February 2020

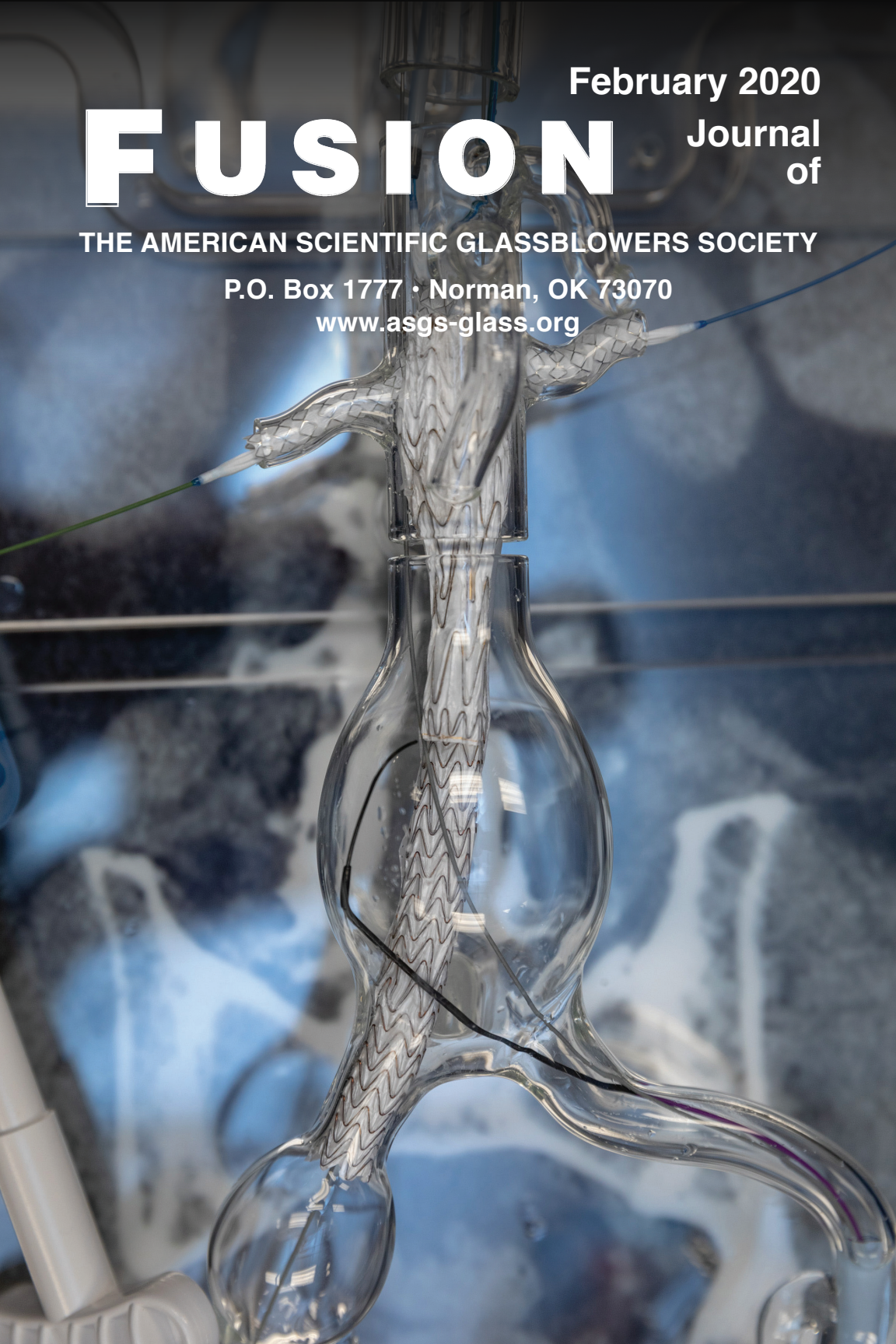
FUSION

Journal of

THE AMERICAN SCIENTIFIC GLASSBLOWERS SOCIETY

P.O. Box 1777 • Norman, OK 73070

www.asgs-glass.org



President's Message

Greetings to you and to a new year full of opportunity. I hope you all had time to enjoy your families and friends over the Holidays, and that your new year is off to a wonderful start.

In my last message, I mentioned we were heading to Sarasota, Florida for the Board of Directors meeting. For those of you, such as myself, who were not able to attend the previous Symposium at the Lido Beach Resort, I can now assure you that the location is beautiful, and the venue is undergoing many renovations that are sure to make our experience exceptional. If you are able, I strongly encourage you to extend your stay and bring your family to enjoy all that the area has to offer. For me, it will certainly be a welcome change from the long upstate New York winter that has been in full force since Thanksgiving. The Symposium Chair and his team have been hard at work developing an educational and inspirational program, and you can find the details posted on the website as they become available. Our symposia are a wonderful example of the spirit that makes our Society so unique. They showcase the passion we have for our field and medium as well as the commitment we have to sharing our knowledge with our peers. Please consider contributing your time and skill set to help make the Symposium an even greater success by presenting a technical paper, demonstration and/or poster. I look forward to seeing you there in July.

Venue aside, an important highlight from the Board meeting is that the Society is now operating on a calendar fiscal year. This change will help alleviate some of the accounting issues we have had in the past. In 2019, we finished our previous fiscal year on May 31. We will now file a short year from June 1 to December 31, 2019, and our first full calendar year accounting will begin January 1, 2020. I would like to thank everyone for their research and input on this decision, and look forward to a smooth transition. Another significant highlight is that the presidential term will now be two years instead of one. The goal of this change is to enable the Society to have more continuity by providing the President and President-Elect enough time to identify, implement and follow through on changes that need to be made. Again, I would like to thank everyone for the conversations about this topic over the last year and a half, and I look forward to the membership having a stronger more effective Society as a result of this change.

Of particular note at this Board meeting was the number of younger faces sitting at the table. As our outgoing President mentioned previously, our Society is in a transition period generationally, and it is reassuring to see the younger members stepping up to learn the ropes and do the work that needs to be done to run the Society. It is also reassuring to see the mentorships between many members to make this transition successful. To complement the mentorships that we have and to provide guidance when mentorship is unavailable, it is imperative that we as a Society compile and archive our standard operating procedures complete with positions and duties so that we can function efficiently. It is invaluable and inspiring to have these fresh voices at the table, and we need to make every effort to provide them with the tools needed to be successful. To that end, I am asking that if you have ever held a position in the Society to please reach out and share your experience. Help us help the Society fortify its future through its past.

Respectfully yours,
Kathryn Jones

Cover picture: "Training Aid for Aortic Stent Placement" by Steve Anderson. ***Please see related article on page 19.***

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US OSSM 0016-315

JOURNAL OF
THE AMERICAN SCIENTIFIC GLASSBLOWERS SOCIETY
P.O. BOX 1777, NORMAN, OK 73070

Volume LXVIII | February 2020 | Number 1

TABLE OF CONTENTS

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Victor Mathews	2020	800-821-8866	vmathews@littonengr.com

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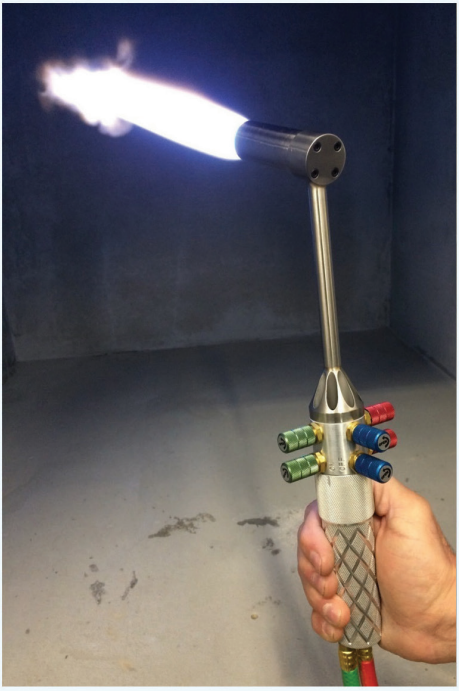

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From the Editor's Desk

Fusion is one of your major links to advancements made in the profession of scientific glassblowing. Please contribute to the journal: cover pictures with an accompanying article, general articles and Lamp Shop Hints. By sharing your knowledge with your peers, you are ensuring that the Society and its members will continue to be a vital component of current scientific research.

It is preferable to submit pictures in a digital format with your articles and reports. These pictures, however, must be in a high resolution, that is, with a 300 dpi resolution or higher and they must be jpeg, tiff or pdf files. These files must be sent separately, not embedded within a text file. Please note: if you are submitting more than just a couple of digital pictures, please do so in a zipped folder. If the folder is larger than 12 MB, please submit it via an FTP site such as Hightail.com or Dropbox as it is difficult to process large uncompressed files. Sending a CD, a flash drive, or photographs via mail is also acceptable. If you are submitting a cover picture, please include a write-up to accompany the picture. This write-up could cover techniques used to produce the piece of glassware, design problems encountered, modifications made, and/or possibly information on the use of the finished apparatus. I will be glad to work with you on the writing of your article.

The next deadline for submission of material for the May 2020 issue of *Fusion* is Sunday, March 15. Deadlines will be strictly adhered to in order to ensure that publication schedules are met. Please allow time for your material to reach me by the cut-off date so that you will not be disappointed.

Respectfully submitted,
Marylin C. Brown, Ph.D.

Note: When material is submitted for publication in *Fusion* or *Proceedings*, the American Scientific Glassblowers Society retains the intellectual property rights to publish the material in a printed or in a digital format for distribution to the membership of the ASGS. Submission of the final form of the manuscript and receipt of the signed copyright permission form is recognized as authority from the author and his or her employer for the Society to publish and copyright the material.

All of the information contained in this journal is the opinion of the authors and does not reflect the views of the American Scientific Glassblowers Society, the Publications Committee, and the membership of the Society.

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Marylin Brown, Editor • brownam@metrocast.net

Philip Legge, 2020 Symposium Chair • philip.legge@gmail.com

CALENDAR OF EVENTS

2020

Southeastern Section Meeting
March 12-14, 2020
Augusta, GA
Contact: Chandra Babbitt • 803-725-2781
Chandra.Babbitt@srnl.doe.gov

Southwest Section Meeting
April 5, 2020
Grav Labs, Austin, TX
Contact: Erin Mayberry • 586-536-0480
erinmayberryglass@ou.edu

Northeast Section Meeting
April 18, 2020
Yale University, New Haven, CT
Contact: Daryl Smith • 203-432-3919
daryl.smith@yale.edu

Delaware Valley Section Meeting
April 30, 2020
Carlisle Machine Works, Millville, NJ
Contact: Amy Miyler • 309-371-6326
asgsdelvalsecretary@gmail.com

ASGS 2020 Symposium
July 19-23, 2020
Sarasota, FL
Contact: Philip Legge • 905-683-3868
philip.legge@gmail.com

Please do business with an advertiser or symposium sponsor.

Fusion Advertising Rates

Issuance and Closing Dates

a. Published quarterly-February, May, August, November
b. Issued 15th of month of issue date.
c. Copy to be set due as follows:

ISSUE	DEADLINE DATE
May 2020	March 15, 2020
August 2020	June 15, 2020
November 2020	September 15, 2020
February 2021	December 15, 2020

Last forms close 6 weeks prior to publication date

d. Cancellation of space not accepted after three weeks before publication date.

General Advertising Rates

Frequency Page Rates: R.O.F. cost insertion black and white. Rate earned is based upon number of insertions used within the calendar year.

	1 time	4 times
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1/2 page	240.00	200.00
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Price rates for multicolored ads and for special position ads are available from the National Office at 716-353-8062.

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ISSUE	DEADLINE DATE
May 2020	March 15, 2020
August 2020	June 15, 2020
November 2020	September 15, 2020
February 2021	December 15, 2020

Classified Notices

Position open, position wanted and For Sale (also appears on ASGS website): $30.00 per column inch, $20 extra for code number return. Display classified in box $20.00 per column inch. Classified pages are two columns each. Column width is 2 5/16" x 7 1/2", (average six words per line and average nine lines per inch with 8 point type). Classified advertising accepted in single column width only (2-5/16").

PLEASE JOIN US FOR THE

65th Annual ASGS Symposium

July 19-23, 2020
Lido Beach Resort • Sarasota, Florida
https://symposium.asgs-glass.org/

Start doing your sit-ups because we're going back to the beach! On behalf of the 2020 ASGS Symposium Committee, I would like to officially invite you to the 65th Annual ASGS Symposium in beautiful Sarasota, Florida. We will be returning to a freshly renovated Lido Beach resort right on the shores of the beautiful Gulf of Mexico. The hotel has just finished a complete renovation of all the guest rooms, banquet and meeting facilities as well as the pools, hot tubs and the much loved tiki bar! We will have the hotel space all to ourselves and a room rate of $139 for a standard room. Executive suites with gulf views, living rooms and spacious balconies are also available for $199.

The dates of the Symposium are July 19th to the 23rd, 2020. We are planning an opening night reception by the beach complete with live music, food and libations. The Exhibits and Seminars will be up on the seventh floor with many of the meeting rooms having panoramic views of the gulf and its surrounding islands. The hotel also provides free shuttle service to and from St. Armand's Circle which has a wide selection of shops, restaurants, bars and galleries. Please consider bringing the whole family as the resort and surrounding areas have plenty of sights and attractions that everyone can enjoy.

If you have any suggestions or would like to contribute to the technical program, please contact myself or one of my Committee members to discuss your ideas as we would be more than happy to include as much as we can into the event.

We hope to see you all there as this will be an event to remember!

SYMPOSIUM CHAIR
Philip Legge • 905-683-3868 • philip.legge@gmail.com

65th Annual ASGS Symposium

July 19–23, 2020 • Sarasota, FL

https://symposium.asgs-glass.org/

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POSTERS		
Erin Mayberry	586-536-0480	erinmayberryglass@ou.edu

Committee Reports

Allan B. Brown Glassblowing Seminars

The Allan B. Brown Glassblowing Seminars Committee has been very busy putting together a program that will be challenging and informative for the 2020 Symposium to be held in Sarasota, Florida.

The goal of the Allan B. Brown Glassblowing Seminars is to teach our members techniques in scientific glassblowing that will elevate their skills to a higher level. The highly skilled instructors selected for this Seminar will demonstrate methods to produce scientific apparatus and then assist each student in fabricating the same item. While the full schedule to be covered has yet to be decided, we will be spending a majority of time on very specific techniques, and with the input of the instructors, we are confident that this year is going to be exciting.

