



March 2014

# THE LONG ISLAND SOUNDER



ASHRAE Long Island Chapter, Region 1...Founded in 1957

www.ashraeli.org

American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc.

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## President's Message

Welcome to the March issue of the "Long Island Sounder". We thank all of those who attended last month's meeting. Thank you again to Richard Gerbe of Highmark NY on his presentation of "LEED Ver 4 Rating System & ASHRAE 191P Water Efficiencies in Buildings", and Mark Piegay of Kathabar Dehumidification Systems on his presentation of "Desiccant Dehumidification System for Energy Recovery Efficient Temperature and Humidity Control"



Thank you to Apollo for sponsoring February's cocktail hour and to Accuspec for offering to sponsor the March meeting. If your company is interested in sponsoring a cocktail hour please contact Rich Rosner or myself.

This month we will have our joint meeting with LI-Geo. We will have two excellent presentations; Evans Lizardos will be presenting Session III of our "Back to Basics" on Design & Theory of Dedicated Outside Air Systems for Humidity Control. Following we have Ray Schmitt presenting on Geothermal Systems – Design and Installation Considerations. Both of these presentations are PDH approved.

If any companies have openings for internships now is the time to find some students to fill them. Please see Rich Halley or myself so we can get your position posted with our student advisors.

## CHAPTER MONTHLY MEETING

<b>DATE:</b>	<b>Tuesday, March 11, 2014</b>
<b>TIME:</b>	6:00 PM - Cocktails/Dinner 6:30 PM - Back to Basics #3 6:45 PM - Dinner Presentation
<b>LOCATION:</b>	Westbury Manor South Side of Jericho Tpke. 25 Westbury, NY 11590
<b>FEES:</b>	
Members -	\$40.00
Guest -	\$45.00
Student -	\$15.00

*Reservations requested, but not required.*

Our 15<sup>th</sup> Annual ASHRAE Long Island golf outing will be held on Monday, May 5 at Cherry Valley Club in Garden City. We always have a great turnout so please don't wait to make a reservation. I want to emphasize that the level of success of the event is dependent on the contributions from our sponsors. We are looking for new and continued sponsors, whether they are individual or company, for the outing. They include the pro shop raffle prizes at dinner, food and beverage services on the course and giveaways during check in. This is a great event and we keep the per golfer fee to a minimum so everyone has the flexibility to give what they can.

Thank you to all the volunteers and board members, I appreciate all your time and dedication to our chapter and community.

We look forward to seeing everyone at the March meeting and thank you for your continued support of the Long Island Chapter of ASHRAE.

**Andrew Manos, LEED AP BD+C**  
**President - Long Island Chapter**

## Long Island Chapter Officers & Committees

### ASHRAE 2013/2014 OFFICERS

POSITION	NAME	PHONE	FAX	EMAIL
President	Andrew Manos, LEED AP	631.632.2791	631.632.1473	president@ashraeli.org
President-Elect	Richard Rosner, P.E.	631.737.9170	631.737.9171	president_elect@ashraeli.org
Vice President	Thomas Fields, P.E., LEED AP	212.643.9055	212.643.0503	vice_president@ashraeli.org
Financial Secretary	Charles Lenik, P.E	516.484.1020	516.484.0926	financial_secretary@ashraeli.org
Treasurer	Don Kane, P.E.	631.737.9170	631.737.9171	treasurer@ashraeli.org
Secretary	Andrew B. Dubel, P.E.	212.967.7651	212.967.7654	secretary@ashraeli.org
Board of Governors	Richard Halley	718.269.3809	718.269.3725	bog1@ashraeli.org
Board of Governors	Lee Feigenbaum, LEED AP BD+C	212.243.2555		bog2@ashraeli.org
Board of Governors	Brian Simkins, LEED AP	203.261.8100	203.261.1981	bog3@ashraeli.org

