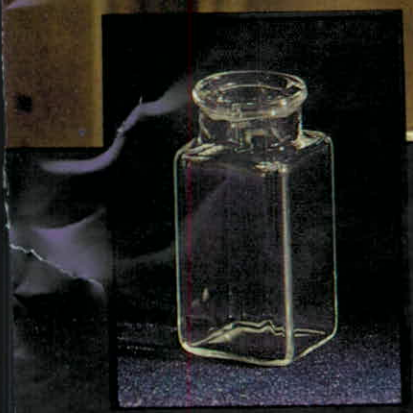

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AWARDS

This is my final report as Awards Chairman, and I wish to thank you, the members, for sending in your nominations for our National Awards. I would like to believe that during the past three years they have regained the level of prestige that they deserve.

My one low point is the fact that not one junior member has been nominated for the new Memorial Award. Possibly there may have been some confusion as to when this award would start. Please, if you have any questions concerning awards, contact your section director; if he does not have an immediate answer for you, he will most certainly get the information you require. You can, if you wish, always contact the Awards Chairman directly.

It has always been my belief that awards are important at the Section as well as the National level. Our Society depends a great deal on the participation and involvement by our members. To acknowledge their contributions in a formal manner becomes an indispensable part of good relations.

I have one final request; please give my successor the co-operation and encouragement you have given to me. Its been fun and very rewarding. Thank you everyone.

David Chandler, Awards Committee Chairman

THE AMERICAN SCIENTIFIC GLASSBLOWERS SOCIETY

AWARD RECIPIENTS

J. ALLEN ALEXANDER AWARD

1972 – Henry L. Christie
1973 – Wolfgang R. Eberhart
1974 – George A. Sites
1975 – William E. Barr
1976 – Arthur Dolenga
1977 – John A. Glover
1978 – M. Howe Smith
1979 – Karl H. Walther
1980 – William A. Gilhooley
1981 – William J. Schulze
1982 – Theodore W. Bolan
1983 – Robert G. Campbell
1984 – Helmut E. Drechsel
1985 – William A. Wilt

*HELMUT E. DRECHSEL ACHIEVEMENT AWARD

1973 – Charles Litton
1974 – Randolph H. Searle
1975 – William A. Wilt
1976 – no recipient
1977 – no recipient
1978 – Alfred H. Walrod
1979 – Dolores & George Sites
1980 – J. H. Old
1981 – George Jahn
1982 – no recipient
1983 – no recipient
1984 – Jame Kontes, Nontas Kontes, William Kontes
1985 – Robert B. Tobin, James F. Morris

*Award renamed in 1984

KERMIT FISCHER AWARD

1976 – Arthur Dolenga
1977 – Don W. Brady
1978 – Thomas J. Doody
1979 – L. Frederick Leslie
1980 – Peter L. Kay
1981 – Raymond L. Carew
1982 – Alex Stuart
1983 – Joseph Luisi
1984 – David L. Hovey
1985 – Gary S. Coyne

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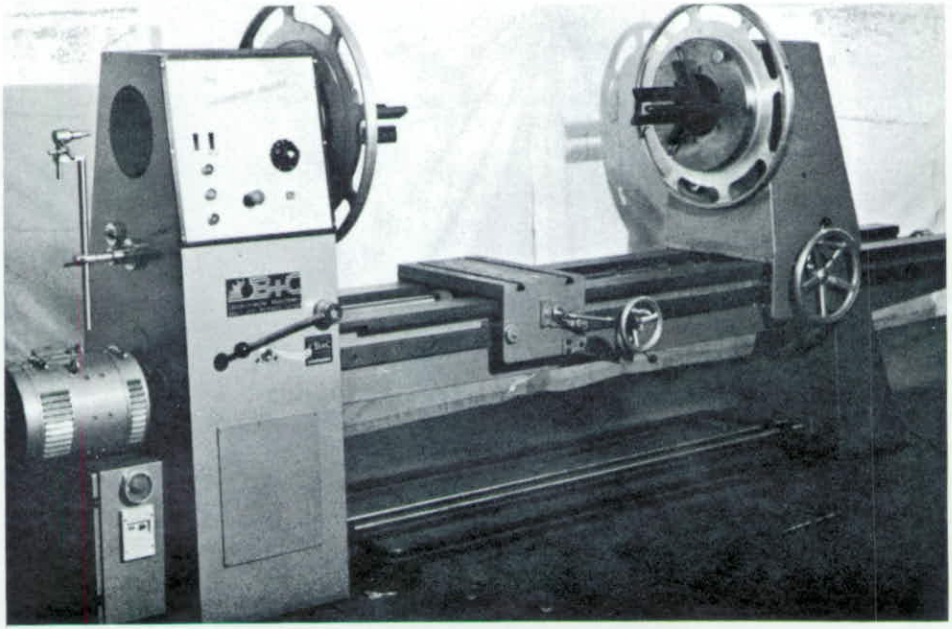

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ALFRED U. CERAMIC SCHOOL EARNS INDUSTRY DESIGNATION AS GLASS RESEARCH CENTER

Eight companies, seven of them glass manufacturers and one a supplier to the industry, after a year-long study of educational institutions, have designated the New York State College of Ceramics at Alfred University as an Industry-University Center for Glass Research.

The eight have pledged nearly one million dollars for research at the college in an effort to enhance the future of the glass industry in the United States.

The College of Ceramics won the designation over 11 other institutions that were originally considered for the honor.

Alfred University faculty and students, under the direction of Dr. L. David Pye, professor of glass science, will conduct the research projects on campus that will be designed to impact the future of glass production nationwide. Dr. Pye, along with Dr. William LaCourse, professor of glass science, co-authored the Alfred University proposal.

The eight participating companies formed a committee a year ago to investigate joint sponsorship of a center for excellence in glass research at a university. As manufacturers of flat glass, fiberglass, containers, pharmaceuticals, scientific glassware and tableware, they determined that since most university ceramic engineering departments have de-emphasized research in glass manufacture, they had lost a source of well-trained graduates to do research and engineering for their firms.

Representatives from AFG Industries, Bridgeport, WV; Corning Glass Works, Corning, NY; Ford Motor Co., Lincoln Park, MI; Manville Building Materials Corp., Denver, CO; Owens-Corning Fiberglas, Granville, OH; Owens-Illinois, Toledo, OH; PPG Industries, Pittsburgh, PA; and Specialty Products Co., Jersey City, NJ, decided the best way to ensure continued process and product improvement was to initiate a university center of excellence in glass research that would focus on glass technology.

A SOURCE OF WELL-TRAINED GRADUATES IS LOST TO RESEARCH AND ENGINEERING.

The committee specifically needed to develop an increased emphasis on traditional glass science and engineering on the university level, to train engineers and scientists for employment in the glass industry, and to increase knowledge that would be useful to glass manufacturing in the 21st century.

As their commitment, member corporations pledged to support the research project for at least three years, at an annual rate of $25,000. Other companies are expected to participate in the future.

As its part, the College of Ceramics pledged to couple the mission and capabilities of its glass science department with the needs of the glass industry. "If the glass industry prospers, so too will the College," said Dean W. Richard Ott.

When Alfred University was selected as the research center site, Dr. Pye, who was co-director of the Institute of Glass and Engineering at the College of Ceramics, established in 1984, was tapped to organize the research effort. He is currently setting up daily operations with his liaison, Dr. LaCourse, co-director of the glass institute.

. . . AND AT THE SAME SCHOOL, GLASSMAKING FACILITIES ARE RENOVATED AND EXPANDED

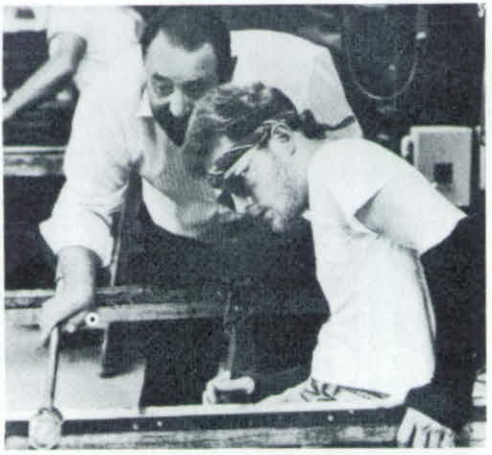
Dr. Pye, Dr. LaCourse, and other faculty members will be principal investigators for the research projects. They will be assisted by graduate students, summer technicians, a postdoctoral fellow and visiting scientists.

Participating corporations will name an industrial liaison board to review projects biannually, propose potential research problems and meet with faculty and students who are involved with research projects. Students and faculty can use results of their work in the center for publication, PhD dissertations and MS theses.

The College of Ceramics has long recognized the importance of the glass industry. In 1936, a program in glass technology was established. In 1970, glass science, ceramic science and ceramic engineering combined to form the division of engineering and science, composed of 27 full-time faculty researchers, teachers and advisers. In 1984, the Institute of Glass Science and Engineering was established to promote glass research and visibility to the College's glass studies. Graduate engineering programs funded in excess of $1 million are currently under way.

"IF THE GLASS INDUSTRY PROSPERS, SO TOO WILL THE COLLEGE," SAID DEAN W. RICHARD OTT.

Alfred University, located in southwestern New York, is celebrating its Sesquicentennial anniversary this year. The New York State College of Ceramics has been a statutory unit within the University since 1900.



Alfred glass professor Andre Billeci (l) shows senior Paul Young how to roll a blowpipe to keep the hot glass centered on it.

The Alfred University School of Art and Design, deemed one of the finest art glass facilities of any college or university in the United States, has been renovated and expanded. The cost of the project was approximately $46,000.

Redesign of the glassmaking area at the NYS College of Ceramics has resulted in facilities that rival any in the country, says Professor Andre Billeci, the faculty member who began the program 22 years ago.

"I believe we have the most comprehensive facilities in the country now," he said. "We're growing and it looks promising," he said, noting that other schools across the country have been shrinking their glass programs.

The newly expanded glass area provides 5,000 square feet of work space, including 2,600 square feet of studio space, study carrels and offices.

The improvements include a new ventilation system that brings the facilities up to current safety standards.

In the glass production area, features added include: a batch house – a small, well-ventilated room to weigh and mix chemicals; three rebuilt tank furnaces for melting clean glass, each with a capacity of about 900 pounds; a rebuilt 250-pound capacity small tank furnace for producing colors; and two rebuilt "glory holes," or reheating furnaces. Existing equipment includes 15 electric annealing ovens used to heat, then cool molten glass to make finished glass less brittle.

All furnaces have updated designs and meet all federal Occupational Safety and Health Act specifications. They have a 2,000-pound molten glass capacity and operate continuously, with the exception of Christmas and summer vacations.

The art glass program, with experts Billeci, glass sculptor, and Fred Tschida, neon sculptor, as instructors, provides the student with ample studio and production time. The glass facility is open every day of the week from 7 A.M. to midnight.

Since its inception in 1963, when a handful of students began taking classes and working in about 200 square feet, the art glass program has expanded in concept as well as in physical capacity. A second faculty member was hired during the 1969-70 academic year and a masters in fine arts degree program was initiated. Facilities were also doubled so the program could expand from hot glass into both hot and cold material.

Today, 40 to 60 undergraduate students are enrolled in the bachelor of fine arts program in glass, with two candidates in the master's program that reopened this year. Two more graduate candidates will be added next year.

Undergraduate students begin elective glass courses in their sophomore year with a course in hot and cold material. They learn everything from cutting glass to making small objects.

In the junior year, students opt to work in the hot glass field, blowing or casting, or in cold glass with sculpting, neon fabricating and making molds for kiln-fired glass work.

Senior fine arts students present a proposal to a faculty adviser and work on their senior show presentations the entire year.

Graduate students in their first year continue advanced studio work presented in their portfolio. They also take art history classes and scientific glass theory and minor in a chosen studio program available in the School of Art and Design.

The second graduate year, devoted to glass studio and thesis preparation, ends with the student's show in the Fosdick-Nelson Gallery at the College and a written thesis.

Ceramics graduates go on to other art schools' graduate programs and are working as glass designers throughout the industry and are teaching at other leading institutions.

Taken from American Glass Review, October, 1985

ROSTER CHANGES

We appreciate being notified when there is an error in the information printed in the membership roster so that a correction can be made through FUSION. Listed below are some corrections you might want to record in your copy of the roster.