The Allan B. Brown Glassblowing Seminars will be offered to ASGS Regular, Retired, Lifetime, and International members who are registered for the 2020 Symposium. The Seminars are limited to the first twelve paid members on a first-come basis per day and both Seminars are completely separate (you can take the first day or the second day, or both). Personal equipment required includes glassblowing glasses, blow hose and any personal tools that you prefer to use. The Seminar includes all supplies needed to complete the project.

The instructors this year are as follows: Jack Korfhage, Neal Korfhage, Ron Legge, Kyle Meyer and Kevin Teaford. We are fortunate to have instructors with this level of experience willing to share their time and talents.

If you have a project that you would like to have us consider in the future, please contact me at kteaford@chem.utah.edu or 801-581-7592. Looking forward to seeing you in Sarasota.

Respectfully submitted,
Kevin Teaford, Chair

Awards

Numerous awards are presented at our annual symposium. Among these is the Memorial Award which has been named for our Memorial Scroll of Honor. The Award is presented to a Junior member who shows an interest in participating in ASGS activities. Its purpose is to stimulate and encourage Junior members to become active and to participate in the field of scientific glassblowing. The Award recipient receives an Award Certificate Plaque at the Awards Banquet and up to $1500.00 for the expenses of attending the ASGS annual Symposium. If you would like to nominate a Junior member for the Memorial Award, please notify your Section Director. Nominations should be submitted to the Awards Committee by February 15, 2020.

The Memorial Scroll of Honor

The Memorial Scroll of Honor is displayed at the annual Symposium in order to commemorate those individuals who have contributed to the advancement of scientific glassblowing and the ASGS.

Please remember to contact the National Office with the names of deceased members.

Currently the Memorial Scroll contains the following names; those marked with an asterisk denote individuals who have served as ASGS President.

Deceased Members on the Memorial Scroll of Honor

** Served as ASGS President*

J. Allen Alexander *
Helmut E. Drechsel *
Jonathan W. Seckman *
Frank Reese
Russell Langley
J. H. Old
Al Kalbin
John Glover
Ward A. Cornell
Thomas F. Speciale
William H. Tozer
Harold E. Crampton
David Chandler *
Joseph W. Baum *
Owen J. Kingsbury, Jr. *
William Hilker, Sr.
Carleton Nelson
Joseph West
William A. Wilt
David S. Blessing
Edwin C. Logsdon
Beverly Panczner
James E. Panczner
James A. Hagedorn
John B. Grout
James Morris
Desmond Radnoti
Rudolph Volk
Edgar L. Wheeler
Arno Roensch
Wendall D. Clark
Wolfgang R. Eberhart
Karl H. Walther *
Werner Haak *
William A. Sales, Sr.
Walter Haim
Roy W. Tiege
Michael J. Caselli
Floyd William Kolleck
Matthew Nazzewski
Bill Bates
John L.A. French
Billie E. Pahl *
Merrill Watson
Robert J. Walsh
Horst Joachim Morgenfruh
Mathew Tighe, III
Robert Anderson
George Sites
Dolores Sites
Gerhard B. Finkenbeiner
Laurence F. Novak
David Roman
Donald O'Brien
Robert Forgnoni
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David K. Searle
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Arthur J. Hanner
Arthur G. Reeves, Sr.
Chester Swopes
Robert Tobin
Peter Clark
Joel Babbitt
Carl Nyman
Gordon Good *
Ken Owens
Ron Stermer
Willard Wyse
Daniel Edwards
Alfred H. Walrod *
Richard W. Poole *
William E. Barr *
Charles J. Cassidy *
William A. Gilhooley *
Allan B. Brown *
Gerald F. Gerhart
Rudolf J. Palme
Agnes Moffett
Loyal Miner
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Fred Kennedy
Dieter Damrow
Irwin Meyer
Raymond F. Steiner
Stewart W. Burt
John J. Hauer
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Wilbur Mateyka*
James C. Vranas
James Cafferty
George (Gyorgy) Sarfi
Fridolin H. Kummer
Wendell L. Sandlin
Daniel L. Vogt
Robert McQuillan
Norman Moeller
Robert Greer
Volker O. Herbert
Joseph H. Luisi
Earl Nagel*
Joseph Kamrad
John Hopkins
Thomas Nagami
Wayne C. Martin
Thomas Orr
William Wasemiller
David G. Daenzer *

Memorial Award Recipients

1987 Ian B. Duncanson
1989 Donald E. Woodyard
1990 Colin L. Chandler
1991 Laura S. Thacker
1992 Steven M. Anderson
1993 Lisa Malchow
1994 Anastacio Bonilla
1995 Michael D. Campbell
1996 Daniel Vogt
1997 James R. Hodgson
1998 Tracy O. Drier
1999 Kenneth Owens
2000 Richard J. Ponton

2001 Jeff Noyes
2002 Charles Christman
2003 Chris Marshall
2004 Kellie Wannett
2005 Philip Legge
2006 Joe Flunker
2007 Kevin Moeller
2008 Jason Craig
2009 Arial Rom
2010 Dan Coyle
2011 Kathryn Jones
2012 Adam Kennedy
2013 Matthew J. McDonald
2014 Benjamin Revis
2015 Sabrina Belanger
2016 Erin Mayberry
2017 Andrew Gibbs
2018 Corina Guerra
2019 Jill Korgemagi

Respectfully submitted,
Steve Anderson, Chair

Joseph Gregar Junior Member Workshop Seminar

I want to encourage everyone to come to the 65th annual Symposium in Sarasota, Florida at the Lido Beach Resort on July 19-23, 2020. The experience of this location and the people will be memorable!

This is a FREE program for Junior/ Student members so do not forget to remember that registration is limited to 12 participants for this Seminar. Register for the Symposium, fill out and send in the Junior Seminar form. This program is a wonderful learning experience that you do not want to miss.

The main goal for this year's program is to include as much non-borosilicate work as possible. So far Victor Nunn will be doing glass to metal seals and Bob Singer quartz plates. I have a few other instructors with whom I am trying to finalize topics. This looks like it is going to be another wonderful learning experience for all.

I want to thank Ron Bihler of Precision Glassblowing of Colorado for coordinating the refurbishment of ALL the hand torches. I also want to thank Craig Hamernik of National Torch for generously undertaking the daunting task of actually refurbishing ALL the hand torches. Without the tireless and generous donations of time, material, and support, this free Seminar for Junior members could not proceed as it has been. The torch tips are being gone over and refurbished or replaced and will be in great working order in July.

Thank you all for letting me continue to keep the Joseph S. Gregar Junior Member Workshop Seminar active at the symposiums. Without your support and the donations of time and material, this Seminar along with the ASGS could not continue.

Thank you.

Respectfully submitted,
Christopher Bock, Chair

Membership Report

Category	**12/16/19**	**9/15/19**	**5/31/19**	**3/15/19**	**12/31/18**
Regular	225	223	221	207	234
Junior	36	36	36	31	34
Lifetime	6	6	6	6	7
Retired	52	50	49	49	54
Student	29	26	25	16	29
Associate	80	80	79	70	72
Artistic	46	45	40	29	42
International	36	36	35	27	29
TOTAL	**510**	**502**	**491**	**435**	**501**

This chart shows our membership numbers throughout the year in 2019. One thing that stands out: at least 15% of our members had not renewed their membership within the first 3.5 months. Just a reminder, our Bylaws state, "Dues are due and payable on January 1.

Membership shall be forfeited if dues are not paid by January 1." Many thanks to all who renewed on time! Your efforts save us time and help keep membership dues as low as possible.

I thought I would paraphrase and share with you part of my report to the Board of Directors for the November 2019 meeting:

"Over 500 members again and I am happy for that. I believe the Symposium at Corning was the reason we had an increase in new International and Associate members. Without them, we would have been below 500 for the year. It seems we are not retaining our core, Regular and Retired Members. What can we do to maintain their interest, continue their membership and encourage them to help the Society and help train the next generation? The number of Artistic and Associate members is growing and requesting more inclusion in the type of training we provide our Junior and Regular members at workshops at the Symposium or other hands-on training. The reason they join us is to learn and they may be our future! We have had trouble filling Junior and Regular member workshops the past couple of years. Is it time to rethink how we can best serve our entire membership?"

I believe we are at a crossroads and we may need to evolve if we want sustainability and growth. We are at a transition point in our history. As a volunteer Society, we need all members to contribute, share ideas, get involved and make things happen! Can you help?

Respectfully submitted,
Jim Cornell, Chair

Technical Q&A

The following inquiries have been taken from the Technical Questions and Answers online email archives. Responses have been summarized.

Vacuum Jacketing

A scientist with whom one of our members was working wraps a clear vacuum jacketed (Dewar) chromatography column with aluminum foil. They were curious if silvering will achieve the same result and allow them to eliminate the foil. While there is not a direct answer to this question, it is good to go over some aspects of silvering and evacuation of vacuum jacketed (Dewar) apparatus.

Let us look at how the Dewar works. There are three aspects:

1) It is made out of glass. Glass is a very poor conductor of temperature and that helps keep whatever temperature that is on one side from migrating to the other side. Dewars are also made out of stainless steel which is also a poor temperature conductor.

2) There is a vacuum in the inner chamber: the vacuum helps prevent migration of temperature because there is essentially nothing to conduct the temperature across the void.

3) The Dewar is silvered, but not always: by silvering the Dewar, any infrared is reflected back. Infrared is one other mechanism to transfer heat, and if the rays are bounced back, they cannot transfer heat. Dewars are not always silvered usually because of the need to see what is going on inside. One way around this limitation is to do "strip silvering" where there is a non-silvered strip running down two sides to allow visibility into the area where you need to see, but silvering elsewhere so there is temperature protection. If you need to see all the way around a vacuum jacket, one approach to maintain the temperature is to wrap the Dewar in aluminum foil when you do not need to look. There are no known comparisons on the effectiveness of silvering versus aluminum foil.

As some of you may remember, Allan Brown did a lot of research on Dewars. One of his discoveries was that you obtained a more effective Dewar if you wrap the com-

pleted evacuated silvered Dewar with white athletic tape rather than black electrical tape. You can see these results in his paper "The Effect of Black Light on Silvered and Unsilvered Vessels" in the 30th Proceedings (1985), pp 80-82.

The issue with the tape has to do with the fact that when you silver glassware, it is not completely opaque. Manufacturers of hanging mirrors coat the backside of their mirrors with an opaque background to help prevent any light from passing through. If you were to hold up a Dewar, you can sort of see through it. There may be a slight purple haze depending on the manufacturer of your silvering solution and the thickness of the plating. Originally the wrapping of the white athletic tape around the Dewar was used to help keep glass shards from flying around in case the Dewar broke. Black Electrical tape did the same thing. Allan started noticing that the Dewars wrapped with the electrical tape did not seem to work as well as those with the white athletic tape. So an experiment was generated and the results showed up in the above mentioned *Proceedings*.

Another question often asked is how low of a vacuum do you need to go for an evacuated vessel.

Most commercial Dewars are pumped using a high capacity roughing pump. With a cold trap, this will provide a vacuum of 10^{-4} Torr at best.

Dave Blessing at Notre Dame did a lot of research on this in the 1970's and he found that in practical use, a 10^{-3} Torr evacuation worked as well as 10^{-6} Torr. What he found did make a difference was the baking process. His technique was to pump out while running the oven up to about 400-450°C. He held the oven at 150°C for about 10 minutes before going up to 400-450°C. This accomplishes the main tasks of driving out water, burning out residual organics and generating sufficient atomic motion to keep the molecules moving to the vacuum source.

A consensus found that their customers are happy with a 10^{-3} Torr evacuation.

If you have a diffusion pump, it makes sense to use it. Sometimes more is better, sometimes more just makes you feel better.

One problem as glassblowers, when it comes to silvering, is the limited shelf life of the silvering solutions and the few opportunities we have to make Dewared work during any given year. It turns out that the sensitizing solution has the short shelf life of about one year. See the August 2019 Technical Q&A in *Fusion* for information on mixing up fresh sensitizer as needed to extend the life of your silvering solutions indefinitely.

Wobble Stirrer

An inquiry was made for suggestions on how to stir a viscous solution (similar to that of cold honey) in a flask under a dynamic vacuum of 0.5 Torr. There were a variety of suggestions regarding stirring plates, but a suggestion to set up a wobble stirrer needed a more thorough description.

Your flask has a standard taper outer joint. Into this is an adaptor with a socket joint on the top. The greased mating ball joint is nested in the socket. This ball joint can be made of metal, glass, or inert plastic. A solid rod is welded, sealed to both the top and bottom of the ball joint with the bottom half extending into the flask, and the top sticking up some inches from the ball. This set-up allows you to gyrate (wobble) the rod about a vertical axis through the center of the flask. The flask assembly is mounted in a support structure which holds a speed controlled motor. Attached to the shaft of the motor is a disc perpendicular to the axis of gyration with an off-centered hole through which the rod loosely passes. This disc rotates slowly and gyrates the rod. Ideally, this rod is as large as possible so that it does not bend, distort or break while in use.

Respectfully submitted,
Tracy Drier, Chair

Training Aid for Aortic Stent Placement

by

Steve Anderson,[*] Claire Eggleston,[**] Tyler King,[**] Victoria Lundine,[**] Gustavo Oderich, M.D.,[***] Jill Colglazier, M.D.,[***] Karen Marie Bjellum,[****] and Raymond Shields M.D.[*****]

Poster presented at the 64th ASGS Symposium held in Corning, NY, June 16-21, 2019

Abstract

Aortic training model fabricated of borosilicate glass used in the education and training of fellows and residents in vascular surgery.

Background

Aortic diseases represent a variety of conditions from clinically silent to acutely symptomatic, which can affect any part of the aorta. In-depth studies of aortic disease conducted increasingly over the past two decades have significantly enhanced our understanding that the aorta is an active living organ and not just a passive hollow conduit that transports blood.

Objective

The aortic training model will be used in the education and training of the vascular surgery fellows and residents. The model is of the entire aorta with its major arterial branches and can replicate aneurysmal disease of the aorta in its arch, descending thoracic aorta or abdominal aorta and iliac arteries. The fellows and residents will learn wire and catheter skills involved in endovascular procedures while using this model. They will be able to perform entire endovascular procedures that range from treating standard infrarenal abdominal aortic aneurysms, to more complex fenestrated and branched endografts to treat extent II throacoabdominal aortic aneurysms that involve cannulating the visceral arteries. This training model will provide a safe environment for the trainees to learn and practice these advanced endovascular skills. One of the biggest issues with this procedure is radiation and with this model students are able to practice without exposure to radiation and prior to being involved in the same procedure with a patient.[1]

Surgical Instruments

Figure 1 shows instruments used in percutaneous placement of aortic endograft to treat abdominal aortic aneurysms. From left to right are sheaths, balloon insufflator, aortic occlusion balloon, syringes, multiple wires.