### ASHRAE 2013/2014 COMMITTEES

COMMITTEE	NAME	PHONE	FAX	EMAIL
Programs & Special Events	Richard Rosner, P.E.	631.737.9170	631.737.9171	programs@ashraeli.org
Membership	Lee Feigenbaum, LEED AP BD+C	212.243.2555		membership@ashraeli.org
Chapter Technology Transfer (CTTC)	Don Kane, P.E.	631.737.9170	631.737.9171	cttc@ashraeli.org
Grassroots Government Activities Committee	Charles Lenik, P.E	516.484.1020	516.484.0926	ggac@ashraeli.org
Newsletter Editor	Liset Cordero	212.643.9055	212.643.0503	editor@ashraeli.org
Research Promotion	Richard Rosner, P.E.	631.737.9170	631.737.9171	rp@ashraeli.org
Historian	Thomas Fields, P.E., LEED AP	212.643.9055	212.643.0503	historian@ashraeli.org
Student Activities	Richard Halley	718.269.3809	718.269.3725	sa@ashraeli.org
Young Engineers in Training	Lee Feigenbaum	212.243.2555		yea@ashraeli.org
Webmaster	Richard Rosner, P.E.	631.737.9170	631.737.9171	web@ashraeli.org
Nominating	Michael Gerazounis, P.E., LEED AP	212.643.9055	212.643.0503	nominating@ashraeli.org
Reception & Attendance	Frank Paradiso Ken Mueller	631.632.2791 201.395.3761	631.632.1473 763.231.6924	reception@ashraeli.org
PR & Engineering Joint Council of LI	Andrew Manos, LEED AP	631.632.2791	631.632.1473	pr@ashraeli.org
Golf Outing	Peter Gerazounis, P.E., LEED AP Steven Friedman, P.E., HFDP, LEED AP	212.643.9055 212.354.5656	212.643.0503 212.354.5668	golf@ashraeli.org

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## Young Engineers in ASHRAE (YEA)

As we continue our "Back to Basics" lecture series, I'd like to follow suit and mention some of the "basics" that make YEA such an exceptional opportunity.

Young Engineers in ASHRAE is a committee of ASHRAE Members 35 years of age and younger who are dedicated to the future of the Society, the Long Island Chapter, and the industry. In addition, YEA can be an important part of a promising career.



YEA offers our youngest members:

- Technical Programs tailored to meet your needs. Studying for the PE or LEED exam? We have a study group for you!
- Leadership opportunities.
- Networking opportunities with local experts in a variety of HVAC related industries.
- Mentors for younger members.
- FUN through social opportunities. Don't miss our next trip to Brooklyn Brewery!

As your YEA chair I encourage you to take advantage of all the resources that ASHRAE has to offer. Contact [membership@ashrae.org](mailto:membership@ashrae.org) to learn more about opportunities to get involved today.

**Lee Feigenbaum**  
YEA Chairman



## Long Island Chapter - Past Presidents

1958	H. Campbell, Jr. PE	1986	Jerome T. Norris, PE
1959	Clyde Alston, PE	1987	Abe Rubenstein, PE
1960	Sidney Walzer, PE	1988	Michael O'Rourke
1961	Sidney Gayle	1989	Mel Deimel
1962	William Kane	1990	Robert Rabell
1963	Louis Bloom	1991	Gerald Berman
1964	Milton Maxwell	1992	Donald Stahl
1965	Will Reichenback	1993	Ronald Kilcarr
1966	Joseph Minton, PE	1994	Jerald Griliches
1967	Irwin Miller	1995	Walter Stark
1968	Walter Gilroy	1996	Joe Marino
1969	Charles Henry	1997	Norm Maxwell, PE
1970	William Wright	1998	Alan Goerke, PE
1971	Louis Lenz	1999	Frank Morgigno
1972	Ronald Levine	2000	Michael Gerazounis, PE, LEED AP
1973	Henry Schulman	2001	Ray Schmitt
1974	Myron Goldberg	2002	Steven M. Stein, PE
1975	John N. Haarhaus	2003	Andrew Braum, PE
1976	Richard K. Ennis	2004	Claudio Darras, P.E.
1977	Kenneth A. Graff	2005	Craig D. Marshall, P.E.
1978	Evans Lizardos, PE, LEED AP	2006	John Nally
1979	Albert Edelstein	2007	Peter Gerazounis, PE, LEED AP
1980	Ralph Butler	2008	Steven Friedman, PE, HFDP, LEED AP
1981	Robert Rose, PE	2009	Steven Giammona, P.E., LEED AP
1982	Timothy Murphy, PE	2010	Nancy Román
1983	Leon Taub, PE	2011	Carolyn Arote
1984	Raymond Combs	2012	Brian Simkins, LEED AP
1985	Edward W. Hoffmann		