1. The city where Lawrence Waller resides is Cleves, OH.
2. The employer listing and mailing address for Kurt O.T. Greiner is:

   University of Nebraska – Lincoln
   Chemistry Department
   Hamilton Hall
   Lincoln, NE 68588

3. Secretary Joseph Gregar, listed under Officers on the Board of Directors page: The area code number for his home phone should be 312.

It is not possible to include all of the changes that occur almost daily because there are just too many to publish in each issue of FUSION. The above corrections were errors made during the printing of the roster.

NOTICE—NOTICE—NOTICE

This is to let all of the membership know that the Home Office will be CLOSED from June 20 - 29, 1986. Of course we will see ALL of you at the 31st Symposium in Cincinnati, Ohio.

The Home Office will further be CLOSED from August 13 - September 8, 1986, as Bev and I will be joining those who are going to Germany and France. Look forward to the November issue of Fusion for a complete report.

Mochten Sis sich uns nicht anschliessen?. Auf baldiges Wiedersehen!

Jim Panczner – Editor

Methods and Materials Committee

The Methods and Materials Committee would like to make available the Methods and Materials Manual to those wishing to purchase a copy or to those who have misplaced their original copy. This manual contains a vast amount of information relevant to the profession of scientific glassblowing. It is offered to you for $35.00 per copy. Orders should be submitted to the American Scientific Glassblowers Society, Toledo, Ohio with check or money order made payable to the same in U.S. currency.

Bruce E. Harwood, Chairman
Methods & Materials Committee

PAST-PRESIDENT'S COMMENTS

In the fall of 1952 a group of individuals realized the benefits and opportunities that would abound, by forming our society. From an original membership of about thirty (30), our ranks increased to one hundred twenty five (125) in 1955, just three years later. During this period there were no strangers, they knew each other well. They were concentrated geographically in a small area and met periodically; their numbers were few.

Today the situation is vastly different. Society membership has grown to nine hundred fourteen (914) with sixteen (16) sections located throughout the continent and representation from eighteen (18) countries around the world. It is readily apparent that it is a physical impossibility for any member of this organization to know all, or indeed a major portion of his fellow glassblowers.

Dissemination of information was the vision of our founders. That goal is as vital to our existance today as it was in 1952 if we are to maintain our integrety as a society. In order to achieve these aims we instituted local sections, symposia, Fusion, methods and materials, cumulative index, national and regional seminars and symposium proceedings. All of these are a medium for glassblowers to convey their thoughts and ideas on scientific glassblowing and generally promote an educational atmosphere throughout the society.

Two questions that are constantly being asked throughout the society:

"How can we give the Junior members more information and get them involved in our programs."

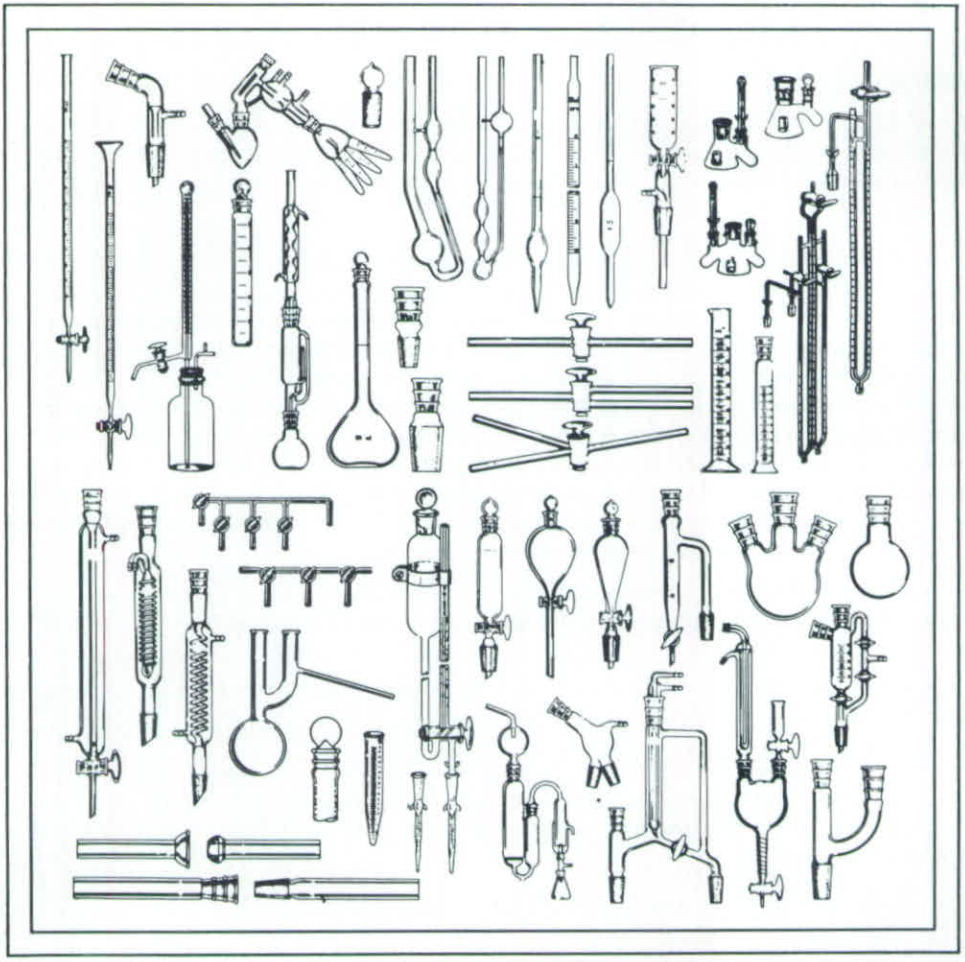
"What are the benefits of joining the society?"

The annual symposium is our largest educational event. However, the number of junior members that attend is generally quite low. Through the untiring efforts of our elected officers and other dedicated members, local sections schedule meetings that cover a wide range of topics. Most of these meetings are planned to generate interest and promote a better understanding of our profession for the Junior members and newcomers.

Are we accomplishing our goals? I believe we are. Our Society is in good shape. We do provide opportunities to those who wish to better themselves in the glassblowing profession and most importantly, we are reaching our Junior members. Yet, we can not afford to be complacent. We must continue to be motivated by these two questions.

To the Junior members; I urge you to keep pushing, the future is yours. And . . . to those newcomers who read last issues of "Past President's Report" and do not know "Joe from Brookhaven" don't be fooled, he really cares. He sleeps with one eye open!!

Best Regards,
Bill Ryan



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Questions and Answers

QUESTION:

Is there a way to etch the surface of a glass plate so that it will produce a surface capable of scattering light? We have tried hydrofluoric acid etching but the surface texture was not satisfactory.

ANSWER:

I have heard that the fumes from hydrofluoric acid will etch differently than the liquid so we filled a plastic beaker nearly full of concentrated hydrofluoric acid and placed a piece of pyrex plate glass on top of the beaker. After about 2 hours the section of the plate that was exposed to the fumes was nicely etched and had the appearance of glass which might have been ground with a fine abrasive compound. The thickness of the plate had been reduced about 0.07mm and when measured at several points showed no significant difference in thickness from one point to the other of the etched section. After exposure for another hour the surface texture was about the same but the thickness was reduced another 0.03mm. The same procedure was repeated with quartz and window glass. The quartz became cloudy but showed much less etching. The etching was more severe with the window glass but the surface was glossy.

Surfaces of different textures may also be obtained by abrading a glass surface using a water slurry of silicon carbide or aluminum oxide powder. The feature can be altered by using different grit sizes.

Sandblasting the surface with air abrasive powders of different micron sizes is another option.

Dave Blessing – Question & Answer Chairman

In the November issue we requested some help in regard to applying a teflon coating on glass. We would like to thank Igno C. J. Dur of the Netherlands for the following information:

1. It is very important to determine the kind of glass of the vessel.
   a. The adhesion of teflon on the glass wall is stronger with soft glass rather than hard glass.
2. What kind of coating will be used.
   a. One should ask himself when choosing the kind of teflon coating what is it going to be used for, has it to be transparent, has the liquid that one uses a high PH or is it fluor containing;
   b. The clear coating gets a very thin film (± 5 micron). The green FEP coating gets a very thick layer (± 75 micron);
   c. Take care that the teflon coating is as thin as possible because of minute cracks.
3. Is the glass wall well pre-treated.
   a. The glass wall has to be well pre-treated and clean to obtain a proper adhesion;

   If the glass wall is not well pre-treated the coating will come off after a short time.
4. There are two ways to fix the coating: dipting and spraying.
   a. You can spray the inner side of the vessel with a sprayer that has a rotating head;
   b. You can pour the teflon coating in the vessel and rotate it so – that the whole wall is covered. Then pour out and let it leak out. When using this method, you will obtain a layer of ± 25 micron.

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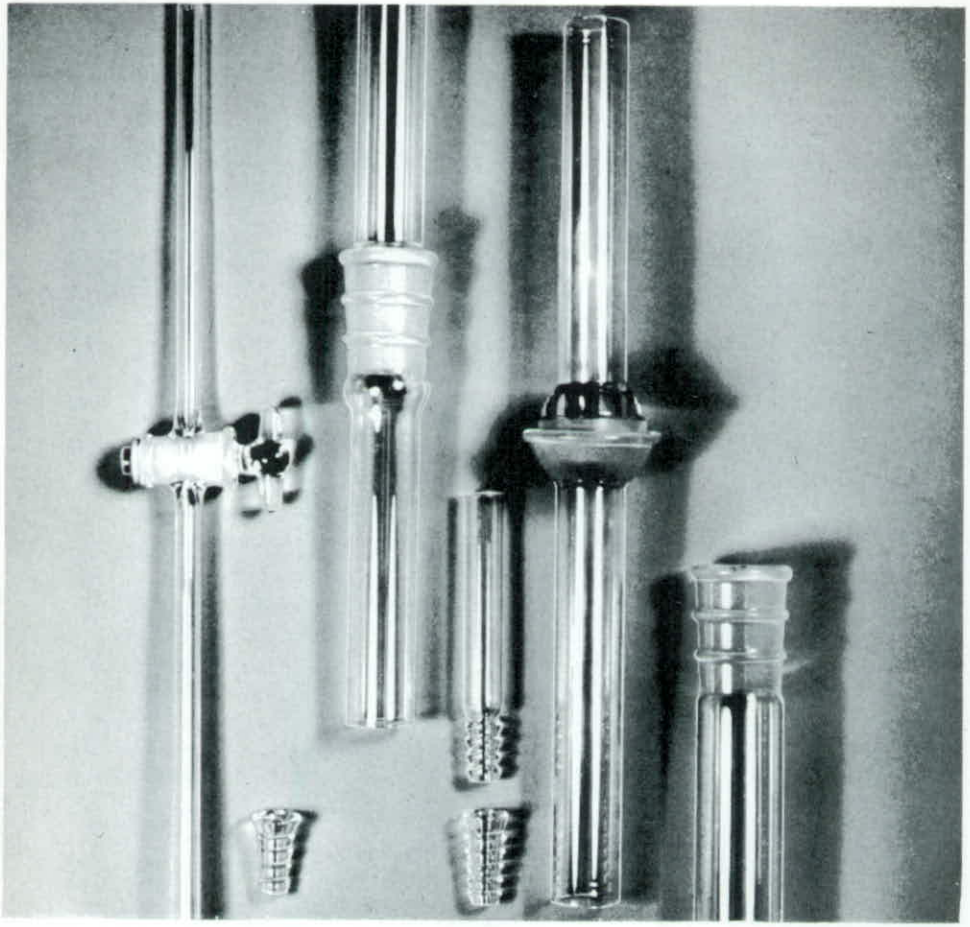

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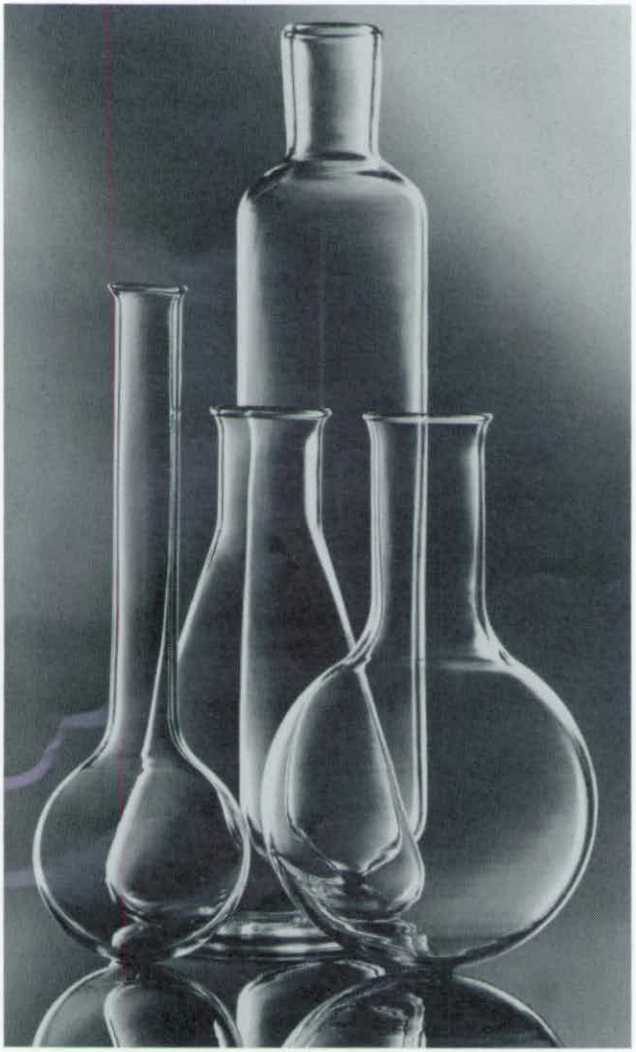

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SILVER JUBILEE CELEBRATION AT SCIENTIFIC GLASSBLOWERS SOCIETY

by F. G. Porter*

The British Society of Scientific Glassblowers celebrated its Silver Jubilee year in 1985. In recognition of this achievement, the following article reviews the history and present-day activities of the organization.