Figure 1. *Endovascular instruments*

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[*****]Mayo Clinic, Department of Cardiovascular Diseases, Rochester, MN 55905.

[1] B.A. Zignashin and J.A. Elefteriades, "Mechanisms of Disease and Natural History," *Endovascular Aortic Repair Current Techniques with Fenestrated, Branched and Parallel Stent-Grafts*, Gustavo S. Oderich, M.D., Editor (Springer: 2017): 19.

Figure 2. *Aortic endograft*

Above is the aortic endograft prior to deployment within its delivery device.

Evolution of the Design

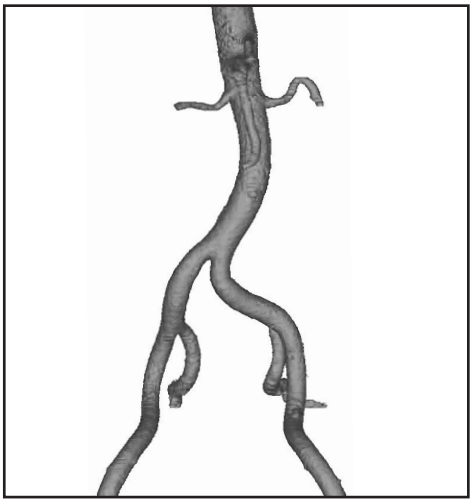


Figure 3. *Mimics model image*

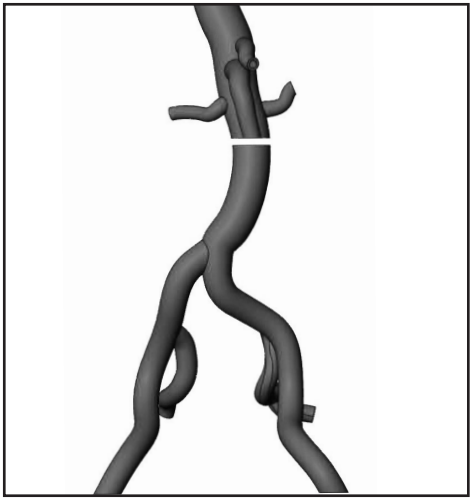


Figure 4. *Solidworks model image*

Figure 3 shows the abdominal aorta from a clinical CTA in the Mimics software which was used to measure the diameter of the vessels. The center line from the model was used in creating the SOLIDWORKS model in Figure 4.

Figure 4 is an image of the SOLIDWORKS model that was created using the center line and vessel diameters from the Mimics model in Figure 3.

Figure 5. *3D Printed model image*

Figure 5 is an image of the 3D printed model which was printed on the Fortus 400 using the Solidworks models in Figure 4.

The glass model portion of the training aid is fabricated using borosilicate glass tubing. The arch and trunk were made with 28 mm o.d. x 22 mm i.d. and the iliac uses 16 mm o.d. x 11 mm i.d. The glass model is connected to the base by using 12 mm o.d. rod as standoffs. (Figure 6)

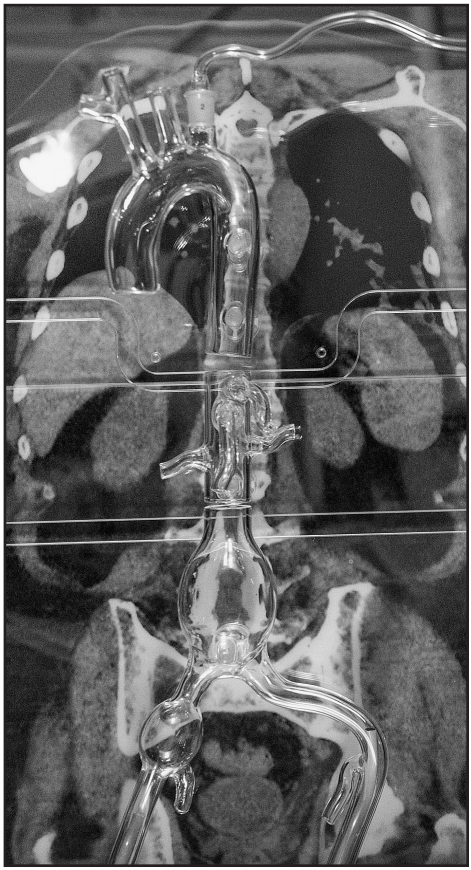


Figure 6. *Glass blown model*

Completed Training Aid

Figure 7 is a glass model of the aorta from the aortic valve to the common femoral arteries with the left brachial artery and bilateral common femoral arteries as access sites for percutaneous procedures are seen in the common femoral arteries bilaterally.

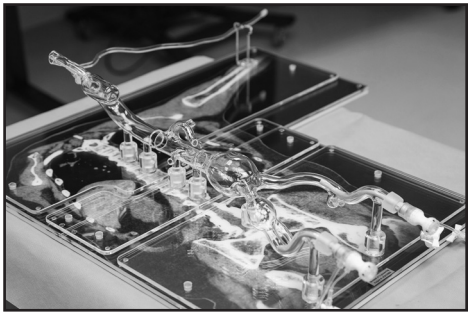


Figure 7. *Completed training aid with true size scale radiographic image background*

Figure 8. *Sheath access*

Stent Placement

Figure 8 shows sheath access into the common femoral artery with catheter coming out of it. Figure 9 shows delivery of the aortic endograft through the right groin access sheath up to the level of the bilateral renal arteries. The aortic endograft has not been deployed yet.

Figure 9. *Aortic endograft delivery*

Stent Deployment

Figure 10 shows stent deployment into the abdominal aorta above the renal arteries with renal artery branches and extending into the right common iliac artery. Figure 11 shows the balloon insufflation of renal artery balloon expandable stent graft.

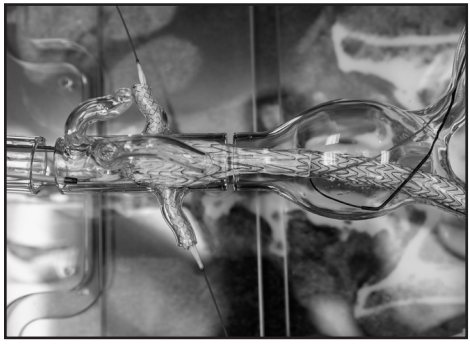


Figure 10. *Stent deployment*

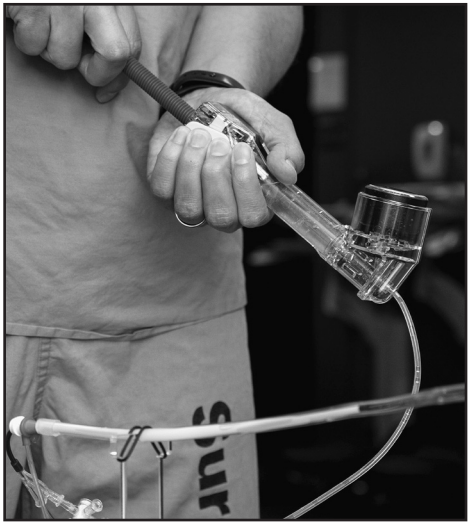


Figure 11. *Balloon insufflation of renal artery*

Deployed Stent

The aortic stent graft is completed with two bilateral renal artery stents. Through the use of the snorkel technique, the two bilateral renal stents are placed and deployed along with an aortic endograft. Without the bilateral renal stents, the aortic endograft would restrict blood flow to the renal arteries which supply blood to the kidneys (Figure 12).

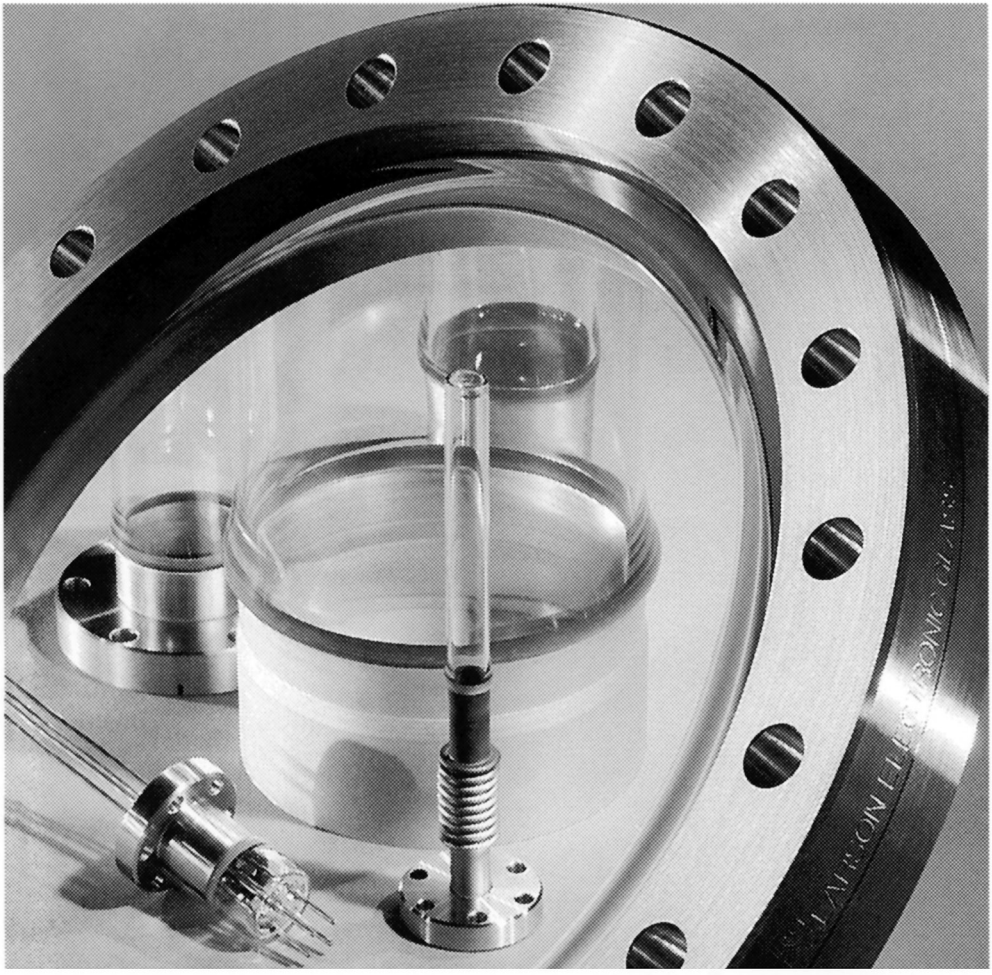
Figure 12. *Deployed graft*

Conclusion

The Training Aid for Aortic Stent Placement will allow fellows and residents to practice an intricate procedure without being exposed to radiation or potentially injuring a patient; both of these things would be possibilities in the operating room. The glass blown models allow these students to better understand the most common types of aneurysms as well as the behaviors and tendencies of the devices they will be using in surgery. Fluoroscopy is used in surgery which only allows the surgeon to see the stent and anatomy of the patient in 2D as opposed to 3D with the glass models.

Figure 13. *Happy surgeons testing the training aid*

GLASS-TO-METAL SPECIALISTS



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Promoting Change and Replacing Mercury Manometers

by
Christian Côté[*]

Abstract

This article is about the process involved to convince University professors to replace old mercury manometers that for years were causing concern to the security committee, and the proposed solution.

I am a laboratory technician who has been working at Laval University for ten years in undergrad teaching laboratories for organic and analytical chemistry. I have also been learning scientific glassblowing in my spare time since 2011, and I have been an associate member of the American Scientific Glassblowing Society (ASGS) since 2016.

Back in 2011, our university introduced the program ‘’Operation mercury’’ to get rid of, if possible, all mercury on the campus. The prevention and security service (service de sécurité et prévention (SSP) in French) instigated this program which aimed at replacing mercury-containing apparatus with mercury-free substitutes for which they would pay. It worked really well, and they succeeded in removing most of the mercury from the campus. However, some laboratories were authorized to continue using mercury. One example is an organometallic synthesis research lab with ten Schlenk lines with mercury manometers. Another is a material/organic synthesis lab with two McLeod manometers used for vacuum distillation. These two laboratories were permitted to keep their apparatuses, on the condition that they caged them, placed them in a plastic container, and put a special label on them (Figure 1).

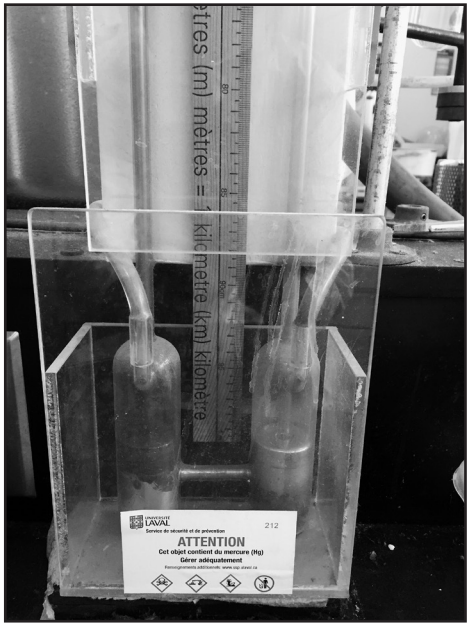

Figure 1

In the first case, years passed and the students eventually broke a Schlenk line; they asked me to repair it. The lab in question is old and outdated, the majority of the lines are on benches and only two of them are in fume hoods as they mainly work in glove boxes. When I first inspected the systems, I realised they were bubbling nitrogen in mercury from a regulator set to 20 psi and the exhaust passed through tygon tubes connected to a filtration Erlenmeyer to trap mercury, and vented to the lab. All the tubing was greyish and visibly contaminated with mercury.

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Furthermore, there was also a visible amount of mercury and dust at the bottom of the flask since, at this pressure, an error in manipulation could result in projection of mercury in the exhaust tubing, and, of course, no one would want to clean that (Figure 2).

Figure 2

My first intervention was to drop the pressure to between 3-5 psi and to educate the users on the risk of pressurizing glassware. Then I started to look for alternatives, and after some research, I found that some laboratories were using thermocouple gauges with meters and bubblers. I tried to convince them to go with that kind of setup; however, since the mercury replacement program was over, they had missed the opportunity and would have to pay for the replacement/upgrade. Since they had ten lines to retrofit, the solution had to be relatively low in cost. Since one line was broken and already not usable, I took the opportunity to propose a replacement for the mercury bubbler/gauge and they agreed. It was a new group of students and since the chemistry department was supporting me, they approved my time and needed parts were free of charge. The hardest part was not to actually make the bubbler and adaptors required, but rather to convince the users to change and that it would work.