## PAOE POINTS FOR 2013/2014

350Chapter Members	Membership Promotion	Student Activities	Research Promotion	History	Chapter Operations	CTTC	GGAC	Chapter PAOE Totals
296	500	505	1,270	300	1,125	735	350	4,785

## Chapter Monthly Meeting - Program for 2013/2014

<p><b>September 10, 2013 * At Westbury Manor</b> </p> <p>Dinner Presentation – Characteristics of Throw (Overhead Air Distribution Fundamentals) Presenter: ADE - Frank Bergamini <b>**1 PDH**</b></p> <p><b>Membership Promotion Night</b></p>	<p><b>February 2014</b> </p> <p><b>NATIONAL ENGINEERS WEEK</b> Feb 16 through Feb 22</p>
<p><b>October 8, 2013 * At Westbury Manor</b> </p> <p>Dinner Presentation—Optimizing Efficiency of Multiple Hydronic Boiler Systems Presenter: Joel Southwell <b>**1 PDH**</b></p> <p><b>Resource Promotion Night</b></p> <p><i>Back to Basic Session I - Evans Lizardos <b>**1 PDH**</b></i> <i>"How to Select &amp; Specify Heating &amp; Cooling Coils"</i></p>	<p><b>March 11, 2014 * At Westbury Manor</b></p> <p>Dinner Presentation—GeoThermal Systems – Design and Installation Considerations Presenter: Ray Schmitt and Panel <b>**1 PDH**</b></p> <p><b>Joint meeting with LI-Geo / YEA Night</b></p> <p><i>Back to Basic Session III – Evans Lizardos <b>**1 PDH**</b></i> <i>"Design &amp; Theory of Dedicated Outside Air Systems for Humidity Control"</i></p>
<p><b>November 12, 2013 * At Westbury Manor</b> </p> <p>Dinner Presentation—Seismic Design for Building Systems Presenter: Jim Sadler from Mason Industries <b>**1 PDH**</b></p> <p><b>Joint meeting with SMACNA Student Activities Night &amp; YEA Night as well as Membership Promotion and Upgrade Night</b></p>	<p><b>April 8, 2014 (5 PM)</b></p> <p><b>ANNUAL FIELD TRIP</b> <b>Long Beach Ice Skating Rink</b> – See the refrigeration system and hear about the storm damage and recovery. <b>**1 PDH**</b></p> <p>Dinner to follow at a local Restaurant with a "Sandy" story <b>Joint meeting with RSES</b></p>
<p><b>December 10, 2013 * At Westbury Manor</b> </p> <p><b>HOLIDAY PARTY</b> Free Buffet Dinner for Members <b>VISIT FROM DRC - Joseph Furman</b></p>	<p><b>May 5<sup>th</sup>, 2014 * Cherry Valley Club, Garden City, NY</b></p> <p><b>ANNUAL GOLF OUTING</b></p>
<p><b>January 14, 2014 * At Westbury Manor</b> </p> <p>Dinner Presentation- Automatic Flow Balancing Presenter: John Knowles <b>**1 PDH**</b></p> <p><i>Back to Basic Session II - Evans Lizardos <b>**1 PDH**</b></i> <i>"Design of Variable Air Volume Systems"</i></p>	<p><b>May 13<sup>th</sup>, 2014 * At Westbury Manor</b></p> <p>Dinner Presentation—Introduction to Ammonia Refrigeration Systems Presenter: Douglas T. Reindl, Ph.D., P.E. <b>**1 PDH**</b></p> <p><b>ASHRAE DISTINGUISHED LECTURER</b></p> <p><b>Student Activities Night / Refrigeration Night</b></p>
<p><b>January 2014</b> </p> <p>ASHRAE Winter Meeting Jan 18-22 New York Hilton 1335 Avenue of the Americas, New York, NY</p>	<p><b>June 10, 2014 * At Westbury Manor</b></p> <p><b>Free Buffet Dinner for Members</b></p> <p><b>PAST PRESIDENTS NIGHT &amp; OFFICER INSTALLATION STUDENT SCHOLARSHIPS TO BE AWARDED ASHRAE History Quiz and prize Give-A-Ways</b></p>
<p><b>February 11, 2014 * At Westbury Manor</b> </p> <p>Presentation #1—Leed Ver 4 Rating System &amp; ASHRAE 191P Water efficiencies in Bldgs. Presenter: Rich Gerbe <b>**1 PDH**</b></p> <p>Presentation #2—Desiccant Dehumidification System for Energy Efficient Temperature &amp; Humidity Control Presenter: Mark Piegay <b>**1 PDH**</b></p> <p><b>Joint Meeting with USGBC and IFMA-LI Resource Promotion Night / Membership Promotion Night</b></p>	<p><b>August 2014</b></p> <p><b>Chapter Regional Conference (CRC) Region I Bi-State Chapter Hosting August 14-16, 2014</b></p>