For several years after World War II, the late Mr. I. C. P. Smith organized in London, Symposia for the Ministry of Supply. Ministry glassblowers attended along with glassblowers who had been invited from other establishments. As a result of these meetings, various ideas were suggested which culminated in a proposal to form a society which would further the aims of scientific and research glassblowers. A group at Aldermaston and another group in the Midlands held discussions to further these ideas, but as records show, it was in the Midlands on November 2, 1960, that the inaugural meeting founding the British Society of Scientific Glassblowers took place. The meeting was held at the works of Messrs Albright and Wilson Ltd, Oldbury. This meeting was attended by 21 people, mostly from the Midlands area, which had at that time a large number of glassblowers. At the meeting was Mr. W. Begby from Aldermaston, who joined the nine strong committee headed by founder chairman, Mr. Bill Baker. Mr. D. Ivin was appointed secretary and treasurer. Members present made a voluntary contribution to start a fund so that the Society began on a firm financial footing. The first annual symposium was planned and held at the works of Albright and Wilson on September 20, 1961, a one-day event dealing with silica working, high vacuum techniques and glass to metal seals. Annual subscriptions were: Full members: two guineas; associate members: one guinea; student members; ten shillings and sixpence. The Membership grew and sections were formed in various parts of the country. A Board of Examiners was established to draw up standards of training and competence.

Aims of the Society

- To uphold and further the status of scientific, technical and research glassblowers.
- To encourage and promote higher standards of skill in the craft and associated arts.
- To establish standards for manipulative ability and technical and theoretical training.
- To award certificates and diplomas for standards attained.
- To engender a feeling of unity and fellowship amongst people working with and associated with glass in all its aspects.

Present-day management

The controlling body of the Society is Council, consisting of chairman, secretary and treasurer, one councillor and one representative from each section, Journal editor and chairman of the Board of Examiners.

Activities

The Society is divided into nine area branches in Great Britain. They each elect annually their own officers, representatives to council and councillors. Each section

*F. G. Porter, Master Glassblower, British Society of Scientific Glassblowers.

decides who its own members of the examiners' board shall be. The sections meet regularly to give lectures, technique demonstrations, show films depicting skills allied to the profession. Meetings are often preceeded or followed by business discussions on section or Society matters and visits to various allied industrial establishments. Next year, the BSSG as a group are attending the 3rd International Glassblowers Symposium in Nurnberg. Fed. Rep. of Germany and a visit to the Schott glassworks at Mainz has been arranged. The sections in turn where possible, organize the BSSG annual three-day symposium, usually in its own area. This includes the Annual General Meeting and annual dinner, at which prizes and trophies are presented for scientific and artistic glassblowing ability and for service to the Society.

The Society is represented at the meetings of Glass Training Ltd. and at meetings of the Worshipful Company of Glaziers and Painters of Glass.

The Journal of BSSG

Some early publications for the benefit of members were section newsletters and bulletins, The Western Section 'REVIEW' and Southern Section Newsletter being two examples. The first official publication of the Society was POISE 10^4 published in March 1963, a duplicated publication clipped together with a pictorial cover. The Journal in its present form was first published in March 1964 and has remained a fairly constant size throughout the last 21 years; it is published quarterly and is free to members.

Each year, a trophy and a monetary prize can be awarded for papers published during the year which have been adjudged by the editorial committee to merit recognition.

Membership

The Society includes members from all branches of Science and Industry and from many countries. The eight grades of Membership are as follows:

- MASTER (MBSSG). A full member of the Society who has passed the Society's Master Glassblower Examination.
- FULL (BSSG). A full member of the Society who has passed the Society's Certificate of Competence examination.
- CRAFT (CBSSG). A person who has been employed for a minimum period of five consecutive years as a scientific glassblower.
- HONORARY. A member of the Society who, in the opinion of the Council, is deemed to have made a noteworthy and/or distinguished contribution to the Society and/or to the knowledge of glassblowing technology.
- ASSOCIATE (ABSSG). A person who is not a scientific glassblower but is interested in the aims and objectives of the Society.
- STUDENT. A glassblowing apprentice under the age of 21 or a person who is receiving instruction from a qualified glassblower and has been so engaged for less than five years.
- RETIRED MEMBER. A member who has reached the age of retirement but wishes to continue contact with the Society.
- OVERSEAS MEMBER. A member resident outside the British Isles but fulfilling the requirements for any of the above grades.

Many countries are represented within the overseas section. The Society has members from such nations as New Zealand, Australia, Hong Kong, Nigeria, Zimbabwe, Indonesia, South Africa, USA, India, Pakistan, Iran and Iraq.

The Society boasts a technical library of some 180 books on glass and its many related subjects. In addition, the librarian has Journal exchanges with around 18 other organizations and Societies interested in glass.

Video films are a subject on which the Society scores highly, claiming the best video lending library in the world on films dealing with glass. The library holds some 30 VHS format films. The Society's newly appointed video unit is to produce video packages of the three-day annual symposia. The production of a training video is also under review.

Further information about the Society is available from Mr. P. Halliwell, Honorary Secretary, 21 Grebe Avenue, Eccleston Park, St. Helens, Merseyside, WA103QL.

Acknowledgement

The author acknowledges the help and information afforded by Mr. Bill Baker, Mr. John Price and Mr. P. Halliwell in the compilation of this paper. □

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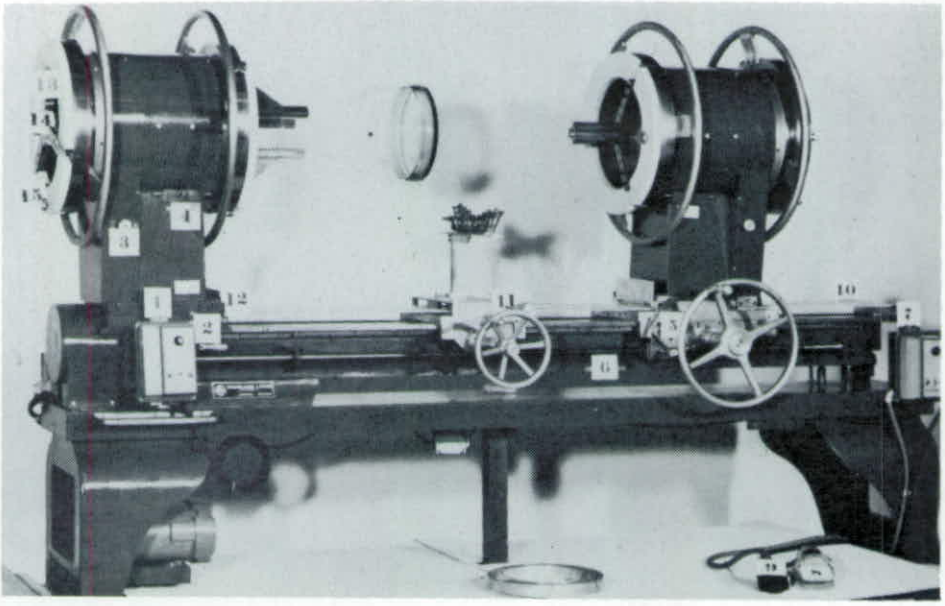

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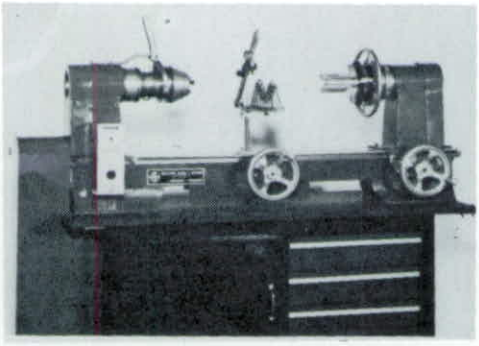

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George and Dolores Sites Celebrate 50th Wedding Anniversary

GEORGE and DOLORES SITES
(50 years and still smiling)

On December 29, 1985, about 70 invited members of the family, neighbors, and friends helped us celebrate our 50th Wedding Anniversary. The affair was held at the DuPont Country Club in Wilmington, Delaware. Although our actual anniversary was December 27, the party was scheduled for Sunday, the 29th so that those from a distance could attend. The festivities opened with a get-together with fruit and champagne punch, followed by a luncheon, dancing, and socializing. It was a day we will recall with fond memories.

Clockwise from 12:00 – Jane Good, Gordon Good, Pat Wargo, Andy Wargo, Dorothy Drechsel, Ted Bolan, Bill Wilt, Margaret Baum and Joe Baum.

Those present from the American Scientific Glassblowers Society were: Joe and Margaret Baum, Rensselaer, NY; Bill Wilt, Lake Piseco, NY; Gordon and Jane Good, Amherst, MA; Andy and Pat Wargo, Hellertown, PA; Dorothy Drechsel, Quakertown, PA; Ken and Faye Everingham, Carneys Point, NJ; Tom and Arlene McKelvey, Folsom, PA and Ted Bolan, Poughkeepsie, NY.

Our only regret was that we were not able to invite more of those in the Society that we worked with and knew for so many years. We would like to express our thanks to all of those that heard about our Anniversary and sent cards and letters. We have made up an album of these remembrances and will treasure them forever.

Fondly,
George and Dolores Sites

AUDIO-VISUAL COMMITTEE

Requests for tapes should be sent to: Owen Kingsbury, Chemistry Department, East Carolina University, Greenville, NC 27834. Users of the tapes are requested to notify him of any damaged areas in the tapes when they are being returned.

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

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

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

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

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

Thank you very much.