Since all manometers are connected with #9 flat O-ring joints, it would be easy to make one drop in replacement. For the nitrogen line, I made a bubbler with a Chemglass pressure release valve (part number CG-999[1]) (Figure 3). This serves as a check valve, a visual indication of nitrogen flow, and keeps the line under regulated pressure. For the vacuum part, I used an old thermocouple analog meter that was laying around and made an adaptor with a glass to metal seal with a 1/8 NPT connection (Figure 4). With low cost and parts laying around, except for the valve, I could assemble a system to make a proof of concept they could use.

Figure 3

Figure 4

It worked and the students liked it. However, with these bubblers, if the spring tension is too low, there is some possible back flow of oil. This source of potential user error could be eliminated with the addition of a check valve in the bubbler stem (part number CG-4539[1]). When operated normally with a bubble flowrate adjusted to 1-2 bubbles /second, this was not an issue. In case of user error, mineral oil is less troublesome

[1]Part number from Chemglass Life Sciences, www.chemglass.com.

to clean than mercury. The analog meter was a bit rudimentary (Figure 5). It worked well, but I looked for a better/more mod-

Figure 5

ern one for future setups. I ended up looking into the DigiVac Bullseye Digital Meter (part number AF-0307[1]) (Figure 7) which is compact, rugged, full of features like leak detection, pump down time, graphic representation of vacuum curve, and offers multiple (12) different units to work with. It is equipped with a magnet for attachment, so we made metal "lollipops" as we call them to attach them to a standard holder (Figure 6) and which can be powered by a battery or with a 5V USB power supply. There is even a Bluetooth version with an app for remote monitoring, but it was over budget.

Figure 6

The chemistry department liked my initiative and decided to fund a second system with the superior meter, so they could test it for some time and see if it met all the users' needs. I was allowed to retrofit a second

Figure 7

Figure 8

line, but for this one, I opted for the Chemglass thermocouple connection (part number CG-354-10[1]) as it was simpler for me to assemble and required no metal soldering. (Figure 8)

The second setup was really appreciated by the users. It provides real-time information on the vacuum and the only complaint I received was that the bubble rate needed adjusting over time as the spring seems to lose strength. The requirement for adjustment may also be due to multiple lines using the same nitrogen source, causing pressure variations. Nevertheless, only minor adjustment was required. Without accounting for time, I would be able to retrofit a line for around 500-600 USD in parts. However, at that time, I still could not convince the pro-

fessor to buy the system for all of the other lines: the money was not there. We submitted a new project to get funding from the SSP, but it did not work, so the project had to be put on ice. Nothing changed until the end of 2018 when I was finally asked to retrofit the remaining eight systems as the professor had funds available and the chemistry department had a strong desire to finally get rid of most of the remaining mercury. Then I had my biggest job ever: since I only do glassblowing in my spare time/on request, it was a challenge, but it was a fun one since I was one of the instigators (Figure 9).

Figure 9

When disassembling the mercury manometer, upon closer inspection we found that there was an unknown mercury spill, and there were miniature mercury droplets all over some areas of the lab. We had to decontaminate the whole lab with the help of the SSP. Our procedure to clean a mercury spill is to aspirate the bulk with a syringe or a specific mercury rated vacuum cleaner. To spot mercury droplets, it helps to lower the light and, working a square foot at a time, look around with a flashlight: mercury will shine on every angle. Then wash the surface with a copper scrubber and diluted hydrochloric acid as mercury readily forms an amalgam with copper and will turn silvery. Then, neutralise the acid and dispose of contaminated material appropriately.

In the second lab, they were using a mercury McLeod gauge for vacuum distillation. Two systems were assembled with rubber hoses on a cart with trap/gauge/valves attached with tie wrap and duct tape (Figure 10).

Figure 10

Each year, during security inspections, they would be asked to get rid of this system, but since there was no replacement apparatus available and they had caged the gauge and placed it in a plastic container, they were allowed keep them. However, in 2018, someone removed the plastic container from one of the gauges and that propelled the security committee into action. Since I had made the replacement setup for the Schlenk lines, I was asked if it would be possible to use the same digital gauge and make a system to replace the McLeod gauges. I proposed a replacement glass apparatus for the vacuum cart with an integrated trap and valves, so that it would be cleaner and safer. The chemistry department once again funded the parts and my time. I had some Aceglass 0-10 Teflon® valves laying in a drawer and I used the same vacuum gauge connection as on the Schlenk lines. I used #9 flat O-ring connections so that the hose adaptors could be connected separately to reduce the risk of breakage as they use this vacuum cart on different setup/fume hoods. (Figure 11) Once again, the students really liked the setup, and I was asked to build another one to replace the other McLeod gauge, as they prefer it to the old setup.

One thing to consider with this new setup is that a digital gauge differs from a mercury

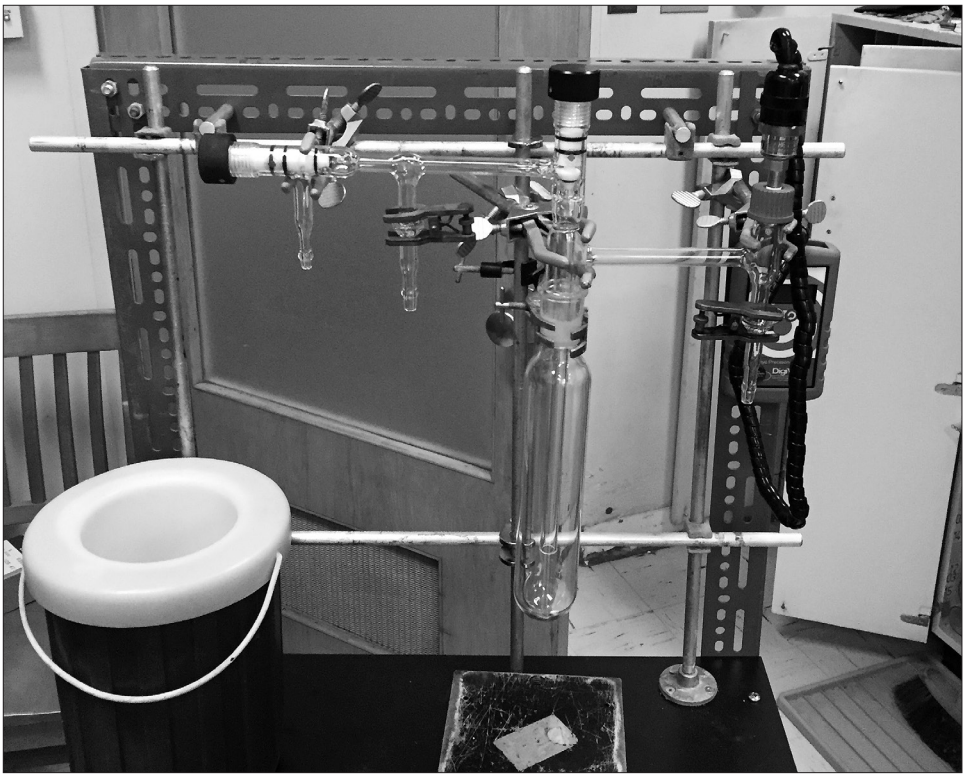

Figure 11

manometer in that the thermocouple needs to be verified/cleaned occasionally to make sure it is still calibrated, and it must be calibrated when necessary. We still must keep a McLeod gauge for this purpose as mercury is still and will remain a reference for vacuum.

In conclusion, even if there are hazards and less than ideal setups in research laboratories, if the current apparatus works, graduate students tend to keep it that way. Sometimes it takes a lot of discussion and convincing to bring awareness. It is not easy and does not always work as funding is sometimes scarce for some research groups, and sadly, often a decisive criterion. In the two instances outlined here, we were able to propose a solution, help financially, and still it needed a lot of time and persuasion. With my glassblowing skills, I was able to design and fabricate the needed glassware apparatus that would solve a problematic situation bothering the security committee each year and demonstrate that scientific glassblowing is an asset for the university. But in my opinion, the most important thing was that I could improve the situation in two research labs. It took some time, but in a university setting, it seems that sometimes if there is no incident, things tend to move rather slowly, and the status quo is often preferred. However, this is not a reason to do nothing. You have to stay proactive, educate and help bring changes to those situations.

These projects would not have been possible without the support from the Laval University department of chemistry for which I am thankful as they allow me to progress in my glassblowing endeavors and allow me to use and update the glassblowing workshop. I would also thank the ASGS and its members for all the knowledge I have been able to acquire from symposiums, discussions, mail group and articles since becoming an associate member.

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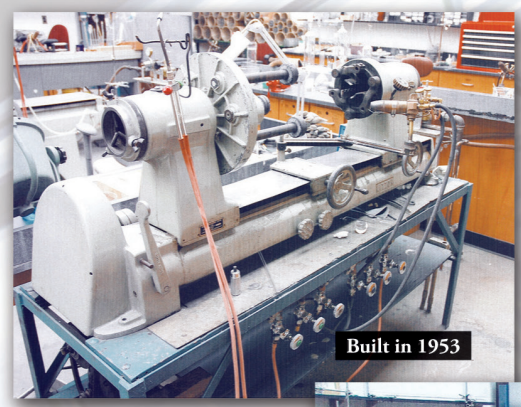

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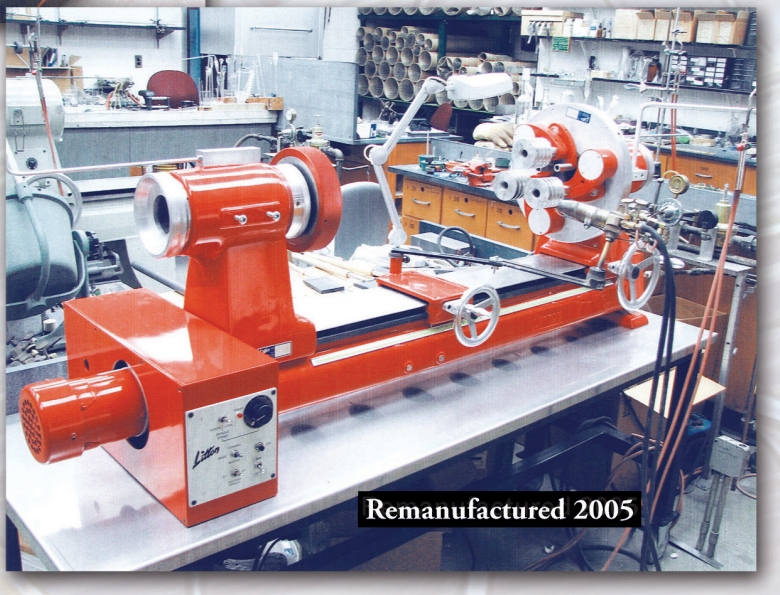

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The ASGS Roster on a Database

by
Gary Coyne[*]

Abstract

We all know the frustration of looking up something like radios on Amazon and also getting suggestions on flashlights. That is because their database is designed to show you more than you wanted in the hope that you also want that. But when you really want to look up something very specific, like a person, you do not want options. This article shows the variety of ways that our Roster (on a database) provides easy access to exactly what you want (and no shoes).

You have already (or will soon) receive this year's ASGS CD with the *Proceedings* from the 64th Annual Symposium. You may have also noticed that there is another folder on the CD called "2019-2020 ASGS Digital Roster." If you have looked in the folder, you would have seen an option for a PDF of the Roster as well as the database file of the Roster.

While the PDF is certainly easy to use, there are times when you might appreciate the flexibility and power of a database. For example, would you rather do a google search to find a business (or some person), or look at a very very large Yellow (or Gray) Pages[1] to find a business (or person)?

Google and other online search engines have many benefits for searching, but you have very few options for narrowing down searches. One easy example of this limitation is Amazon: how many times have you entered something you were interested in and received a number of other items that (seemingly) had nothing to do with the original actual search?

The reason why searches in Google and Amazon can be frustrating is that they do try to make it as simple as can be: one field to enter everything. The ASGS Roster is constructed in a different way so as to provide the user the ability to get exactly what they want. So yes, it is a smidgen more complicated to use, but the benefits make it all worthwhile.

So, in this tutorial, we will see how to

1. Set up your system
2. Introduce the Roster Window
3. Perform a basic Find
4. Find variations on how someone spells their name (doing an "OR" search)
5. How to search for groups (a variation of a simple search)
6. Looking for a name in a state (doing an "AND" search
7. How to focus your search (searching for "this" but not "that," aka, a "not" search")
8. A few extra tips and tricks

One last thing: this database is not connected to anything else but your computer. That is, if a member provides you with a new email or phone number you *can* change or add it to this database. But that change ONLY exists on your computer. If you also place a copy of this database on your iPhone or iPad (see instructions on the CD), you will also have to manually change that as well. Likewise, if you add something in the Comments section, next year when you replace this database with next year's version, your comments have to be manually transferred or they will be lost.

(Continued on page 33)

[*]1033 Garfield Avenue, South Pasadena, CA 91030. Email: gary@thecoynes.com.

[1]Ask your parents or grandparents

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("The ASGS Roster on a Database" continued from page 31)

Setting Up Your System

To do all this you will need to transfer the correct Folder from the CD onto your computer. There are two options available depending on whether you have FileMaker Pro (version 12 or later) on your computer or not. IF YOU DO, then simply drag the folder called "If you own FileMaker Pro v12+" onto your computer and store it in a convenient location. Double-click the file in that folder to start the application, and you are good to go and can skip the next little bit.

If you do not own FileMaker Pro, then you need to use the "Runtime version"[2] of the database and simply drag the entire folder to a convenient location on your hard drive.

Find, and then double-click the item called "ASGS 2019-20 Roster" (ending with .exe on a PC or .app on a Mac) in that folder to start.

At this point you should be starting at the following introduction screen (Figure 1).

Figure 1

When ready, click on the "Enter" button.

Introducing the Roster Window

You now see a new window of the database itself. There are two main regions: the top region (in medium gray) that are controls from FileMaker Pro, and a lower region of the database (in the boxed area) that lets you operate the actual data within this database (Figure 2).

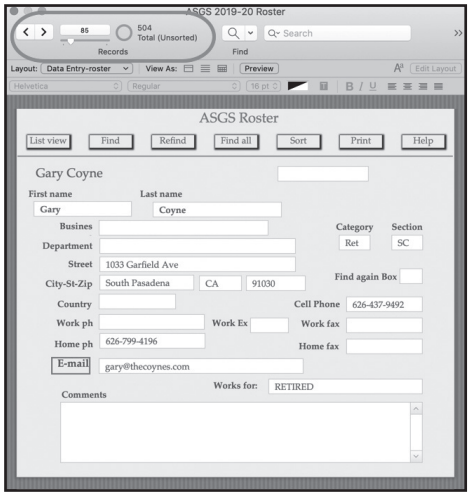


Figure 2

If you look at the circled region, you can see that this is currently on the 85th of 504 records. To go up or down each of the records, you can tap the "<" and">" buttons. You can also grab the slider and move it left or right to skip to a different section of the records. Alternatively, you can select the number and type in a different number to go to that record. Also, in this upper region, are a number of text formatting options to use if you wish.