## Board of Governors Meeting Minutes

**Attendees:** Andrew Manos (AM); Rich Rosner (RR); Don Kane (DK); Richard Halley (RH); Brian Simkins (BS); Carolyn Arote (CA)

The meeting was called to order at 5:00pm by Andrew Manos – President. On a motion by RH (seconded by RR) the previous meeting minutes, as published in the *Sounder*, were approved. AM noted the good turnout by the Chapter at the ASHRAE Winter Conference and AHR Expo. All BOG/Committee chairs were reminded to update their PAOE points each month. President-Elect training has been approved for RR and he will be attending the training in April. AM will look into booking another Chapter Fishing Trip this year, tentatively scheduled for Friday, June 20, 2014.

**President-Elect/Programs:** RR noted that speakers have been booked for all remaining meetings this year. RR and DK will meet with representative of Long Beach to review tentative program for the April Field trip. RR noted that ADE will sponsor the cocktail hour at the dinner following the field trip.

**Chapter Technology Transfer:** DK noted that we should start promotion for the DL prior to May's presentation, to increase attendance. DK and RR will work with Long Beach to coordinate the Field Trip presentation. RR (a member of TC 5.7) will give a brief presentation at the general meeting on the role of Technical Committees in general and TC 5.7 in particular.

**Treasury:** DK reported the current balance of \$9,120.96. The Tax filing for FY 2013-2014 will be mailed on or before the February 15, 2014 extended filing date. Documentation was sent to IRS confirming that the request for extension was filed in a timely manner (USPS signed and dated return receipts). Once the tax filing is complete, collection of unpaid advertising revenue will be a priority.

**History:** RR provided AM with contact information for Carl Graber to AM to arrange for an interview. Carl has a long history in the HVAC field and has stories of the predecessor to ASHRAE.

**Honors and Awards:** BS noted that we are still looking for candidate projects for submission.

**Research Promotion:** RR reported that the Chapter has received \$10,405 towards the goal, to date. RR has reached out to 50 companies and received responses from 41. The deadline for getting in the book is February 12, 2014. \$5,500 has been collected thus far with \$7,250 remaining to be collected. All donors have been called or emailed. Corrections to the email list to eliminate "bounces" have been sent to Liset, as corrections are found.

**Student Activities:** RH has arranged to meet with Eugene Silberstein at SCCC on February 18, 2014. He noted that Eugene also gives a class on "Psychometrics Without the Tears" that some of the members may be interested in. RH will schedule meetings with Stony Brook either at the end of February or sometime in March.

**Webmaster:** RR reported that, in general, the website has been updated promptly. The FTP site has not been used much.

**GOLF:** AM noted that the date has been confirmed for May 5, 2014. He will make sure that venue has the new ASHRAE logo details.