Sincerely,
Owen Kingsbury
Audio-Visual Chairman

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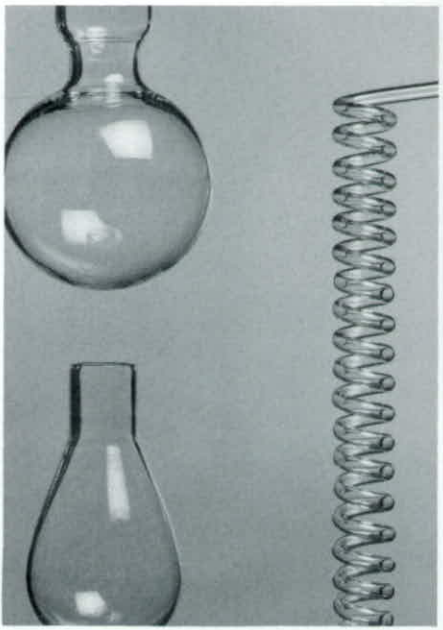

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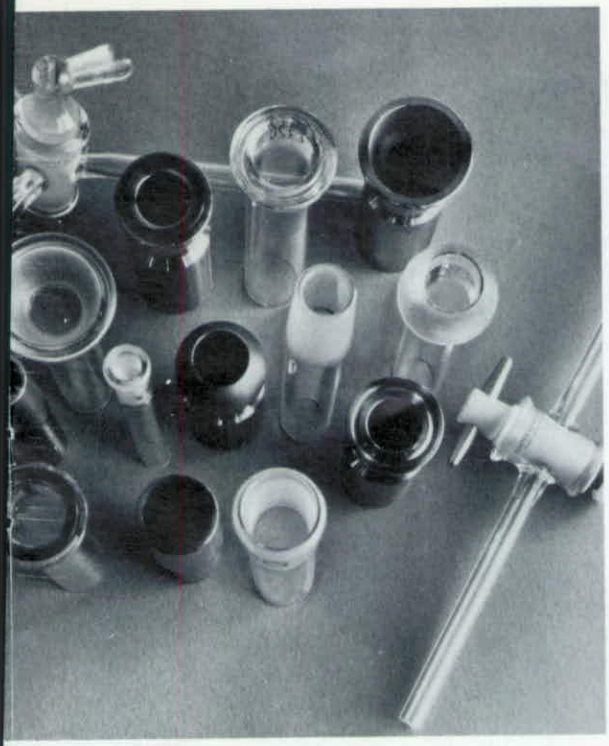

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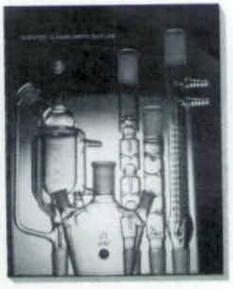

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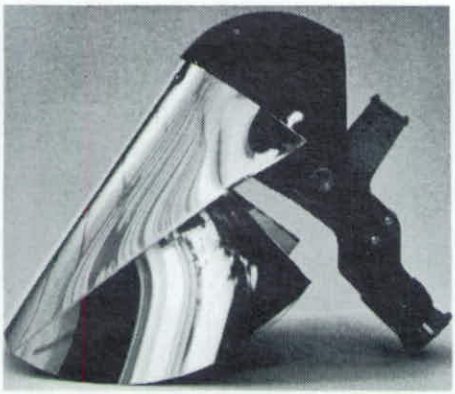

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"I believe the key to our success has been our goal of constantly striving to develop and produce new and useful items for the laboratory," says Paul Kramme Jr., president of Ace Glass, "combined with the philosophy that service to the customer has to be the foundation on which a successful company is built."

Some of the most notable innovations from Ace Glass include:

- the first glass spherical joints to provide a flexible, non-freezing interchangeable glass connection;
- the first American-made, sintered glass filters;
- Mini-Lab, the first specially designed line of miniature glassware;
- the first complete line of laboratory scale photochemical vessels for use with immersion lamps and power supplies;
- Trubore Stirrers, the first precision interchangeable glass stirrers, which are probably the most widely used glass stirrers in research today;
- Ace-Threds, versatile, grease-free, no-clamp threaded glass connections;
- the first interchangeable reaction equipment; and
- Ace Instatherm, a process by which a conductive heating film is fused directly to a glass surface.

"We have been dedicated to meeting the needs of the laboratory apparatus

industry," explains Kramme, "and during our past half-century of service to the industry we have consistently expanded our production facilities and capabilities in Vineland and added a sales office and warehouse in Louisville, Kentucky."

The expansion of Ace Glass has included foreign markets as well and its laboratory glassware is now sold throughout the world.

Ace Glass in Vineland, N.J. is celebrating its 50th anniversary as a manufacturer of laboratory glassware this year.

"Today, Ace Glass prides itself in keeping up with the latest technologies," Kramme adds. "The innovation that marked the success of our first 50 years will continue to help make work more fruitful for the scientist and laboratory worker."

And, to help customers become more familiar with the full range of Ace products, Kramme says, the firm has recently created the Ace Traveling Scientific Expo, a display of its laboratory glassware product line, which has visited more than 100 universities and businesses in America.

"We are grateful to those who have supported and contributed to our growth during our first half century," Kramme concludes, "and we pledge to continue our dedication to innovative research and customer service that helped get us to our leadership position in the industry."

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Chemical analysis services include classical methods of organic and inorganic analysis as well as modern spectroscopic techniques such as inductively-coupled plasma (ICP), atomic absorption, x-ray diffraction, wavelength- and energy-dispersive x-ray fluorescence, arc emission, UV, visible, and Fourier-transform infrared. Other instrumental techniques include electron probe microanalysis, scanning electron and optical microscopy, gas chromatography, high-performance liquid chromatography, gel permeation chromatography, ion chromatography, and GC-mass spectrometry.

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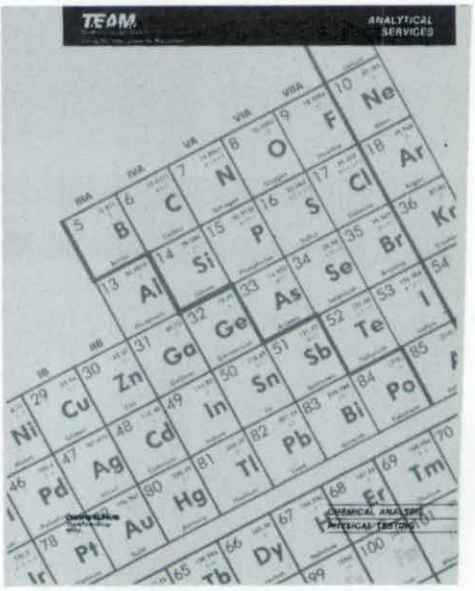

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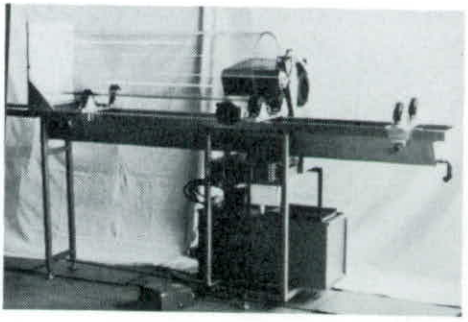

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Full information available from Peter Norton at: Nortel Machinery Inc., 1051 Clinton Street, Buffalo, NY 14206, (716) 852-2685.

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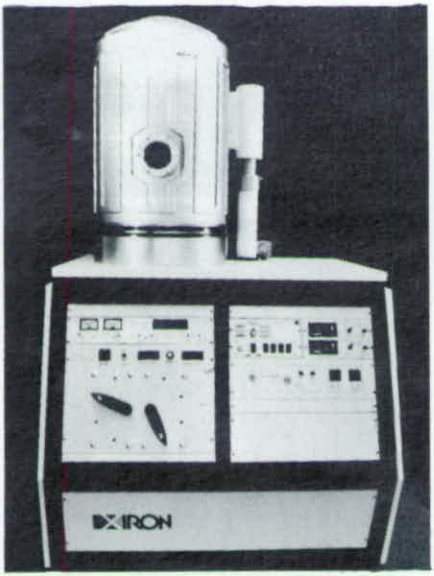

For additional information on any RC Series products, write to XIRON Vacuum Products Division, 1251 West Sepulveda Blvd., Suite 418, Torrance, CA, 90502, or call (213) 831-4290.

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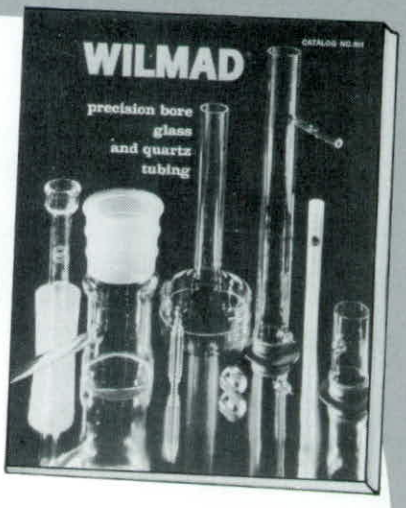

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SECTION NEWS

Great Lakes Section

A joint spring meeting of the Great Lakes and Canadian sections was held in Windsor, Canada on March 8, 1986. Wolf Eberhart was our host and the meeting opened with coffee and doughnuts and renewing old friendships.

Displays of glassblowing tools, burners, new laboratory glassware and equipment were furnished by the following companies: B+C West Germany, Peter Norton (Nortel), Peter Petersen, and Eberhart Glassblowing. As evidenced by the amount of enthusiasm and questions, these displays were very informative and greatly appreciated.

Dick Kowalczk, Fred Hackett, Harold Eberhart, Randy Hansen checking the displays.

Wolf and Kathy Harper with another captive audience.

L-R: Fred Hackett passing the glass gavel to the new chairman, Manfred Langer.

Arthur Dolenga installing new officer, L-R: Scott Bancroft, Secretary/Treasurer; Manfred Langer, Chairman, Pete Severn, Director.

A business meeting was held and new officers elected. They are as follows: Pete Severn – Director, Manfred Langer – Chairman, and Scott Bancroft – Secretary/Treasurer. Congratulations to these men.

Again, we had the pleasure of our national officers' company. Dave Chandler – President-Elect; Ted Bolan – Executive Secretary; Dave Daenzer – Treasurer; from the home office Jim and Bev Panczner; and Bill Wilt – Director, Hudson-Mohawk section.

A break for lunch of delicious hamburgs followed our business meeting and the afternoon was spent enjoying demonstrations of artistic and scientific glassblowing by the following people: Peter Petersen, Kathy Harper, Harold and Wolf Eberhart, Doreen Goulden and others. Thanks to those who shared their talents.

The meeting concluded with an authentic German dinner at the Bavarian Inn. We would like to thank all our sponsors and especially our host, Wolf, for an excellent meeting.

Respectfully,
Randy Hansen
Secretary/Treasurer

INTERNATIONAL SCENE

Japan

Disappearance of the international scene, Japan, in the 1985 issue of FUSION does not mean the vanishing of the Japanese Society of Scientific Glassblowing into a thin air. Quite the contrary. The society did good activities as can be read in the following paragraph.

On March 22, 1985 the society held the first meeting of the year at Sumida Kaikan in downtown, Tokyo. About 70 members joined the meeting. Themes of the lectures were as follow:

"New Ceramics and its Application"
Dr. Fujio Okamura
Inorganic Materials Research Institute
Science and Technology Agency

"Fabrication of Fused Quartz"
Mr. Kunihiko Sakikubo
Toshiba Ceramics Corporation

The lectures were very informative and received well by the attendants. Following the lectures the annual meeting of the society was held and every minute report were approved unanimously.

On the 14th of June, the society held a plant-tour. Members got together at a corner of Tokyo station and got on a charter bus at 8 a.m. After 4 hours of driving, the members arrived at Shizuoka Works of Toshiba Glass Co., Ltd. They were welcomed by the company officials. Following the brief explanation of the company, the officials conducted the visitors into their works. The visitors were attracted by automatic production of blown wares.

Following the tour, a lecture on the strain analysis was given by Dr. Hiroshi Kishii, chief engineer of the company. Dr. Kishii is one of the well-known glass technologists here in this country. With the aid of video tape he talked about the analysis of strain in various types of glasses.

The plant-tour and the lecture were received very well by the visitors. The charter bus left the works at 4 p.m. for the Tokyo station.

On October 25th, the society held again the plant-tour. Members got together at a small national railway station at 9 a.m. They took a charter bus and visited Takasaki Plant of Koike Oxygen Co., Ltd. and Tatebayashi works of Shinetsu Chemical Corporation. At the oxygen company the visitors were attracted by a burner demonstration. They were also attracted by a chemical production line of Shinetsu Corporation.

The 1986's first session will be held on March 20, featuring the purification of water and glass washing, A.S.G.S. video tapes, etc. In June, a plant-tour will be held. They are going to visit a fiber glass company and also a bottle company in the outskirts of Tokyo. In October, a lecture meeting will be held at a municipal technical center.

Correspondent
Coe Gotoh

Southern California Section

The December meeting of the Southern California section was held at California State University at Los Angeles. Our host Gary Coyne gave a demonstration of computer graphics: how he uses the computer to make permanent drawings and also how he makes use of the graphics in the design of vacuum systems. Jim Merritt gave a demonstration on making hemi-spherical dewars and water jacketed petri dishes by indenting rather than sealing. Our next meeting will be on Saturday, February 22.

Our host Craig Kloss and wife.

Dinner begins.