In the lower section below the words "ASGS Roster" are a number of commands. Some of these do simple commands while others change the various views.

List View lets you view the members in a list, and you can switch from First name first or Last name first. If you click on the round dot to the left of any name, it will bring you back to the full record of that member (Figure 3).

[2] A "Runtime" version of an application is simply to provide a legal copy of an application to others. This provides full operation of the database for that one file. You cannot create a new file nor open any other file with a Runtime version of FileMaker Pro. That is what makes it free.

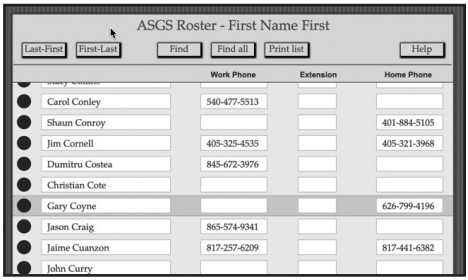


Figure 3

Find lets you go into the search mode. [Note that when in Find mode, a "?" appears in all fields letting you know you are in Find mode.]

Refind returns you to the just previous Find conditions. This can be very handy if you have several layers of a given search and wish to further refine your search.

After performing a search, you are only looking at the results of that search and cannot see any other member. Clicking on **Find All** returns you to where you started before a search. [Note: after performing one search, you do not need to "Find All" before doing another search. FileMaker will always do a search on the entire database.]

Sort brings up a window to let you sort the records that you are looking at. The default is to sort on the Last Name. In this window, on the left are all of the fields in this database and if you double-click any of them, they are moved over to the right-hand side. You can then slide them up or down to create the order of the records. For example, you may want to sort them first by *State*, then by *Last Name*, then by *First Name*. If you select any field on the right-hand side, notice that you can "Clear" that field from the right-hand side. [Note: you cannot delete a field from existence, so do not worry about that.]

Print lets you print the records you are looking at in the same format as the PDF of the Member's Roster on the CD. This database is set up to ONLY print in this format if you click the Print button. [Note: after clicking on "Print," you can tap the "Continue" button, and you will then Print. If you do not wish to Print, tap the Cancel button. If you tap the Cancel button, you will see a special layout for printing with a yellow button that lets you go back to Data Entry.]

Lastly, is the **Help** button. At some point Help was broken and what you are now reading should be considered the Help. This information will be replaced back into the database for next year. I apologize for this, but it was not discovered until after things were sent to the CD replication company.

Performing a Basic Find

If you now click on the second button, "Find," you enter the "Find Mode."[3] [Hint: you can either tap the "Find" key in the top of the Orange region or press Command/Control-f on your keyboard, or go to View (menu) -> Find.]

The Find Mode is just like going into Google or Yahoo and entering text into the search field to seek some specific information. The difference here is that there are several potential "fields" that you can click in. While a bit more cumbersome, it also lets you narrow down the type of search you are doing. By this I mean that if you are looking for a person, you can enter a first name in the first name field and/or last name in the last name field. But putting the first name in the telephone field will reveal zero records because there are no "names" in the telephone field.

Obviously, there are more than just names in this database, there are email listings, phone numbers, addresses, membership categories, etc. Thus, the main reason to look

[3] There are four different "modes" in FileMaker Pro. You work in the Browse mode where you can see the records in the database. The Find mode is to let you enter the text of what you want to find. After tapping the Enter key, you are back to Browse mode so you can examine what you found. The "Preview" mode lets you see what your records will look like when you are about to Print (an example of this can be seen when you tap the Print button). Lastly there is a Layout mode to which you have no access in a Runtime Version.

someone up in this database is because you wish to find this other data for any given member. For example, let us say you want to send me an email, but you do not know my email. You can go into Find mode, enter "Gary" in the First Name field, "Coyne" in the Last Name field, tap the Enter/Return key, and there I am.

[Hint: you can go from field to field by tapping the TAB key and backwards by holding down the Shift key and tapping the TAB key.]

However, if all you wanted was my email, then it might be just as easy to go into the PDF, search for me by my last name and there is my record. But what if you only knew my first name? If all you had was the PDF, you would have to manually look for each "Gary" and email them one-by-one until you found the right one. There are only three "Gary's" in the ASGS, so it is not a major challenge. But there are 16 "Johns" and 14 "David's," so the speed of your search is contingent upon the number of people sharing a name.

Find Variations on How Someone Spells Their Name (Doing an "Or" Search)

If you know someone by their first and/or last name, all you need to do is to go into the Find mode, enter their name into the appropriate field, and either tap the Return/Enter key and you are done.

But let us say that you know a person by the name "Dave," but you do not know if they are listed as "Dave" or "David." No problem, all you have to do is to type "dav" and you will find both.

FileMaker does not care if the item is capitalized or not, and all you need is enough letters to satisfy a search. Thus just "dav" will find both Dave and David.

All this works well until the variations are not so simple. Consider if you type "tom," you will not find anyone who is listed as a "thomas." Same issue goes for jack for john or jon. So, what do you do then if you want to find them all?

This time, click in the first name field, and enter "john." Then go to the top region marked, circled, in the fourth image. And click on (#1) "New Request." To see what you did, if you look to the left, you will see that there are now two requests (#2). Now you can type "jon" in the first name field (#3). Lastly, repeat this process but enter "jac" in the first name field in this third request. This is telling FileMaker that you are looking for all "joh" or all "jac" or all "jon." In other words, you are doing three different searches at the same time and FileMaker will display all of the results (Figure 4).

Figure 4

How to Search for Groups (a Variation of a Simple Search)

Let us say you want to find not one person but all of the National Members who are in the Great Lakes Section (there are 38). To do this, (#1) click on the Find button, then (#2) click into the "Section" field, and type in the abbreviation for the Great Lakes Section (press the Return/Enter key to perform the "Find). At this point, if you want, you could (#3) print out a Roster of all of the Great Lakes National Members with a few actions. [Click the Print button on the top. Then print as you always do on your computer.] (Figure 5)

[Hint: if you are not sure what the abbreviation is, click into the Section field, and type Command/Control-i. Now, as shown in the image below, you can see the abbreviations for all of the Sections in the ASGS. Double-click the one you want and then press the

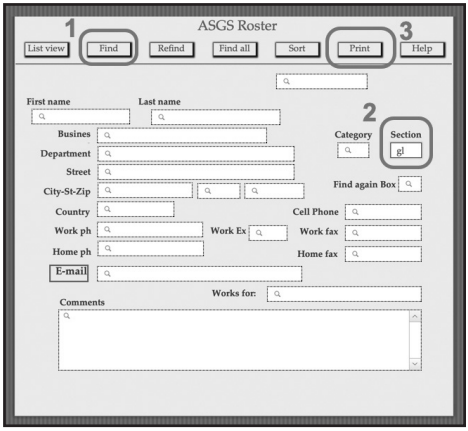


Figure 5

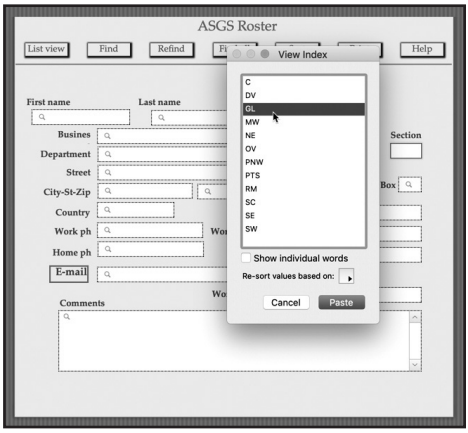


Figure 6

Enter/Return key and your search is done.] (Figure 6)

You can do the same thing for cities, states, or even countries.

Test: how would you search for all Great Lakes and Midwest National Members?

Looking for a Name in a State (Doing an "And" Search)

When you typed "ga" in the first name field and "c" in the last name field, you created an AND search. This is to help focus your search and limit the number of results you get. If you just typed "ga" in the first name field, you get four results, if you add the "c" in the last name you get one result.

Another example: let us say you know the person's name is Dave and they live in Pennsylvania. If you search for that ["dav" in first name field and "pa" in the state field], there is only one person.

So, the question is "How do you do this?"

If you look at what this looks like in the Find mode, look at the next image (Figure 7).

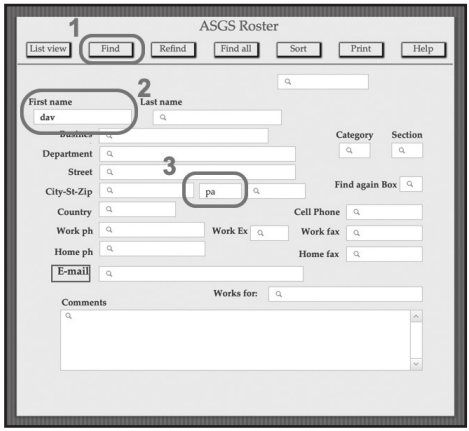


Figure 7

This works because you are asking for two (or more) items on the same request.

"And" searches are known as *exclusive* searches, while "Or" searches are known as *inclusive* searches. Or more simply, an AND search narrows the results, while OR searches broaden the results.

How to Focus Your Search (Searching for "This" But Not "That," aka, a "Not" Search")

But what if you want to find all "Gary's" but no members from California? That is, I want to find all of the "Gary's" in the ASGS but none from California.

Once again, we start by clicking the Find button and place "ga" in the first name field. And, once again, we are going to bring up a "New Request" by clicking on the "New Request" button in the upper region. Here we will go to the State field, and type in "ca" (for California).

Before you tap the Return/Enter key, go up to the top region (see the image below) and instead of the default, "Include" option,

click on the “Omit” button (Figure 8).

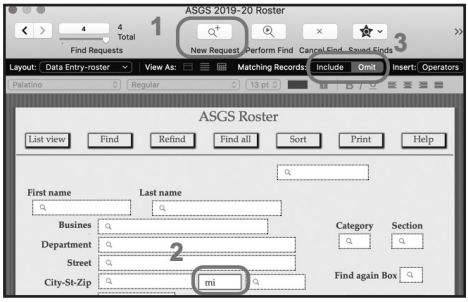


Figure 8

What this says is that you are looking for every “ga” in the first name field but to omit any “ca” that you find in the state field. What you will get is only two records, none from California.

Keep in mind, my record is still in the database, it was simply omitted from the Find results due to the structure of the find request.

A Few Extra Tips and Tricks

1. ***Multiple windows***

Let us say that you have done a search and wish to do another, but do not wish to lose the results that you just created.

No problem: simply go to the Window (menu) and select New Window. This will first appear with the results of your previous search, but it is now completely independent, and anything you do in this new window will not affect your previous search.

2. ***Removing an individual record from the results of a search***

Let us say you have done a search for Montana using “mo” and amongst the records is one from Montreal. There is nothing wrong with Montreal, but you did not want it included in your desired set of records. Simply have that record displayed and press Command/Control-t (also Records (menu) -> Omit Record) and that record will be “Omitted” from the current collection. Do not worry about the loss of this record, it is Omitted, not Removed.

3. ***Finding all of the records of a certain type without going into Find mode.***

This is an interesting trick that brings up a whole new area for you to explore. Let us say you have done a search and notice that one of the members you found is in Texas; now you are curious as to what other members there are in Texas. Click into that (state) field and right-click (or Control click if you are on a Mac without a right-click option) and scroll down to Find Matching Records. This action will override any previous search for this window, so you may wish to do this on a New Window (see tip #1), but you will now have all of the members who match that text (Figure 9).

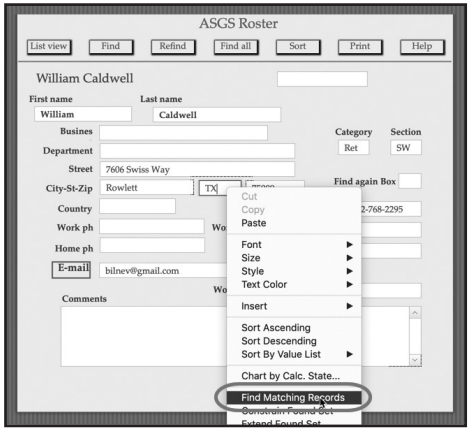


Figure 9

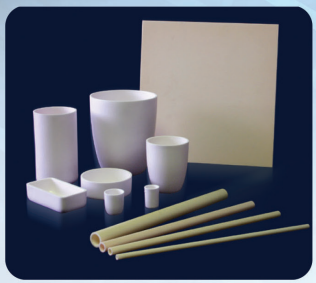
4. ***Watch out for misspellings***

Try as we might, there are “oopsies” in here. While preparing this article, I noticed that there is both “Tokyo” and “Toyko.” If you find misspellings, please let the National Office know; they will be grateful for your help.

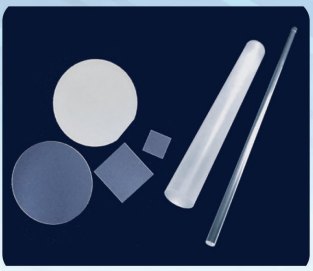
5. ***This is just “one” FileMaker database***

If you ever encounter another FileMaker database, even one that is a roster, it will likely look completely different than this one. This is because FileMaker Pro is a database creation program just like MS Word is a document creation program. I am the creator of this specific database within the FileMaker Pro application.

AdValue Technology



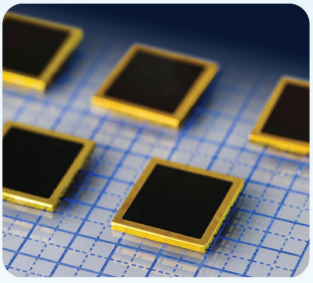
Alumina



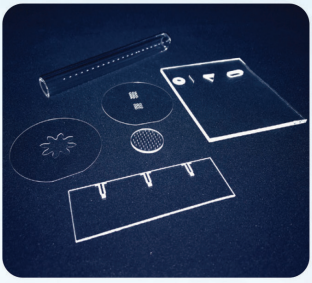
Sapphire

Quartz

High Purity Powders



Metallization



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Informational Article

*The following article, "Flange and Profile Forming Techniques" (*Fusion *XXXII.2 (May 1985): 22-23), was written by Grant Franklin. This article is interesting as it discusses how to make special types of flanges and profiles. It includes a technique to form Buchi style flanges and a flange for a rotary evaporator among other things. It is an interesting and worthwhile article.*

Respectfully submitted,
Dave Smart, Publications Chair

Flange and Profile Forming Techniques

by
Grant Franklin*

The following paper covers the techniques which produced the magnificent, tooled glassware shown at the Dunedin "Gather" and, I hope, much further afield by now. The objects themselves say all that is necessary of the skill required and shown by their existence.