**OLD Business:** CA reported that the first printing of the meeting ticket books has been completed. AM reported that the paperwork for the chapter dues change has been processed through the Society. AM has made arrangements for the ASHRAE webinar webcast to be held at SUSB.

**New Business:** AM will check into arrangements for a Fishing Trip on June 20, 2014. CA will look into potential dinner venues in Long Beach, after the Field Trip.

The next meeting will be held on March 11, 2014 at 5:00PM, Westbury Manor

The meeting was adjourned at 6:00PM.

**Andrew B. Dubel, P.E.**  
**Chapter Secretary**



## March Program



**Presentation #1 – Back to Basics Program**  
***“Design of Theory of Dedicated Outside Air  
 Systems for Humidity Control”***  
**By Evans J. Lizardos, P.E., LEED AP**  
***ASHRAE DISTINGUISHED LECTURER***



**Presentation #2**  
***“GeoThermal Systems -  
 Design and Installation Considerations”***  
**By Ray Schmitt**

<b>DATE:</b>	<b>TUESDAY, MARCH 11, 2014</b>		
<b>Time:</b>	6:00 PM - Cocktails and Hors D'oeuvres 6:30 PM - Dinner Presentation #1 7:30 PM - Dinner Presentation #2 8:45 PM - Conclusion	<b>Fee:</b>	\$ 40.00 Member \$ 45.00 Guest \$ 15.00 Student
<b>Location:</b>	<b>WESTBURY MANOR</b> (516) 333-7117 Jericho Tpke (South Side), 3/10 of mile east from Glen Cove Rd., Nassau County, NY. <b>Directions are posted at @ <a href="http://www.ashraeli.org">www.ashraeli.org</a>.</b>		
<b>Presentations:</b>	<p><b>Presentation #1 – Evans Lizardos, PE, LEED AP, will be presenting Part III – Design of Theory of Dedicated Outside Air Systems for Humidity Control of the ‘Back to Basics’ series.</b></p> <p><b>Presentation #2 -</b> The objective of this presentation is to establish Geothermal Systems as a viable and energy saving alternative system to the established conventional heating and cooling methods and systems. The attendees will be provided with design and installation considerations for the various types of “GeoExchange” Heat Exchanger Loops. Dave Reardon and Dan Goodwin of Greenway Environmental Management will review the types of installations and how to determine/select the best type of “GeoExchange” Loop for a given project. PSEG-Long Island will provide financial rebate information to help defray the initial (Construction) Cost of Geothermal Systems. Energy conservation and Environmental issues and concerns will also be discussed.</p> <p><b>All attendees will receive <u>2 PDH's</u>.</b></p>		
<b>About our Speaker(s):</b>	<p><b>Evans J. Lizardos, P.E., LEED AP</b> is a founder and President of Lizardos Engineering Associates, P.C. A Mechanical Engineering graduate of Polytechnic Institute, Evans credentials include: Professional Engineer (licensed in 12 states), LEED Accredited Professional, Certified Energy Manager, Demand Side Manager, Indoor Air Quality Professional and Cogeneration Professional. An ASHRAE Fellow, Evans has spoken nationally in his role as <b>Distinguished Lecturer</b> on topics such as Sustainable Design for Green Buildings, Water and Air-Side Design, Efficient Central Plant Design, Piping, and Combating Mold in Building Design.</p> <p><b>Ray Schmitt</b> is the HVAC Department Manager for Wales Darby, Inc. Ray is a SUNY Farmingdale Graduate of the Air Conditioning Technology Curriculum where he was President of the Society of Thermal Technicians. Ray has had a very diverse career in the HVAC Industry- including Equipment Manufacturer Research and Development, Mechanical Contracting (20 Years), VRF Manufacturer Sales, and for a Manufacturers' Representative (17 Years). Ray served as ASHRAE LI Chapter President in 2001 and is a New York State Certified trainer for the Continuing Education Unit Presentations that he has written and has been providing for over ten years. He has been happily married to Linda for 45 years, has two daughters and two granddaughters.</p>		