The February section meeting was held on the Queen Mary in Long Beach. Members and guests assembled early for a tour of the Spruce Goose (a tour that many of us working on the 29th symposium had missed). After the tour we went aboard the Queen for refreshments. Our dinner for the evening was hosted by Corning Glass and our local rep, Craig Kloss. Craig also provided a most impressive movie from Stuban. The fun was followed by a short business meeting with a reminder to all to submit nominations for section officers. Our thanks to Corning Glass and Craig Kloss for a most enjoyable evening and San Diego rep, Mike Barnett, for his participation.

Refreshment time.

Southeastern Section

The 29th annual meeting of the Southeastern Section of the A.S.G.S. was held at the Ramada Inn in Spartanburg, SC on April 13, 1985.

The meeting was called to order by Chairman Bill Caldwell. The minutes were read, corrected and approved and the treasurer's report was read and accepted. Owen Kingsbury announced that the winner of the Dana Sampson Award was Michael Olsen of Vanderbilt University for the best lampshop hint of the year. New members recognized at the meeting were: Donna Rice, David Lovins, Klaus Widmann and Donald Woodyard.

Under new business, Bill Caldwell announced that the present officers were willing to serve another year. The officers are: Chairman – Bill Caldwell; Vice-Chairman – Willy Shoup; Secretary/Treasurer – Rick Smith and Director – Owen Kingsbury. These officers have 1 year remaining. Cheryl Stone volunteered to chair the Membership Committee for 1 year and Owen Kingsbury will chair the Awards Committee and the Nominating Committee for 1 year.

Bill Caldwell asked Ted Bolan the reason for holding the national symposium in late summer and Ted explained it would be only for the 1987 symposium in Boston due to high prices in late spring/early summer. Discussion was held regarding the matter of the Southeastern Section hosting a national symposium in 1989 or 1990.

Bill Caldwell thanked the sponsors of the Spartanburg meeting. The Friday night cocktail party was hosted by Autokeg Systems – Tim Falon, President; the breakfast was sponsored by Wale Apparatus – Bob McKellin; the Saturday night cocktail party was hosted by Ace Glass – Dom Underwood. Also in attendance were the Kontes team and Bill Wilt of Wilt Industries.

Jerry Cloninger announced that the national officers should be on our roster regardless of the section to which they belong. It was decided that Randy Searle, George and Delores Sites and Dorothy Drechsel would be made lifetime members of this section.

The meeting was adjourned at 11:27 a.m.

Respectfully submitted,
Richard C. Smith
Secretary/Treasurer

New England Section

JANUARY MEETING

Our January 23, 1986 meeting at Honeywell was an overwhelming success with over 35 members and guests attending.

Our host, Leon Vezina, provided us with an extensive tour of the glass shop, which included a number of specially designed lathes used in the manufacture of precision glass parts. We were able to see the equipment used in the glass molding operations as well as a microprocessor-controlled laser used to etch "sputtered gold" glass parts.

Honeywell Meeting – Our sponsor Rick Wilt, Wilt Industries, explains new diamond abrasive belts.

Many members take the opportunity to view the Newport Beach California workshop videos.

Honeywell Meeting – Andrea Kennedy, Ed Mitchell and Leon Vezina (L-R) during glass lab tour.

Honeywell Meeting – Gary Anderson, Dave Hovey and Dick Ryan. (L-R)

Honeywell Meeting – "Time to Socialize."

Our thanks to Leon, Honeywell and Wilt Industries for sponsoring this outstanding display of glass technology.

MARCH MEETING

On March 6, 1986 the New England Section met at the DuPont: NEN Products, Billerica, MA site. Thirty members and guests were in attendance for the evening's proceedings.

After dinner, Mr. Skip Roy, the Health Physics and Radiation Protection Officer for the Billerica site, spoke to us about the "Safe Handling of Radioactive Materials". The lecture and slide show included an interesting overview of the operation that has helped to make DuPont a world leader in the production of radio-pharmaceuticals. We also learned the fundamentals of radiation protection and contamination control on a daily basis.

Mr. Roy also demonstrated DuPont's commitment to providing a healthy and safe environment for its employees and neighbors.

Many thanks to Mr. Charles Killian, Mr. Skip Roy, and Mr. Len Smith of DuPont for making this evening possible.

Sincerely,
Ed Mitchell
Secretary, N. E. Section

Metro New York Section

For the March 28, 1986 meeting of the Metro New York Section, we gathered at 6:30 p.m. for cocktails and a buffet dinner graciously sponsored by Chemglass of Vineland, NJ.

At 8:52 p.m. the meeting was called to order by Rudy Schlott. 28 members and friends were in attendance. The chairman extended a humorous welcome and thank you to this month's sponsor, Chemglass. The floor was offered to Jim Carson of Chemglass, who thanked the membership for their support. A new catalogue is in preparation and suggestions were solicited.

Dave Edson announced that the 1988 symposium will be held at Atlantic City, NJ at Resorts International Hotel. Exhibitors are invited to attend a meeting at Atlantic City on Thursday, May 1, 1986 from 1 - 5 p.m. to aid in the selection of contractors for drapage, etc., and review the facilities.

Ted Bolan solicited papers for the 1986 Cincinnati symposium. Forty-six exhibitors have been signed. He reminded the membership to vote for the national president when the ballots arrive. In addition, the contracts have been signed for Boston for the end of July 1987, to be held at the Sheridan.

Rudy reminded us that there was still room on the Germany trip. Contingents for the U.K., New Zealand, Austria, Switzerland, Spain, Germany, etc., will attend as well as the U. S. Group.

Election of New Officers: We had a quorum.

Rudy regrettably announced resignations which made it necessary to hold elections for Chairman/Director, Treasurer and Chairman-Elect/Director-Elect.

The following volunteered and were nominated: Chairman/Director – Ottmar Safferling, Treasurer – Fred Kummer, Chairman-Elect / Director-Elect – Adolf Gunther. The motion to nominate these officers was made by Bob Jahn and seconded by Elco Machek.

The meeting was turned over to Danny Wilt, who showed us two new products: a reflective face-shield to reflect heat away when working with large diameter quartz and pyrex, and diamond belts to replace silicon carbide belts in the shop.

At 9:50 p.m. Ottmar Safferling moved to close the meeting. Joseph Schrauth seconded the motion.

Respectfully submitted
William C. Khoop
Acting for John Pucylowski, Secretary

Delaware Valley Section

The Delaware Valley Section would like to share with you some highlights of our last two meetings, November 13 and February 27.

Our November meeting was held at the Five Points Inn, Vineland, NJ, where we enjoyed a buffet dinner. A special thank you goes out to Friedrich & Dimmock for sponsoring our cocktail hour.

We were very fortunate to have the talented Mr. Paul Stankard as speaker for this evening. Paul creates some of the most magnificent paperweights you will ever see. He shared with us some of his works along with a very interesting slide presentation entitled "Transferring Nature into Glass."

Sponsors for February meeting - Kontes Glass.

We held our February meeting at a new location, the Centerton Country Club in Centerton, NJ. Many commented on the superb service and delicious food we received during our buffet dinner.

Paul Stankard during his slide presentation.

Paul Stankard's Paperweights.

This meeting took us on a tour of Kontes Glass Company. Everyone enjoyed this so much and we would like to thank Norman Neill, Vice-President of Manufacturing at

Kontes, for his help in coordinating this evening. Not only did Kontes provide us with a fantastic tour, they also sponsored our cocktail hour. We would like to thank them for their never-ending support. It is most appreciated.

The topic which received the most discussion at both meetings was the Delaware Valley Section's sponsorship of the 1988 Symposium and Exhibition. As you know from reading the February issue of FUSION, the location for our symposium is Resorts International Hotel & Casino in Atlantic City, NJ. Dave Edson, our chairman for this symposium, has been working very hard with his committee chairmen. We thank them all for their time and effort.

Respectfully,
Cindy McNellis-Eberwine

San Francisco Bay Area Section

Our first meeting of 1986 was held on January 30th at the Image Tube Division of Varian Associates in Palo Alto, CA.

Don Prows, the shop foreman, gave a demonstration of large Kovar sealing and Kovar seals made by the R.F. method (radio frequency). The demonstration was followed by a question and answer session.

A tour of the shop was conducted, which was followed by a short business meeting. We were pleased by the large turnout of the members.

* *

Our second meeting of the year took place on February 27th at V.B.I. Technology in Palo Alto, CA.

Hermann Van Braght was our host and gave us a tour of the shop as well as a talk about the arc lamps and the various applications.

A short business meeting followed the tour. During the meeting the location and date of our annual picnic were set for August 2nd at Huddard State Park in Woodside, CA.

Most Successful Fund Raiser

The San Francisco Bay Area section of A.S.G.S. announces its most successful charitable fund raising affair in twenty-seven years with the presentation of a check for $1,500 to the Eastfield Childrens Home. This year a one day sale was held at a shopping mall in Saratoga, California followed by a major Christmas sale that was heavily attended and well supported.

The section came up with the idea of a Christmas sale back in the fall of 1958 when Al Walrod was elected chairman. The first sale was held at Hal Warden's Glass Engineering Laboratories in Belmont, California. Hal provided the facilities and the support needed to get things started. Over the years the section has donated to various children's organizations and at one time donated $1,000 towards a glass and ceramics scholarship at Alfred University in New York.

Frank Szephegti

Harry Horn

Al Walrod

Herman VonBraght and Vicki Schath

Laurel Walrod

Dan Baker

Teddy Goldsworthy-Hanner

Tony McMahon and Tony Lockwood of Glastronics in Santa Clara, California opened their facilities for this year's sale. More people came out to work and help. This was the largest sale ever conducted and, at one point, orders had to be taken to keep up with the public demand for glass objects made by our artisans. In addition to complete support from Glastronics, Kent Glass, Corning Glass Works and Glastronics donated glass for the show.

Vicki Schath

Art Hanner

We've seen a revival of interest in this area and the highlight was our December 14th sale. We hope we can sustain the same level of interest for another twenty-seven years.

Those who participated and/or contributed objects for the sale are:

Dan Baker – Varian Associates, Ernest D'Amico – Weiss Scientific, Art Hanner – R & D Glass Products, Teddy Goldsworthy-Hanner – R.P.C. Ind., Harry Horn – N.A.S.A., Al Kalbin – I.B.M., Ken Keech – Glastronics, Vicki Schath – Glass Dragon, Vern Schath – Glastronics, Frank Szephegti – Franks Glass, Sergio Villa – Glastronics, Al Walrod, Laurel Walrod, Claudia Scott, Art Glassblowing Inc. – Incline Village, Nevada, Firelight Glass – Emeryville, Calif., R & D Glass Products – Berkeley, Calif., and Vilhelm Designs – Berkeley, Calif.

Midwest Section

The March 14, 1986 Midwest Section meeting was held at the University of Illinois, Circle Campus glassblowing shop. Workshop demonstrations were given by Ed Hyland, Al Gardner, Joe Gregar and Dieter Damrow.

Following the demonstrations, beer, soft drinks and snacks were had, followed by a buffet dinner.

Chester Swopes opened the meeting at 8:15, thanked Kimble for sponsoring the meeting and thanked those that came a long way such as Dave Blessing, Al Gardner, Bob Ponton and others from the Milwaukee region.

The secretary read the minutes of the previous meeting, which were accepted and seconded. Chairman Chester Swopes then led us into a moment of silence in memory of Bill Sales.

Chester thanked those that gave the demonstrations, mentioned the coming May 23rd meeting at Argonne Labs and then led us into happy birthday songs for Ted Bolan and for Jim Morrises 73rd birthday.

Ms. Debra Hollis, Kimble's representative, thanked us for coming and urged us to buy Kimble. Kimble's catalog and price lists were available.

Bob Ponton came to the podium and boosted the Cincinnati symposium and requested that we contact him if we have papers to present. He mentioned downtown Chicago and the O'Hare area for a Midwest section symposium site. Bill Schulze mentioned that we are benefiting because we have the records and experience of the 1976 symposium.

Bob mentioned that we give nominations for the junior members awards. He also stated that John Squeo went to the Canadian Section meeting in Windsor and brought back a substitute for asbestos tape which seems to be superior to the other substitutes that we have been using.

Joe Gregar mentioned that we have to phone too many people to encourage them to come to the meetings. This is costly and time consuming. The invitational letter should be sufficient notice to get us to come to our meetings.

The meeting adjourned at 8:50.

George Jahn, Secretary

Ohio Valley Section

REPORT NO. 1

The fall meeting of the Ohio Valley section was hosted by Bob Russell at Procter & Gamble's Ivorydale Tech. Center Glass shop on October 19, 1985. There were 12 members present. We had demonstrations of coil winding and removal of blume from quartz. Bruce Lanier demonstrated how he forms soft glass beads around a copper wire mandrel.