There are many different techniques used in glassblowing to form flanges and profiles. The following are a few that we have found very useful.

1. **Basic flat flange:** Select tube to be used preferably with even wall thickness. An uneven wall will accentuate when forming flange and complicates procedure. There are formulas for calculating how much glass goes into a certain size flange (ref. I.C.P. Smith "Glass Flat Flanges" Vol. 6 No. 3 *Journal of British Society of Scientific Glassblowers*), but these are rather complicated and long winded. It pays to keep a note on how much glass is used in order to produce a matching flange. Experience will tell you in the first instance how much to use (we used approximately 50 mm over hand on 90-95-100 mm tubing). Figure 1 illustrates the tube to be flanged set up in the lathe. We have had a steel jig made up to hold the internal carbon support rod which

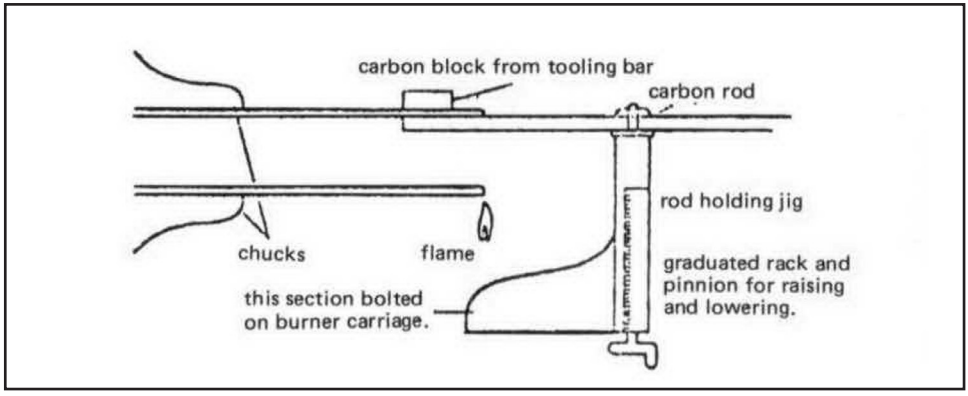

Figure 1

* DSIR, Chemistry Division, Lower Hutt.

has proved very useful. The scale on the jig allows operator to reproduce the internal diameter precisely. This is the ideal way of holding rod, but failing this, a retort stand c-clamped to lathe bed will suffice. The lathe is set at very low revs to reduce twisting, but can be sped up as glass shrinks back. The heated glass is eased back up against backing carbon with a hand-held paddle. This is a relatively straightforward procedure producing a very nice square shape as a result. A carbon rod of substantial diameter is desirable to reduce flexing and resist intense heat. We have used 25 mm diameter. Ref. M. Lock *B.S.S.G. Journal* Vol. 17 No. 4.

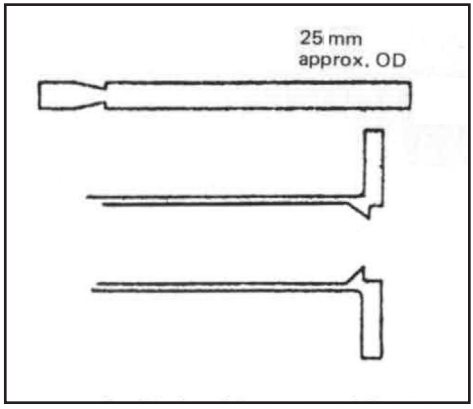

Figure 2. *Profiled rod for recessed flange*

2. **Recessed flange:** The procedure for forming this flange is the same as for a basic flat flange. The only difference being the internal carbon rod. A rod of, again, 25 mm is machined to match desired shape of recess. A little more care is involved with this method (Figures 1 & 2).

Figures 3 and 4 illustrate how the same technique can be used to form Buchi style flanges.

3. A very straightforward method of making O-ring ball joints. A carbon flat is set up in tooling bar of lathe at a 45° angle. Ball joint is placed in chucks so that when carbon flat in tooling bar is lowered, contact is made on ball surface. (It is wise to select O-rings first and make groove to match). Set stop on tooling bar so that corner of carbon flat depresses into molten glass to a depth of approximately 2 mm. A thin intense band of heat is needed so as not to distort overall shape of ball joint.

A thin groove will result to which an O-ring can be seated. The cup/socket half of joint requires to be lightly flame polished so O-ring can form seal on glazed surface.

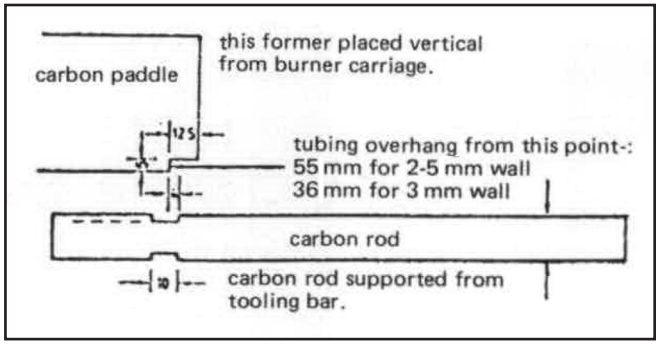

Figure 3. *Carbon formers, sizes and relationships*

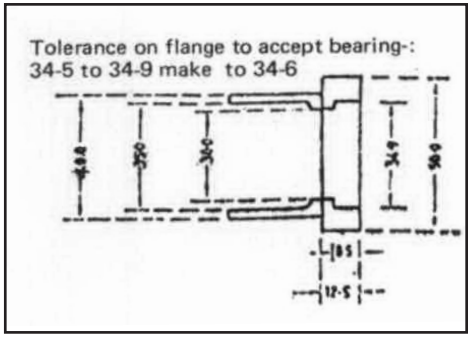

Figure 4. *A rotary evaporator: flange*

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Request for Bid
ASGS National Office Managers

The American Scientific Glassblowers Society is seeking bids to contract with, either individual(s) or a business corporate entity to manage the operations of our National Office. We seek an individual or team that is responsive and pro-active in accomplishing the goals of the Society as our National Office Manager(s).

Our Request for Proposal for new National Office Management has recently been revised. Please follow the link below to read the new Scope of Responsibilities and follow the updated section on "Preparing your Bid."

The Society's ideal candidate will be well versed in QuickBooks Online, MS Office programs, excellent bookkeeping, administrative, communication and organizational skills. Basic understanding of accounting principles and File Maker Pro software would be helpful.

The following is a general list of responsibilities we require to be performed:

- Provide administrative/clerical duties as described in RFP or as directed by the Executive Secretary, which includes administrative and service support for our Membership, Symposium and Publication budget centers.
- Manage incoming/outgoing communications for the Society.
- Customer service for Board of Directors, Committees and general public.
- Provide bookkeeping/reporting services for Membership, Symposium and Publications budget centers.
- Prepare general office and financial reports for distribution.
- Perform annual membership and *Fusion* advertising renewal procedures.
- Receive/record invoices for all expenses, send check requests to Treasurer for payment. Receive, countersign, record checks from Treasurer and mail checks to payees. Check PO box frequently for payments.
- Prepare invoices, receive payment and record income for membership dues, advertising and symposium payments. Deposit received funds.
- Reconcile all bank/investment accounts to monitor financial activities.
- Compile and distribute financial and other reports as outlined or directed.
- Management/storage of all physical records, electronic data and archives.
- Provide organizational assistance for the Symposium: registration and information preparation/distribution/on-site registration desk assistance.
- Coordinate website management via Webmaster and IT Chairman.
- Update the website by adding content, editing pages, and managing user access as directed.
- Coordinate Accountant oversight of and filing of Society tax filing.
- Provide dry storage for all Society records and archives.

All RFB's must be received by the National Office by email or postal mail no later than March 31, 2020.

Please refer to the complete RFB on our website: https://asgs-glass.org/national-office-rfp-2019/ for complete details, expectations and instructions for preparing your Bid for our National Office Management candidates.

Section Reports

Delaware Valley Section

The Delaware Valley Section had the honor of holding its fall meeting at the newly constructed Samuel and Jean Jones Glass Education Center at Salem Community College in Carneys Point, NJ. Sponsors of the meeting were Griffin Tools, UST Glass, Chemglass Life Sciences, Wilmad Labglass, Precision Electronic Glass, and North Jersey Diamond Wheel.

Katie Severance explaining the importance of wall thickness and uniformity in bellows using a saw-cut section

This new Samuel and Jean Jones Glass Education Center (GEC) features two complete flameworking classrooms each with 20 workstations and an instructor's bench, four lathes with an assortment of hand torches to accompany them, two large Wilt bell kilns, and two Skutt Skarab kilns as well. It also features a full hot shop with a tank with a 400 lb capacity along with a double pot color furnace with a 160 lb capacity, four glory holes, and a full coldworking and kilnworking studio. This new GEC is right next to SCC main campus as opposed to in the middle of the corn fields of Alloway and is an excellent addition to the ever growing glass education opportunities of Salem Community College.

Student and Section member, Harrison Mask, working in the hot shop at the new GEC

The meeting started out with a short breakfast along with tours of the new facilities. Attendees were also able to view and purchase products from Scott Griffin of Griffin Tools as well as sign up for a special raffle with Bonnie Clark from North Jersey Diamond Wheel. We then continued to a demonstration of a non-functional apparatus by Katie Severance of AGI Inc. in Vineland, NJ. As a demonstration to the students in attendance, this apparatus featured sealing a coil, adding side arms, and forming bellows on a lathe. This presentation was then followed by an explanation and demonstration of the silvering process by Nick Gardiner also of AGI. Afterwards, we had a short lunch provided by Italian Kitchen of Pennsville.

After lunch, the Section business meeting began. The 2020 Symposium in Lido Beach, FL was discussed followed by a brief review of the many awards and scholarships that the Society and the Sections offer along with what is required to submit an application. Many of the students and members in attendance were interested in applying for the awards especially because they would

Students at work in the Flameworking studio at the new Glass Education Center

not be able to attend the Symposium otherwise. Next, our Delaware Valley Section Award winner, Ashleyann Kaltschmid, gave a presentation on the 2019 Symposium at the Corning Museum of Glass. We then moved to appoint Katie Severance as our Alternate Director. In addition, it was announced that the 2020 International Flameworking Conference will take place March 20-22 and will feature a full SCC alumni lineup for presenters. In conclusion, it was decided that our spring meeting will be held at Carlisle Machine Works on April 30, 2020.

We would like to thank Salem Community College for hosting the meeting and our sponsors who made this meeting possible: Griffin Tools, UST Glass, Chemglass Life Sciences, Wilmad Labglass, Precision Electronic Glass, and North Jersey Diamond Wheel.

Respectfully submitted,
Nicolas Salame, Secretary

Great Lakes Section

The Great Lakes Section gathered on October 12 for their annual fall meeting. The meeting took place at Glass Art Kalamazoo in Kalamazoo, Michigan and was sponsored by Meints Glassblowing LLC, Chemglass Life Sciences, and Technical Glass Products.

Frank Meints was our gracious host for the day. Frank's glassblowing shop is in the same building as Glass Art Kalamazoo. The majority of the meeting took place in the main hot shop of the building, but the meeting continued in Meints Glassblowing LLC for further demonstrations.

Frank started the day off with his demonstration on how a Class A volumetric flask is calibrated. With Frank's well established process, using water at 20° Celsius and a highly accurate scale, he is able to certify a high accuracy for the calibration for TC (to be contained) and TD (to deliver) in volumetric flasks. Frank can certify his technique for this process.

Following our first demonstration, the hot shop was then open to everyone to take part in creating projects. With the help of Meints Glassblowing LLC and the skilled

Frank Meints demonstrating biometric calibration

assistance from the staff of Michigan Glass Works, everyone in attendance at the meeting was given the opportunity to create either a glass pumpkin, a paper weight, vases, and/or a glass fusion tile.

Once everyone had made their project, we were given a hot shop demonstration by the staff of Michigan Glass Works: they displayed their skills and wowed us with their creation of a large-scale spherical form that was then flattened with wooden paddles.

Lori Neu in the hot shop

Philip Legge in the hot shop

The hot shop smelled of smoke and success. The final piece was to be cold worked after it had been through the annealing process.

We broke for lunch and immediately following the break, we held our business meeting. Old and new business along with award nominations were discussed among the members. Our new Treasurer, Doug Navalinsky also updated us on his transition into his new position and how the Section was doing financially. As Symposium Chair, Philip Legge informed everyone about the 2020 Symposium which is to be held at Lido Beach Resort in Sarasota, Florida. Before we concluded our meeting, we took a moment of silence to honour the memory and acknowledge the loss of David Daenzer, who was a prolific member of the ASGS and the Great Lakes Section. His contributions to the Society will be dearly missed.

We then regrouped in Frank's glass studio where the next demonstration was by Jake Shaff of Kalamazoo Glassworks. He demonstrated the use of a glass-cutting machine with automatic rotators and a long thin torch. Glass tubing sizing from 25 mm to 120 mm can be scored and shock cracked with the insertion of the thin torch at the score mark to make a clean break. This method helps to efficiently cut down on prep time and produces consistently clean cuts of glass tubing.

Scott Bankroff, of Michigan State University, then demonstrated his process of boring 1 mm holes into glass tubing with a tungsten rod. To keep the integrity of the round bottom, the glass is held by the flame to stay warm, it is only the tungsten rod that is heated and then used to pierce the glass when the rod is red hot. The holes are smoothed out and flame polished, then HF is used to clean the leftover debris to give a clean piece. Scott made this look very easy as he demonstrated this delicate process.

The next demonstration was by Dan Foster

Attendees watching the hot shop demonstration

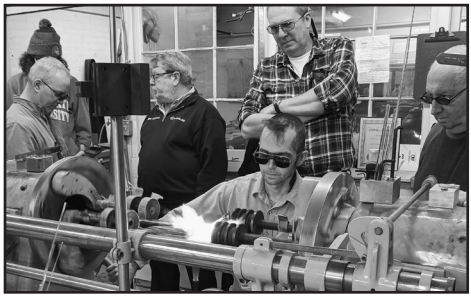
Dan Foster creating a glass bulb water magnifier

Scott Bankroff's demonstrating boring 1 mm holes into glass tubing

of Foster Glass. He showed everyone how simple skills like pulling points and blowing a sphere can be used to create a hand blown bulb glass water magnifier. With the right heat and method, water can be trapped in the sphere to make a magnifying tool.

The last demonstration for the day was from Jake Shaff. Using a lathe, Jake showed us how to seal a perforated/fritted glass plate into 50 mm tubing using a vacuum seal. The vacuum helps to hold the plate perfectly straight and in place so that the sealing process is effortless and neat.

Once the demonstrations were concluded and before everyone left for the day, we gathered all the Great Lake Section members for a group photo and concluded our fall meeting.



Jake Shaff's lathe demonstration

The Section would like to thank Frank Meints and Glass Art Kalamazoo for hosting the meeting as well as our sponsors Meints Glassblowing LLC, Chemglass Life Sciences, and Technical Glass Products.

Respectfully submitted,
Jill Korgemagi-Clarke, Chair

Group photo

Midwest Section

The Fall Midwest Section meeting was held in West Lafayette, Indiana at the Purdue University chemistry department glass shop. Jordan Smith was our host, and our two sponsors for the meeting were Technical Glass Products and ABR Imagery. Gabriel Alminauskas was on hand for ABR Imagery to answer any of our questions. There were 18 attendees, including our ASGS President Kaite Jones, and we had a full day of demonstrations and discussions. The Assistant Chair, Mike D'Acquisto (Milipore Sigma), ran the meeting and kept everyone on task.

Jordan Smith resizing tubing

High quality video/audio of all the demonstrations from this meeting are available to any of our Midwest Section members on a password-protected Vimeo website. Midwest Section membership is open to anyone. Corrina Guerra (3M) is the Chair of the Media Committee and was busy taking videos and notes throughout the day. As an incentive to our members in the Midwest Section, there is a $100 prize for the best demonstration of the meeting.

The demonstrations began with Jordan Smith resizing tubing by hand on the lathe. Using a Nortel block-head torch, paddle and blow hose, Jordan resized a 100 mm diameter tube up to 125 mm. A set of outside calipers were set with a caliper and this was used to check the progress of his work.

Tracy Drier (University of Wisconsin – Madison) often builds fritted H-cells for electrochemistry that require a narrow gap between the two legs of the "H." This narrow gap is to minimize the amount of chemical requirements in each of the legs, and he showed his method for minimizing this gap while not fusing the frit solid.

ASGS Junior member Jack Roy (Wild Rose Glass) demonstrated methods for cleanly cutting glass at the bench and lathe so that no further process is required to make a clean, vacuum tight seal. Using tweezers to fire cut on the lathe and the Hashimoto tube cutter on the bench were demonstrated. It is not easy for anyone to go up in front of a roomful of your peers and demonstrate, so congratulations on a job well done, Jack!

The final demonstration before lunch was Erich Moraine (Wild Rose Glass) showing how he resizes 24 mm medium-walled round tubing into an oval cross-section at the bench. Using a lab stand and clamping the tubing at the top and bottom, he used an oval-profiled tapered graphite with a wire hanging off the bottom with attached washers used for weight. These washers provided the weight to pull the plug through as he used a #55 Shelbo torch tip to produce a bushy flame and heat all around the tube, feathering the heat down to keep a uniform flow of the graphite downward. Halfway down the length of tubing, he switched to a new torch neck carried by ABR that has two torch tips facing each other. The benefit is that this requires that you only need to rotate your torch 90 degrees to heat the entire circumference of tubing. He completed the remainder of tubing with this method.

Highlights from the business meeting were:

- Thank you to our long-time supporters and meeting sponsors ABR Imagery (www.abrimagery.com) and Technical Glass Products (www.techicalglass.com)

- The Section now has a full Board with the addition of our two newest Board members: Chris Stemper (Bauer Sign) and Aaron Kirchoff (North Dakota State University)
- Shortly after any given Section meeting, a follow-up survey using Survey Monkey (www.surveymonkey.com) polls members to solicit feedback about what they did and did not like about the meeting, as well as asking for recommendations about what could be improved or what demonstrations they would like to see at the next meeting. This approach seems to be working with about 80-90% of recipients responding.
- Attendance is off and membership in the Midwest Section is down from previous years.
- The Section is planning to implement an auto-renewal option for Section membership dues.
- A progress report was presented about the Midwest Section's Vimeo video + audio project to provide password protected access to meeting demonstrations as a benefit of membership to the Midwest Section. You have to be a member of the Midwest Section to be eligible for this benefit and anyone can easily become a Midwest Section member.

Jack Roy demonstrates fire cutting using a hand torch and tweezers

- The Section is strong financially with a summary of financial activity by the Section Treasurer, Kevin Moeller (Argonne National Labs).
- We are looking for a meeting site for the 2020 spring meeting.
- ASGS president Kaite Jones filled us in on some of the latest from National:

  – The National Office is resigning at the end of the 2020 Symposium and they are currently looking for a replacement.

Midwest Section at Purdue hosted by Jordan Smith

– A Scope Committee has been developed to produce a document outlining the roles and responsibilities for the various National Officer positions.

- There is a push to clarify some of the grey areas in our Bylaws.
- The presidency term is being increased from one to two years. It has been approved at the BOD meeting last June in Corning, NY and will need to be voted on and passed at the upcoming BOD in November in order to be ratified.
- The National Office is looking for replacements for the following Committees Chairs. Please contact the National Office if you would like to become involved with your Society in any one of these areas:
  – Awards Committee
  – Elections Committee
  – Audit Committee
  – IT Committee

Following the business meeting, Scott Bankroff (Michigan State University) demonstrated the construction of a magnesia interface probe. The porous magnesia stick was 1 mm diameter by 112 mm long, and was fused into a borosilicate capillary tube. You make a round bottom on the capillary and drop the magnesia in. Heating, and using a blow hose, you suck the glass down onto the magnesia. The intention is to keep the magnesia from getting red hot so that is does not melt into a solid chunk. After this has cooled, you saw the round bottom off to expose the magnesia core.

Tracy Drier demonstrated drawing 35 mm x 45 mm rectangular tubing from a round 45 mm tube on the lathe. The process was similar to that on the bench except that the set-up is horizontal rather than vertical. 54 mm tubing was sealed onto each end of the 45 mm tube and this provided a guide/holder for the forming graphite.

Erich Moraine gave a talk on the anatomy of a ring seal and then mediated a group discussion on this topic. This was an excellent discussion with heavy group participation. This was an "all killer with no filler" demonstration, and one which easily won the $100 award. This is also going to easily justify your becoming a Midwest Section member to see the video for yourself.

The Section would like to thank Jordan Smith for hosting this meeting as well as our sponsors Technical Glass Products and ABR Imagery.

Respectfully submitted,
Tracy Drier, Secretary

Northeast Section

The Northeast Section held its fall meeting on November 6, 2019 at the University of Massachusetts Amherst Glassblowing Lab. The event was sponsored by Prasch Glass and Yankee Glassblower, Inc. Thanks to the Christman family for running the registration desk.

A special thanks to our host Sally Prasch who runs the Glassblowing Lab at Umass/Amherst. The shop is very well equipped and organized with several operational lathes and a stock of supplies and annealing ovens.

The meeting began with a demonstration by Patrick DeFlorio, a second generation glassblower. Patrick used the lathe to demonstrate making a Y-tube used to test insect attractants. Patrick's demonstrations are always a treat.

Next, there was a show and tell for tools that have been found to be particularly useful. Some highlights were Klaus Paris's tubing cutter with a 120 degree cutting wheel which seemed to make quick perfect cuts in glass tubing without much effort at all, and some custom joint forming tools by Jacob Kun-

Patrick DeFlorio demonstrates making a Y-tube at the lathe

nen. Everyone brought their best demonstration skills, and it was great to see all the little tricks people use to get the job done.

Lunch was in the award winning Amherst dining hall. Over lunch, a short business meeting was held. Several motions were passed for Patrick DeFlorio to be our new Director, Daryl Smith–Alternate Director, Preston Smith–Chair, Sally Prasch–Alternate Chair, Adam Haggard–Treasurer and Bob Balsano–Secretary. Additionally, a motion passed to reimburse the cost of the Director's airfare to the Board meeting. A very sad motion was passed to add Wayne Martin of M&M Glass to the Memorial Scroll. He is missed.

Jared Carver gave a Director's report in which he announced the retirement of the National Office staff and that bids are being taken for a new National Office. President Kaite Jones gave a report in which she announced that the National Office is moving the fiscal year to align with the calendar year and that there is a need for an IT Chair. Chuck Christman gave a Treasurer's report in which the Section was said to be in good financial standing. The Northeast Section spring meeting will be held at Yale University on April 18 and the next fall meeting will be a joint meeting at the Pittsburgh Glass Center.

After lunch there was brief talk given by Adolf Gunther and Ted Bolan on putting together a borosilicate box. Between the two of them, there is over 100 years of glassblowing experience and their talk was full of hilarious anecdotes, useful advice and life wisdom. The talk wrapped up just before the raffle.

The meeting finished at the Barnes Gallery at the Leverett Crafts and Arts which was hosting a glass exhibit for the month of November. There was live music and lots of great glass art, including pieces by ASGS members. As with all Northeast Section meetings, truly fun and educational.

The Section would like to thank Sally Prasch and the University of Massachusetts Amherst Glassblowing Lab for hosting the meeting as well as sponsors Prasch Glass and Yankee Glassblower, Inc.

Respectfully submitted,
Bob Balsano, Secretary

Meeting attendees in the glass shop at UMASS, Amherst

Pacific Northwest Section

October 19 Meeting

On Saturday Oct. 19, the Pacific Northwest Section held a meeting at the C.R.Glow neon shop in Stockton, California. Roger Daniells is the owner of the shop and has over 40 years of neon experience. At one time, he worked at Ad Art sign shop making the huge signs of Las Vegas. Sponsors of the meeting were FMS neon (www.brillite.com/index.php), West Coast Custom Designs (www.prosites-llcwccd.homestead.com), Ventex Technology (www.ventextech.com), Tech 22 (www.t2-neonpower.com/index.html), Litton Engineering Laboratories (www.littonengr.com), Abitech (www.abitechsupply.com), EGL Company, Inc. (www.egl-lighting.com), North Jersey Diamond Wheel (www.diamondwheels.com/), Alta Robbins Valves (www.alta-robbins.com), and ABR Imagery (www.abrimagery.com).

Wireless neon sign

First off, Roger did a demonstration on how to bend tubes for a neon sign. He showed the many different bends needed to get each letter. Bombarding the neon tube followed;

Frank Szephegyi working borosilicate

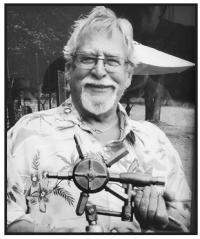
Roger Daniells' neon demonstration

this is done with high voltage amperage and vacuum. He completed a bright red neon tube for everyone to see.

Nate Bennett then brought up an oxy/gas torch for borosilicate working. Nate, Frank Szephegyi and Victor Nunn all had a shot at making Christmas ornaments.

Lunch was next: delicious sausages from Handford Meat Market were barbecued for all. There were veggie sandwiches and drinks as well. Plenty of smiles all around.

This was followed by the "Suba" raffle for which our generous vendors donated all kinds of great things. The rule of the "Suba" raffle is that if you win something you will never use, put it back in the pile so a person who could use it can win it. Help out others who need it and cannot afford it.



Tom Orr

Then the about 45 of us gathered in the shop celebrated Tom Orr's life. Each of us took our turn to speak about him and our personal relationship. Tom was a chemist/scientific glassblower. Any time I had a question, he would take the time to answer my questions and explain everything. I am thankful for our friendship and promise to pass on the knowledge to the next generation as he did with me.

We had about ten new faces join our Section who were happy to learn more. Bryson DeJong from the east coast was one of the attendees. At the end of the event, he said this was the most amazing ASGS meeting he had gone to, that we were all like family. We all had big smiles on our faces and we thanked him as anyone is welcome to come. All in all, it was a great day with lots of memories.

The Section would like to thank C.R.Glow neon shop for hosting the meeting and all of our sponsors: FMS neon, West Coast Custom Designs, Ventex Technology, Tech 22, Litton Engineering Laboratories, Abitech, EGL Company, Inc., North Jersey Diamond Wheel, Alta Robbins Valves, and ABR Imagery. I look forward to seeing you at next year's Section meetings.

Respectfully submitted,
Bruce Suba, Chair

Pacific Northwest Section

November 9 Meeting

On November 9, the Pacific Northwest Section meeting was hosted at Oregon Glasslab for its second year. Sponsors of the meeting were Northstar Glassworks, North Jersey Diamond Wheel, Blast Shield Tools, Boro Art Supply, Southern Oregon Glass Circus, and drinks were provided by Fire and Water of Ashland.

We had a large group of attendees, most of whom were not from the scientific community but all of whom have a great interest in the shared knowledge of the ASGS. Demonstrations started off with Chris Hurley sharing approaches to sidewall seals and ring seals. Matt Galanti followed by sharing additional approaches to sizing with Hurley's demonstration and tips on how to use masking tape to build your own stopper. Paul Bonham of Boro Art Supply brought mandrels of different sizes for attendees to try and added an extra demonstration of wrapping a bridged double coil. Finally, Victor Nunn was so kind as to share his approaches and advice on glass to metal seals of various materials. Thank you to the demonstrators who provided extra materials for attendees to try some of these techniques. It was a great time seeing so many first attempts at these projects and attendees were ever grateful.

Demonstrators (L-R) Victor Nunn, Paul Bonham, Chris Hurley, Matt Galanti

The meeting followed with a delicious catered meal and an exciting raffle. The raffle was loaded with materials donated by the above-mentioned companies.

The Section would like to thank Oregon Glasslab for hosting the meeting. A very

Paul Bonham walking observers through the coil wrapping process

Chris Hurley blowing through a side seal

Attendees enjoying trying new techniques

special thank you to those companies who support our Section with their time and donations: Northstar Glassworks, North Jersey Diamond Wheel, Blast Shield Tools, Boro Art Supply, Southern Oregon Glass Circus, and Fire and Water.

Respectfully submitted,
Chris Hurley, Section member

Victor Nunn talking about glass to metal seals

Chapter meeting at Oregon Glasslab

Southeastern Section

The 2020 Southeastern Section meeting will be held at the Hyatt House in downtown Augusta, Georgia from March 12-14, 2020. You can make reservations by calling 1-866-974-9288 or by going online at hyatt.com and entering G-SCIE as the group/corporate number. The cut-off date for rooms is February 25, 2020.

Thursday evening there will be a meet and greet with snacks and drinks in the hospitality room. Friday morning we will be heading to the Savannah River Site and start with a bus tour around the site. We will then be having lunch at the Savannah River National Laboratory. After lunch, we will be going down to the Glass Shop to have a look around and to see some demonstrations.

Saturday Morning, we will have our business meeting followed by a cup exchange. The cup exchange will be the same as a white elephant gift: you bring a cup that is wrapped and you get to swap to receive one of the cups that someone else made. Later Saturday evening, we will be having our

banquet which will be catered by our own Ruth Babbitt.