After a short business meeting we adjourned to **The Blue Gibbon**, a local Chinese restaurant, for dinner.

REPORT NO. 2

Our Spring meeting was hosted by Bruce Lanier of "Huff 'n' Puff Glassblowers" in Covington, Ky. on March 15, 1986. There were ten OVS members present, plus Jerry Cloninger and Ted Bolan of the national organization and Bob McKellin of Wale Apparatus.

Bruce demonstrated an offhand way of making vases and attaching the bases last.

There was a lot of discussion about the upcoming symposium. This continued into our business meeting, which was held at **Mick Noll's Covington Haus**, a German restaurant in downtown Covington. After the meeting we all enjoyed a fine German meal.

Respectfull submitted,
Peter Clarke, Secretary-Treasurer

A Blip from the Home Office

Returned publications – as many as 20 in a single month! Address correction notifications from the Post Office (at a price) – as many as 40 in a month! It's a problem and with your help, it can be eliminated.

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Beverly Panczner, Office Manager

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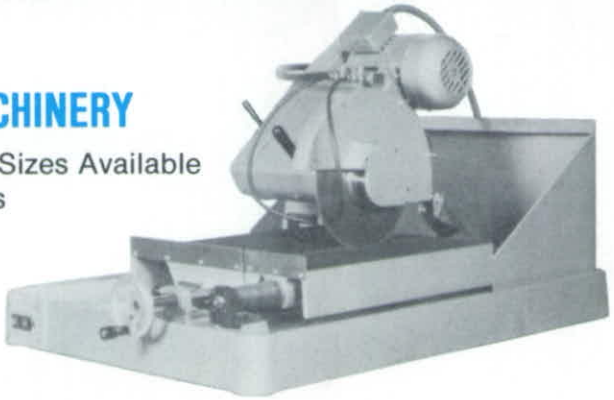

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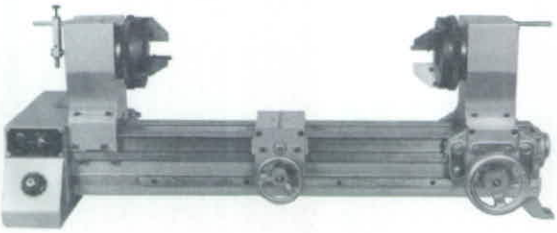

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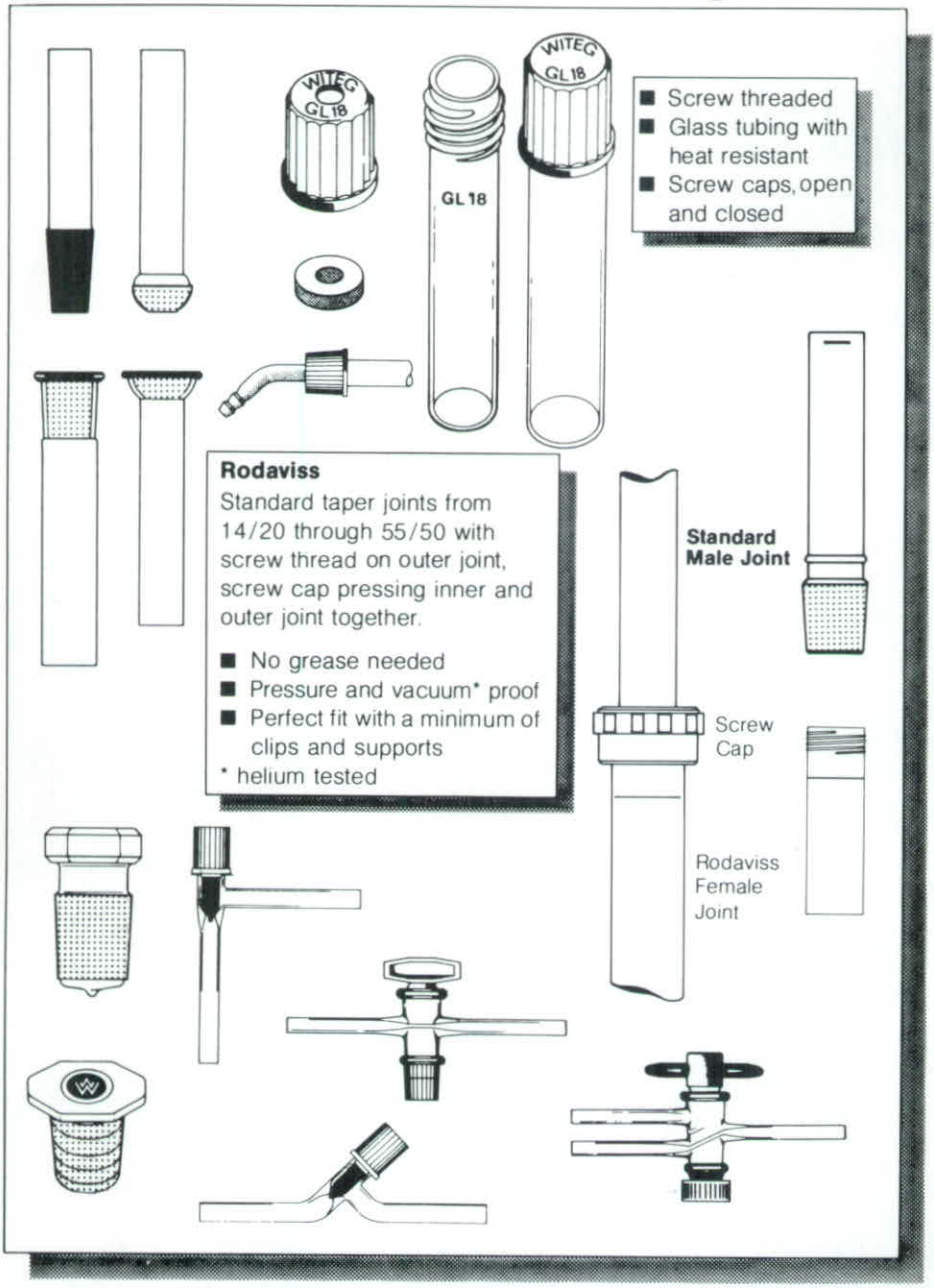

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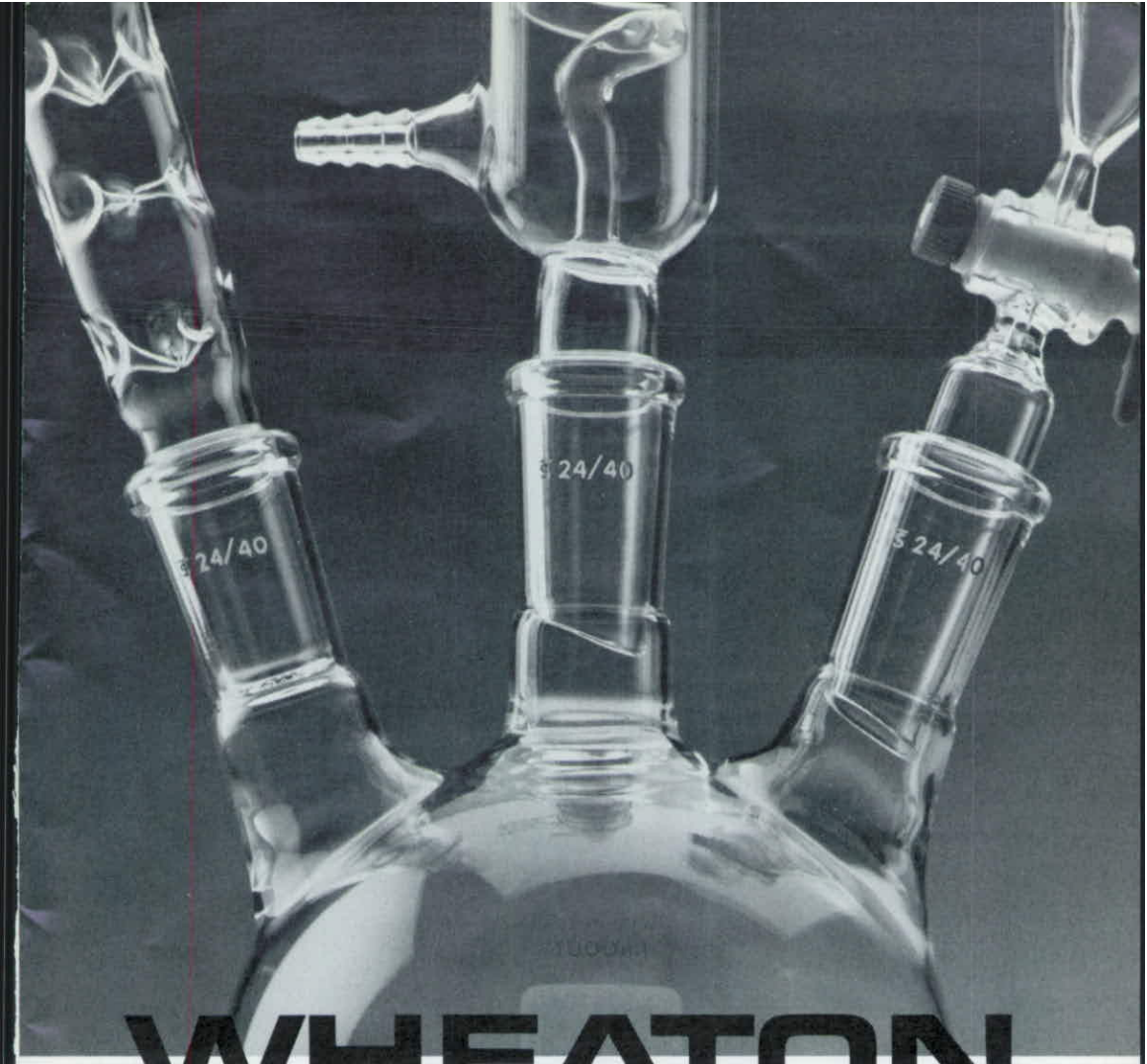

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Obituaries

VERDIE "AL" MASENGIL was born March 22, 1912. Died April 13, 1985. Most of his life was spent in Eugene, Oregon. He began a life-long love affair with glass while still in high school. Starting as an avocation, it became a career when after World War II he and a friend formed a partnership and started. The Aerolite Neon Sign Co. which lasted for more than 25 years when both retired. During those years he became well known locally for his artistic creations in glass as well as being in demand for scientific glass products.

Mr. Masengil was a man of many interests, a life long member of BPOE No. 357, a member of the Royal Horticultural Society, American Vacuum Society, Planetary Society, American Association for the Advancement of Science, The American Instrument Society and a former member of the American Solar Energy Society. He was especially adept in electronics and had one invention patented and another pending.

He is remembered as a much loved husband and father of three daughters and one son. He is also a grandfather to three grandsons, and a loyal friend to many.

JOHN BONTORNO of Danvers, Mass. died August 2, 1985 at the age of 57. John started his glassblowing career in 1940 at Sylvania in Salem, Mass. He served in the army overseas from 1942-46 and returned to Sylvania, where he worked until 1951. From 1951-58 he was employed by Varian of Beverly, Mass. and Bonde Electronics of Beverly, Mass. from 1958-62.

In 1962 John started his own business, Glass-Tech, Inc. in Georgetown, Mass. Glass-Tech is a successful company which serves many local businesses.

John was a member of the A.S.G.S. since 1977 and an active member and sponsor of the New England Section.

May I express the deepest condolences of the membership of the New England Section to his wife Helen, daughter Robin, son Jack and his three grandchildren, Sara, David and Steven.

Gary L. Anderson
Chairman, New England Section

ERICH GREIL passed away in October of 1985. Mr Greil lived his 78 years in Germany. He joined the A.S.G.S. as an Associate member in 1982.

We of the A.S.G.S. extend our sympathy to MARGARETHE GREIL, wife of deceased.

HENRY V. LEAHY passed away on March 31, 1985. He had been retired with a heart condition for several years.

Henry was born in Boston, MA on July 26, 1924. He started his glassblowing career with MacCalister-Bicknell Co. in 1945, after four years in the Navy. In 1954 he joined Nuclear Metals Co., where he worked for 12 years. He then went to Harvard University, where he shared the glassblowing responsibilities for several departments from 1966 until his early retirement in 1974. Hank was a charter member of the New England Section, A.S.G.S., and held office in that section.