For anyone wanting to do any of the activities at the Savannah River Site, some personal information will be needed to create a temporary badge for you. I will need your full name and street address as it appears on your driver's license, your social security number, and verbal confirmation that you are in fact a US citizen. This information will be compiled and will only be seen by myself and the person who will be creating your badge. Do not email or text me this information, it is not a safe way of transferring it. Instead, please call me at 803-725-2781 where I will put it on the list. If you have any questions, please feel free to email me at Chandra.Babbitt@srs.gov or call me.

Looking forward to seeing you in March.

Respectfully submitted,
Chandra Babbitt, Secretary

Southern California Section

The Southern California Section meeting was hosted by Phil Sliwoski at the University of Southern California in Los Angeles, California on June 8, 2019. G. M. Associates, Inc. was our sponsor.

The meeting began at 11:30 am, and after socializing, the over twenty attendees enjoyed food and beverages provided by G.M. Associates, Inc.

After lunch, the demonstrations began. Phil Sliwoski (USC), kicked them off by making a Strauss Flask. Nathan Hart (Caltech) was next, constructing a demountable quartz plasma torch. Victor Nunn (Thermo Fisher Scientific) followed by demonstrating Kovar seals. Last but not least, Gary Coyne (retired CalState LA) gave a very informative talk on thermal stress migration.

The meeting was enjoyed by all. With more attendees than originally expected, the Southern California Section hopes to continue to grow.

The Section would like to thank all attendees as well as the demonstrators. A special thank you to Phil Sliwoski for hosting the event and to Deborah Nutter Camp of G. M. Associates, Inc. for sponsoring the meeting.

Respectfully submitted,
Nathan Hart, Secretary

Nate Hart

Victor Nunn

Phil Sliwoski

Attendees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Advertising Policy

Adopted by The American Scientific Glassblowers Society Board of Directors • July 2015

These Guidelines set forth standards that govern advertising in *Fusion* Journal of the American Scientific Glassblowers Society, a publication of The American Scientific Glassblowers Society (hereinafter "ASGS").

We also recognize that no set of Guidelines can address every situation or issue that may arise in the course of doing business, especially given the pace of change within the media industry.

Accordingly, we anticipate that these guidelines will be revisited and updated from time to time. In particular, we will remain teachable and open to suggestions, criticism and corrections from our readers and other interested parties.

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The Guidelines in the following section apply to all advertisements and sponsor content served by or appearing in the print and digital publications of *Fusion* Journal of the American Scientific Glassblowers Society and its affiliates (hereinafter "*Fusion*").

- Advertisers are responsible for ensuring that their ads are adequately substantiated and comply with all applicable laws, regulations and guidelines. While the content of advertising does not necessarily reflect the views of *Fusion* or its editors, if it comes to the attention of *Fusion* that an ad, in our opinion, contains demonstrably false or unlawful content, *Fusion* will refuse or remove the ad in whole or in part.
- *Fusion* may exercise its discretion to refuse or remove any advertising that is inconsistent with or may tend to bring disparagement, harm to reputation, or other damage to *Fusion*'s brand.
- Although *Fusion* will evaluate whether to work with advertisers on a case-by-case basis, some examples of advertising *Fusion* will not accept are the following:
  - Advertising that *Fusion* believes, in its opinion, is indecent, vulgar, suggestive, profane, or offensive.
  - Advertising for illegal products or services, including drugs, illegal substances, or any related products or services.
  - Advertising that *Fusion* believes includes hateful or violent text advocating against any individual, group, or organization.
  - Advertising that *Fusion* determines to be inflammatory.
  - Advertising that *Fusion* believes will undermine the intellectual integrity, authority, and character of its mission and brand.
  - All determinations of the application of the foregoing standards to particular advertisements or advertisers shall be within the sole discretion of *Fusion*'s editorial staff.
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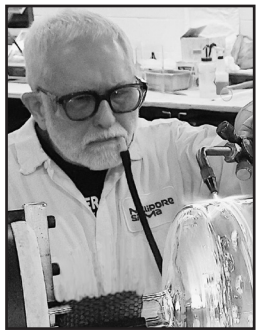
- Even with the caveat that Sponsor Content does not necessarily reflect the views of *Fusion* or its editors, *Fusion* will refuse publication of such content that, in its own judgment, would undermine the intellectual integrity, authority, and character of our enterprise.
- As with all advertising, and consistent with the foregoing General Advertising Guidelines, *Fusion* may reject or remove any Sponsor Content at any time that contains false, deceptive, potentially misleading, or illegal content or which is inconsistent with or may tend to bring disparagement, harm to reputation, or other damage to *Fusion*'s brand.

Obituaries

Bill Wasemiller • 1953 – 2019



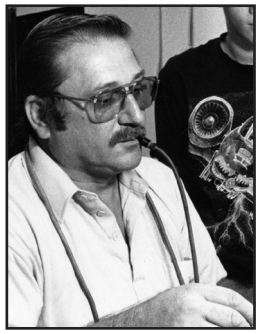
A longtime member of the Midwest Section, Bill Wasemiller, has passed away. Bill began his glass experience 43 years ago in the shipping department of Pope Scientific. The glass shop folks noticed he had a feel for handling glass and soon he was apprenticed there. He spent 11 years at Pope until a position he liked opened at Aldrich Chemical. Bill stayed at Aldrich for 32 years through three company glass shop relocations and three company name changes. Earlier this year he was diagnosed with mesothelioma and made the choice to keep the diagnosis private. He worked as much as he could until his retirement from Millipore Sigma in November, passing away November 20, 2019.

Bill loved blowing glass and loved teaching others how to do what he was so good at. Those of us who knew Bill were lucky. He always had a kind word to say and would find time to chat about glass with anyone regardless of their skill or background. Those of us who had the chance to learn glass skills from Bill were even luckier. He was a dedicated teacher and second to none in the quality of his work. He was able to explain in detail how and what he was doing which made him a sought-after teacher.

Bill had many apprentices who were fortunate to have worked alongside him. He had many more of us who were lucky enough to see him demonstrate either at a national symposium or a Section meeting. He is one of the few who could honestly claim the title of Master Glassblower, but he was a humble quiet man and would never use that title or draw attention to himself.

The Midwest Section Board is investigating ways to create a lasting legacy for Bill and his love of teaching. If you would like to participate, please contact erich@wildroseglass. Bill will be missed. Rest in peace, Bill.

Robert A. "Ski" Lewandowski • 1939-2019
Retired Member of ASGS



Robert began his glassblowing career in the early 1960's and became a Regular Member of the ASGS in 1974 while working at the University of Texas Health Science center in San Antonio, TX. Robert held several positions throughout his career and he eventually retired from the University of Texas, Austin in 2003. In addition to these glassblowing positions, he also worked at Ace Glass, Quartz General, the University of West Virginia, North Texas State University and Sandia Laboratories in New Mexico. He always had a glass shop at home no matter where he lived or worked. Robert was a longtime member of the Southwestern Section.

Robert leaves behind his wife of 46 years, Jane, and four sons, six grandchildren, five great grandchildren and several nieces and nephews.

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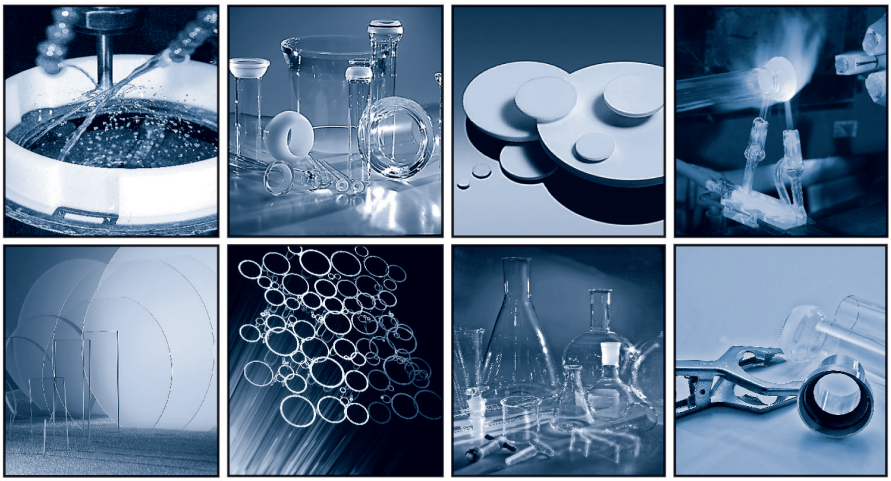

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Motions Passed by the ASGS Board of Directors

November 9, 2019 • Lido Beach Resort, Sarasota, FL
Presiding Officer: Kaite Jones • Recording Secretary: Andy Gibbs

Accept Minutes
Motion Resolution: Motion #1109201901R
To accept the minutes of the June 16, 2019 Board of Directors meeting under President Jones as read.

Motion by: S. Elayne Ashley
Seconded by: Philip Legge
Motion Passed: Unanimous

Bylaw Change, Presidential Two-Year Term
Motion Resolution: Motion #1109201902R
Replace Article: V - Officers: Section: (c)
The President and President-Elect shall serve a term of office of ~~one year~~ two years only. The President-Elect shall, having served that term of elected office, automatically succeed to the office of President and serve for a ~~one-year~~ two-year term only. The President shall not be eligible for election to any national office for a period of ~~one year~~ two years after completion of the Presidential term.

This amendment shall be retroactive to June 16, 2019, meaning that the 2019-2020 Presidential term and Presidential-Elect term shall be a two-year term beginning June 2019 and finishing at the 2021 Symposium Board of Directors Meeting.

Motion by: Corina Guerra
Seconded by: Annalee Pickett
Motion Passed: Unanimous

Bylaw Change, Fiscal Year End Date
Motion Resolution: Motion #1109201903R
Replace Article: X - Finance: Section: (a)
I move to amend the Bylaws in Article X, Finance, by amending current language:
For business purpose [sic], the fiscal year shall begin on ~~April 1~~ January 1 of each year. [Rationale: To provide the time necessary to perform all year-end accounting and provide a complete and accurate fiscal year-end Audit Committee reviewed Treasurer's Report as required. This change will go into effect January 1, 2020.]

Motion by: Erin Mayberry
Seconded by: Corina Guerra
Motion Passed: Unanimous

2020 Symposium Registration Rates
Motion Resolution: Motion #1109201904R
Motion to set the 2020 Symposium rates from July 19-23 at Lido Beach Resort in Sarasota, Florida not to exceed 20% above the 2019 Symposium registration rates.

Motion by: Philip Legge
Seconded by: Patrick DeFlorio
Motion Passed: Unanimous

Memorial Scroll
Motion Resolution: Motion #1109201905R
Motion to add David Daenzer, Tom Orr, and Wayne Martin to the Memorial Scroll.

Motion by: S. Elayne Ashley
Seconded by: Patrick DeFlorio
Motion Passed: Unanimous

Adjourn
Motion Resolution: Motion #1109201906R
Motion to adjourn the November 9, 2019 Board of Directors meeting at Lido Beach Resort in Sarasota, Florida under President Jones.

Motion by: Andy Gibbs
Seconded by: Philip Legge
Motion Passed: Unanimous

65th Annual ASGS Symposium
July 19-23, 2020
Lido Beach Resort • Sarasota, Florida
https://symposium.asgs-glass.org/posters/

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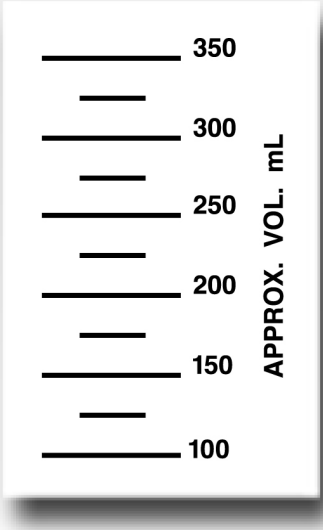
- barcodes
- amber stain



C60101	C60106	C60112	C60118
C60102	C60107	C60113	C60119
C60103	C60108	C60114	C60120
C60104	C60109	C60115	C60121
C60105	C60110	C60116	C60122
C60105	C60111	C60117	C60123

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Important Dates
Fusion Deadlines for Publication

Issue	Deadline Date
May 2020	March 15, 2020
August 2020	June 15, 2020
November 2020	September 15, 2020
February 2021	December 15, 2020

Information must be received prior to the established deadline dates to ensure consideration for the respective issue of choice. Articles received after the deadline date cannot be guaranteed entry in respective issues.

All advertising should be sent to the National Office. All other publication materials should be sent to the Editor.

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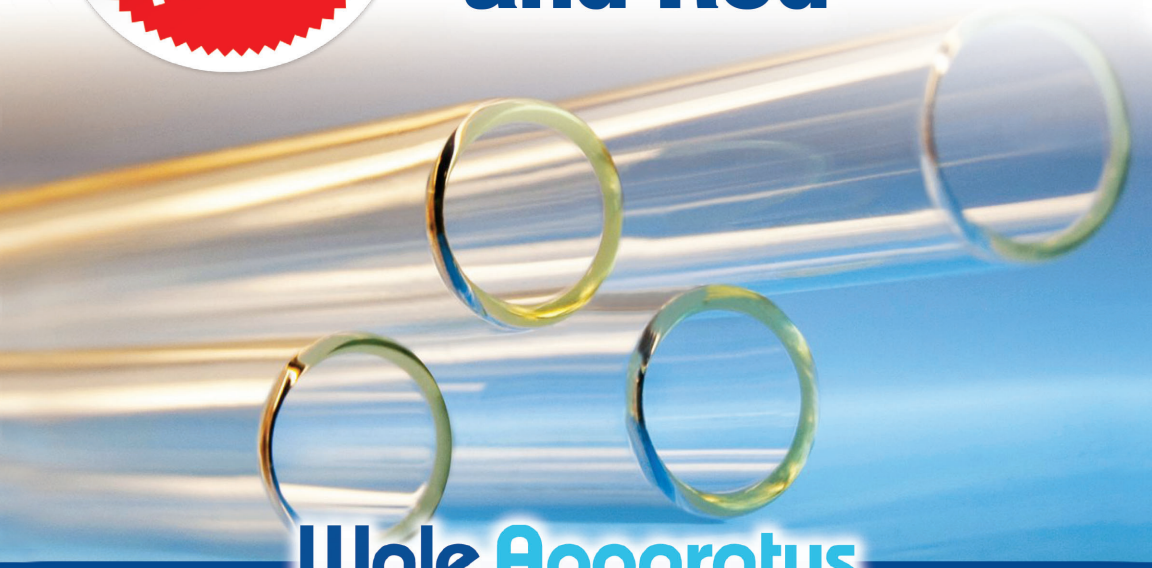

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