He is survived by his wife, Gladys, and his daughters, Mary Linstrom of Waltham, MA and Joanne Moynihan of Cambridge, MA, and five grandchildren.

WALDO J. YOUNKER, age 78, died February 8, 1986 in Cincinnati, Ohio.

Waldo was born in Ashland, Wisconsin on August 16, 1907. He received his Chemical Engineering degree at the University of Cincinnati, Ohio. He began working as a research chemist for R. F. Johnston Paint Co. and doing his own glassblowing in Covington, Kentucky. He also worked as an analytical chemist and glassblower at Kentucky Chemical Manufacturing Co., Emery Corp., Perfect Manufacturing Co. and the University of Cincinnati, Dept. of Internal Medicine at the Kettering Lab. Waldo retired in 1973 after 37 years at the University with the title of Sr. Research Associate. He kept on creating scientific instruments for N.I.O.S.A., Shriners Burns Institute and the Medical College.

He was a charter member of the Ohio Valley section and joined the National A.S.G.S. in 1960.

His survivors are his wife Ireda, daughter Lois, sons Waldo Jr. and Neal and nine grandchilren.

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This issue's articles were submitted by:

Jerry Cloninger *Gary Coyne*

Anthony Hawkins

ALKALI

Consumption of Base by Glassware, by A. Smith, Journal of Chemical Education, Vol. 63, Is. No. 1, January, 1986, pp. 85-86. We know that bases effect glass. However, what is the effect of glass on standardized base solutions. This study used Kimax, Pyrex, KOH, NaOH, and distilled water to obtain answers.

CERAMICS – MACHINING

Residual Stress in Machined Ceramic Surfaces, by D. Johnson-Walls, A. G. Evans, D. B. Marshall, and M. R. James, Journal of the American Ceramic Society, Vol. 69, Is. No. 1, January, 1986, pp. 44-47. Residual surface stresses generated in ceramic materials by diamond grinding were studied.

CERAMIC – MATRIX

Ceramic Matrix Composites: A Literature Review, by L. J. Schioler and J. J. Stiglich Jr., American Ceramic Society Bulletin, Vol. 66, Is. No. 2, February, 1986, pp. 289-292. This review is a good summary of current work on Ceramic Matrix Composites which could in the future replace many items currently made out of metals. This particular issue of the American Ceramic Society Bulletin is devoted to this subject.

CHROMATOGRAPHY

Advantages of Wide-bore Capillary Columns, by R. T. Wiedmer, S. L. McKinley, and T. W. Rendl, American Laboratory, January, 1986, pp. 110-119. Advances in column manufacturing technology have provided the gas chromatograph with an attractive alternative to the packed column. The recently introduced wide-bore capillary has many desirable characteristics, including low bleed, high efficiency, and excellent reproducibility.

COATINGS

Elastomer Protects Communications Fibers, by W. E. Dennis, D. W. Burke, Research and Development, January, 1986, pp. 70-71. A fast-curing silicone relieves fiber stress and seals out moisture.

ENVIRONMENT

Development of a West Valley Nuclear Waste Glass by Empirical Modeling, by L. A. Click, R. O. Lobken, D. M. Strachan, and W. M. Bowen, Journal of the American Ceramic Society, Vol. 69, Is. No. 2, February, 1986, pp. 114-118. The plans for the first full-scale conversion of high-level commercial U.S. nuclear wastes to a glass suitable for long term storage and disposal are discussed. This was done using statistically designed study of empirical models of the properties of glass composition.

GLASS – APPARATUS

Atomic Absorption Evaporation flow Rate Measurements of Alkali Metal

Dispensors, by M. Succi, R. Canino, and B. Ferraro, Vacuum, Vol. 35, Is. No. 12, 1985, pp. 579-582. Research paper detailing a method of preparing photosensitive evaporation surfaces, using an atomic absorption technique, which accurately measures the evaporation rate of the alkali vapors. The test sample is mounted in a Pyrex glass cell, illustrated schematically. This technique was used for Ceasium generators and the paper contains the practical results.

Clay-Modified Electrodes 5. Preparation and Electrochemical Characterization of Pillared Clay - Modified Electrodes and Membranes, by K. Itaya and A. Bard, Journal of Physical Chemistry, Vol. 89, Is. No. 25, December 5, 1985, pp. 5565-68. Research paper with a nice schematic of Pyrex apparatus for membrane - potential measurement using clay membranes supported between glass - flanges.

FT-IR Study of Nitric Oxide Chemsorbed on Rh/Al_2O_3, by J. Liang, H. Wang, and L. Spicer, Journal of Physical Chemistry, Vol. 89, Is. No. 26, December 19, 1985, pp. 5840-45. Research paper with schematic of a high-vacuum cell for Infra-Red spectroscopy of absorbed species with Ca F_2 windows and an Al_2O_3 disc plate on which a Rhodium metal surface is deposited for study of Nitric Oxide reactions. Apparatus is simple, effective, and compact.

Measurement of Bromine Removal Rates in the Oscillatory BZ Reaction of Oxalic Acid, by Z. Noszticzius, P. Sterling, and M. Wittman, Journal of Physical Chemistry, Vol. 89, Is. No. 23, November 7, 1985, pp. 4914-21. Research paper with a nice schematic drawing of H-shapePlatinum elecrode cell. May be useful to those unfamiliar with the use of this classic apparatus.

Surface-Catalyzed Formation of Electronically Excited Nitrogen Dioxide and Oxygen, by Ang-Ling Chu, R. R. Reves, and J. A. Halstead, Journal of Physical Chemistry, Vol. 90, Is. No. 3, January 30, 1986, pp. 466-471. Research paper detailing the reaction kinetics under surface catalysis conditions of NO and O atoms. Contains schematic of a Pyrex glass 3 inch diameter Reaction tube used for passing selected ionized gases over a sheet Nickel metal catalyst. The resultant discharge glow was measured using photomultiplier tubes.

ION EXCHANGE

Gradient - Index Profile control by Field Assisted Ion Exchange in Glass, by S. Honde-Walter and D. Moore, Applied Optics, Vol. 24, Is. No. 24, December 15, 1985, pp. 4326-4333. Ion exchange can be used to fabricate gradient-index materials in glass. There have been two problems; 1) length of time for process and 2) the profile shape is limited. This paper discusses attempts of overcoming both of these problems.

LABORATORY EQUIPMENT & TECHNIQUES

Microcomputer Applications: Data Acquisition Using a Digital Multimeter, by M. Stockwell, American Laboratory, Vol. 18, Is. No. 2, February, 1986, pp. 236-237. Article outlining a method of using a Commodore 64 microcomputer and an STD (Simple To Design) bus system which is used in conjunction with a digital multimeter to create an inexpensive Analog to Digital circuit for interfacing TRIAC and/or Reed relay controls. This setup could be used for Annealing Furnace cycling or On/Off switching etc.

LASERS

(Various Titles). Journal of the Optical Society of America (B) Optical Physics, Vol. Is. No. January, 1986, pp. (various). This issue features several articles on the properties of doped glasses used in lasers. Technical and research oriented, they will be of interest to someone in this field.

PATENTS

Pipette Puller, by J. D. Kopf, (U. S. Patent No. 4,530,712), British Glass Institutes Research associated (B.G.I.R.A.), Abstracts No. 366,

December, 1985. The pipette puller is designed to draw glass or quartz tubing into micropipettes. Heating elements are provided to give a high degree of control for obtaining uniformly repeatable shapes of pipettes.

SAFETY

Chemical Detection and Alarm for Hazardous Chemicals, by Carrico, Davis, Campbell, Jr, Roehl, Sima, Spangler, Vora, and White American Laboratory, February, 1986, pp. 152-163. A chemical alarm based on ion mobility spectrometry (IMS) is described. As an alarm, specific chemical vapors are sensed onthe basis of recognition of their IMS signatures by microprocessor programmed with discrimination algorithms.

The Explosion-resistant Fumehood, by J. Koenigsberg, American Laboratory, February, 1986, pp. 86-96. The fumehood is one of the most important safety installations in the lab, but a surprising number of scientists have little knowledge of its safe use and limitations as a protective shield. This article focuses on the important topic of the explosion-resistant properties of the laboratory fumehood.

Protect Your Eyes, by D. D. Hedberg, Research and Development, January, 1986, pp. 187. A brief article on eye safety in the lab. Describes general situations that could occur and the proper action to take.

SILICA

Physical Properties of Vitreous Silica, by V. Shutilov, Soviet Journal of Glass Physics and Chemistry, January, 1986, pp. 83-96. (Russian Original is Vol. 11, Is. No. 2, March/April, 1985). Technical in Nature, this article reviews the contemporary literature on Vitreous Silica and is a useful condensation of property measurements, etc.

Versatile Material Meets High-Purity Standards for Advanced Ceramics, by A. J. Gitter, Ceramic Industry, Vol. 125, Is. No. 7, December, 1985, pp. 34-35. A (too) short commentary on various aspects of Silica (SiO_2) but is great as a quick overview of its commercial use/history. It is abstracted from a paper presented at a conference in Alabama in February, 1985.

SINTERING

Effects of Shear Stress on Sintering, by M. N. Rahaman, L. C. de Jonghe, and R. J. Brook, Journal of the American Ceramic Society, Vol. 69, Is. No. 1, January, 1986, pp. 53-58. Variations in a powder compact can lead to different sintering rates which therefore produce stress. This stress can lead to creep. Therefore a powder compact experiences creep and densification during sintering.

TEMPERATURE MEASUREMENT

Measurement of Flame Temperature Distribution by IR Emission Computed Tomography, by H. Uchiyama, M. Nakajima, and S. Yuta, Applied Optics, Vol. 24, Is. No. 2, December 1, 1985, pp. 4111-16. Non contact and non destructive measurements for determining flame temperature distribution are studied. The experimental system (using infrared emission) gave results that were in agreement with thermocouple probe measurements.

VACUUM

A Simple Inexpensive evaporation Setup for Coating Rods, by T. V. Rao, et. al., Journal of Vacuum Science and Technology (A), Vol. 4, Is. No. 1, 1986, pp. 142. Research paper with schematic of Pyrex bell-jar used for high-vacuum evaporation of materials onto a sample using an ingenious magnetic rotation device to rotate the sample.

VACUUM – BOOK REVIEW

Coatings on Glass, by H. K. Pulker, Elsevier Science Publishers, Vacuum, Vol. 35, Is. No. 12, 1985, pp. 637. The reviewer (W. Steckelmacher) considers this book an important compliment to, and update of, such well-established books as F. Hollands "Vacuum Deposition of Thin Films" (1956) and "Properties of Glass Surfaces" (1966) plus other considered classic texts on this subject.

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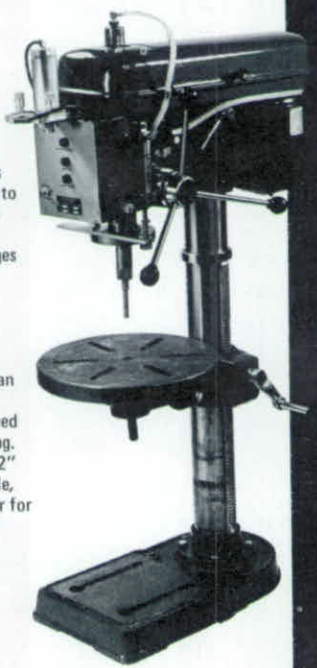

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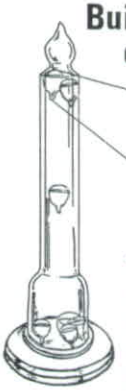

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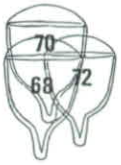

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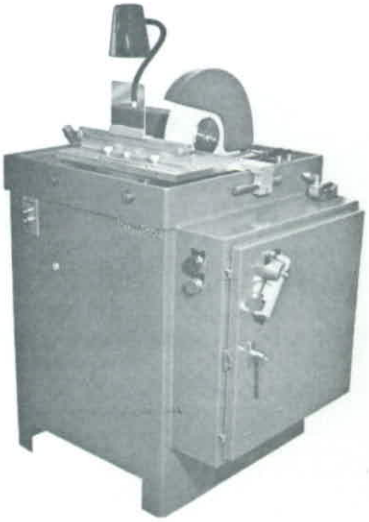

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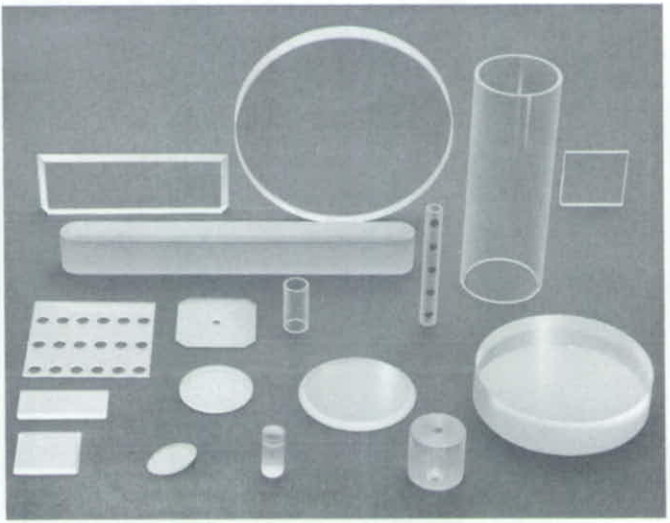

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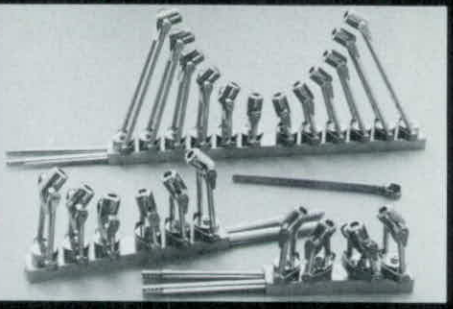

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ELECTIONS COMMITTEE REPORT

By virtue of the authority vested in us as The Elections Committee of The American Scientific Glassblowers Society and in accordance with the By-Laws regarding elections procedures, we do hereby state the following:

The Elections Committee unanimously declares that Mr. Owen J. Kingsbury, Jr. is hereby elected to the office of President-Elect of The American Scientific Glassblowers Society for the period of one year (1986 - 1987).

The Elections Committee unanimously declares that Mr. Joseph S. Gregar is hereby elected to the office of Secretary of The American Scientific Glassblowers Society for the period of two years (1986 - 1988) by popular acclaim.

Mr. David Chandler will automatically accede to and be installed in the office of President of The American Scientific Glassblowers Society for a period of 1 year.

The Elections Committee unanimously declares that the annual membership dues of The American Scientific Glassblowers Society shall be increased to the amount of $45.00 by approval of the votes cast by eligible members of the Society.

Respectfully submitted,
Arthur Dolenga, chairman
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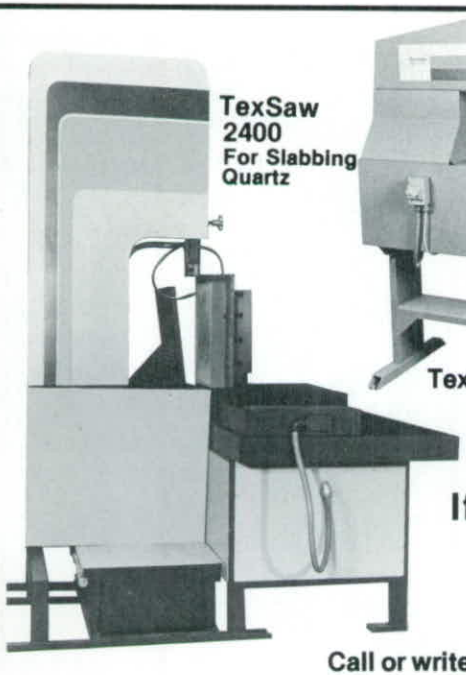

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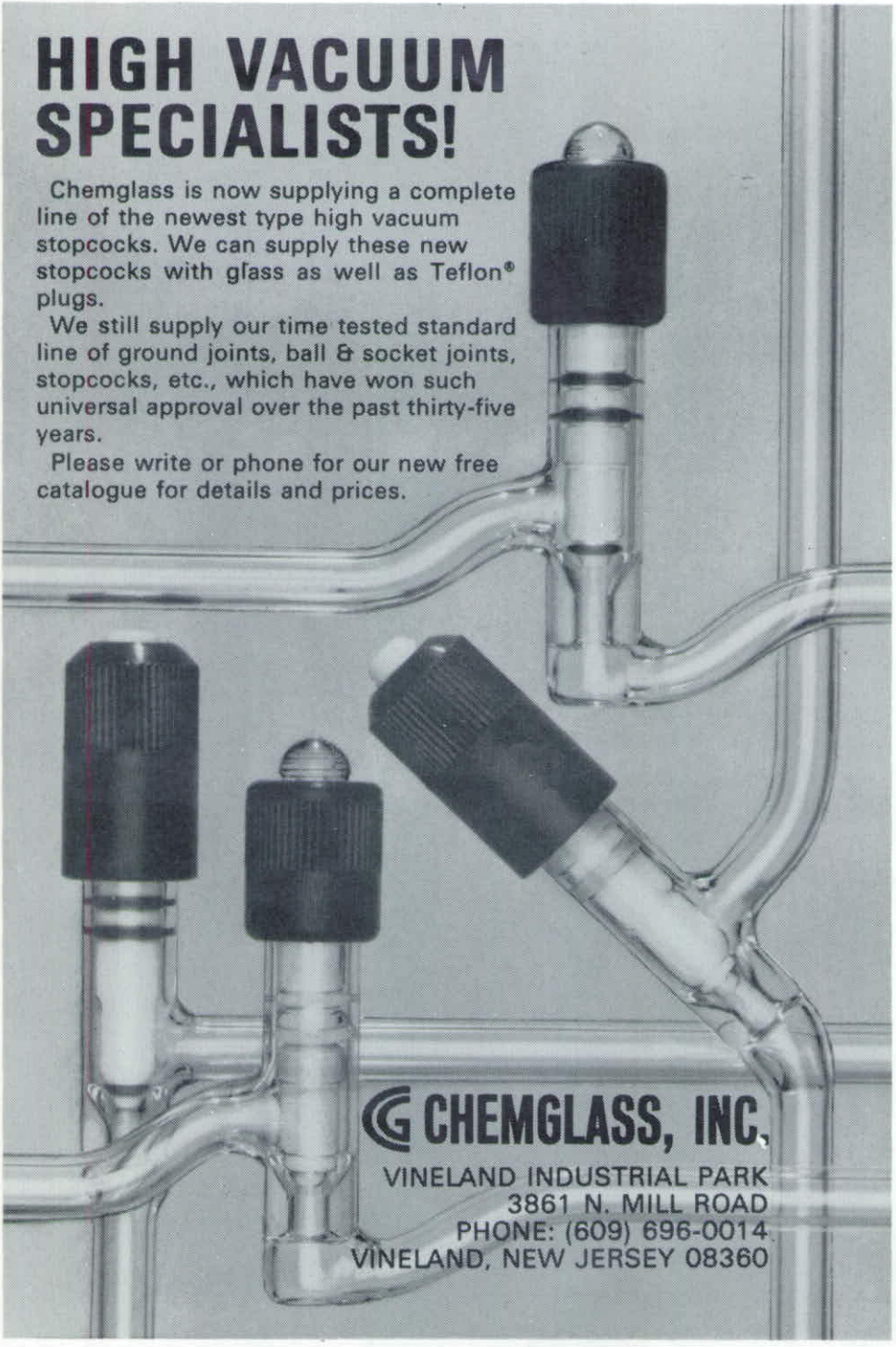
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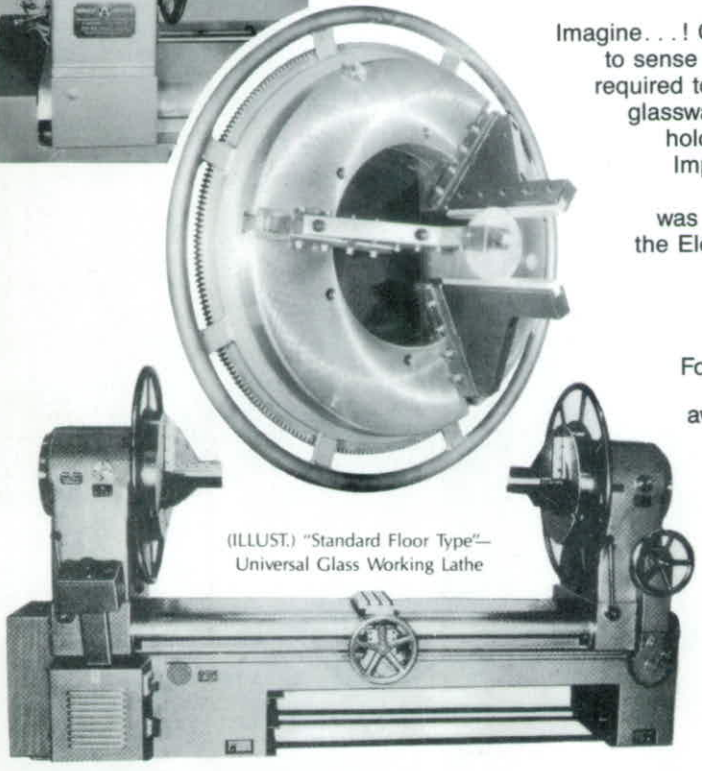

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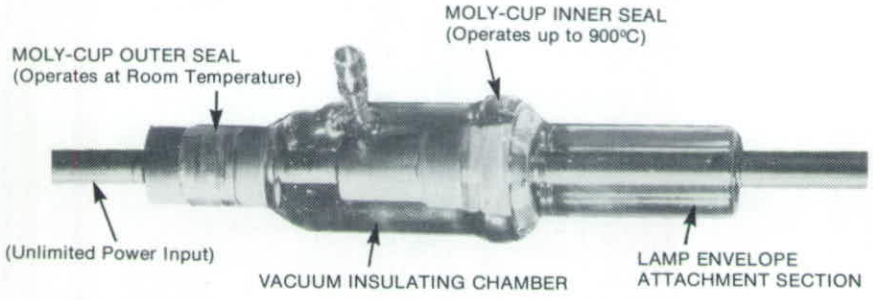

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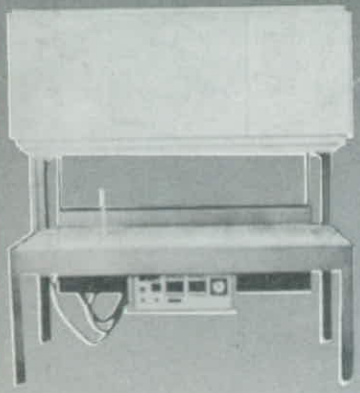

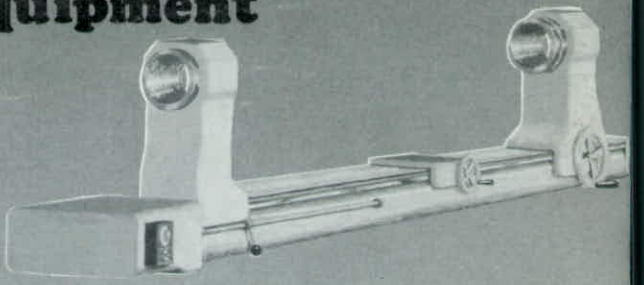

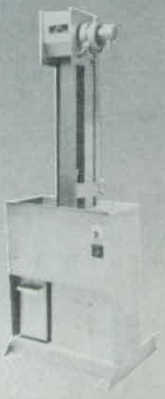

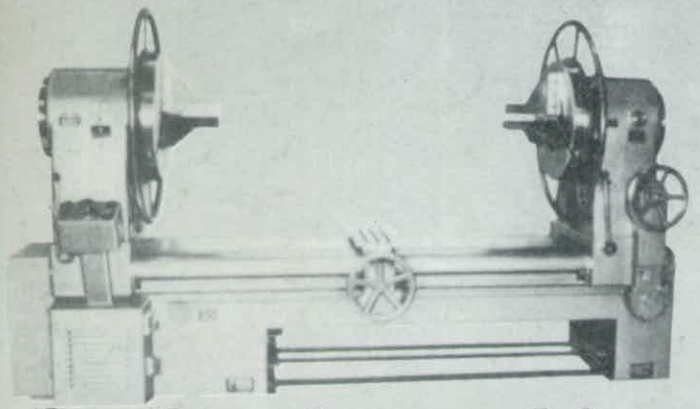

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