**Attendees  
Will Earn  
2 PDH's!**

## Research Promotion

I see last year I was reporting that we were half way to goal at this time. This year I am so happy to say "Bingo" we have met the goal already. I didn't set my sights on just the normal goal though this year so I still have a ways to go and hope to reach beyond the High Five goal, which is the next level, and make it to the top goal at the Challenge level. I have a good tracking system for the numbers and all things are pointing to reaching that high goal. About a dozen of you need to pay up still for the Product Directory which is at the printer now and will be available on the web-site at <http://ashraeli.org/productdirectory.html> shortly also. We will be running 50-50's at the rest of the meetings and of course we have the golf outing to help bring in some funds. I see some new names who have given directly to the society under our chapter and I see some dedicated yearly donors have returned once again. Thanks so much and I hope to see a few more names there before the year is up in June. Doesn't it just sound nice to say June!! I hope I don't hear anyone complaining of how hot it is this summer!!!

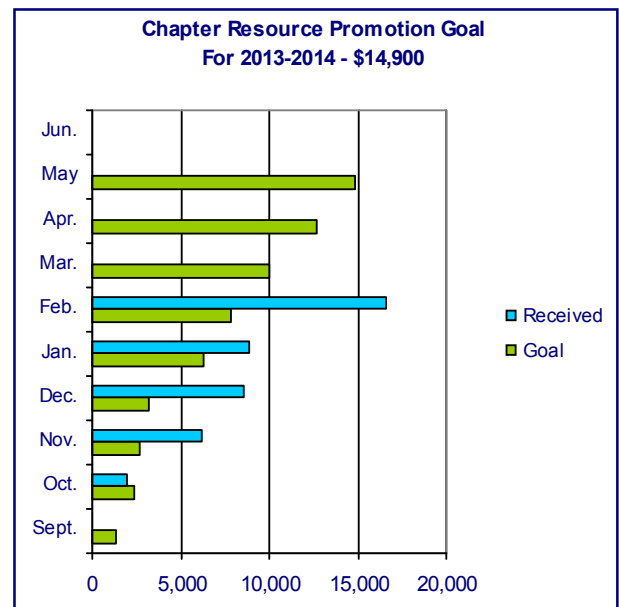


We have sponsors for this March and April meetings and are looking for sponsors for May and June still. It has really helped us keep the cost of our meetings down with the generosity of our sponsors. Just to mention again we had:

### Meeting Sponsors, Thank You

Sept –	Daikin
Oct –	ATI
Nov –	Trane
Dec –	Holiday Party
Jan –	MGE
Feb –	Apollo
To sponsor yet:	
March –	Accuspec
April –	ADE
May –	Open
June -	Open

Like last month we have two lecturers planned and there will be 2 PDH's given out for these lectures this month. Evans Lizardos will be returning with his back to basics series presenting "Design & Theory of Dedicated Outside Air Systems for Humidity Control" and Ray Schmitt (The Rev) from Wales Darby will be presenting "Geo Thermal Systems, design and Installation Considerations". The LI- GEO group will be joining us for this meeting so if you see some new faces that's probably where they are from. Again please help support ASHRAE in any way you can.



### CONTRIBUTIONS CAN BE MADE IN THE FOLLOWING WAYS:

- 1) You can mail your checks, made out to ASHRAE Research Promotion, to:  
Richard L. Rosner, P.E.  
ASHRAE Research Promotion Chair  
c/o Nassau Suffolk Engineering & Architecture, PLLC  
801 Motor Parkway, Suite 103  
Hauppauge, NY 11788
- 2) You can bring your check to any of the meetings and give it to me. I will mail it into headquarters.
- 3) You can contribute via PayPal from the ASHRAE LONG ISLAND web site just click on the donate button.
- 4) You can contribute directly on-line. [www.ashrae.org](http://www.ashrae.org)

\* Please make sure you accredit your contribution to the LONG ISLAND CHAPTER 006 \*

Thank you again for all of your support! I hope to see you at the March Meeting.

**Richard L. Rosner, P.E.**  
**Research Promotion Chair**

## CTTC - Geothermal HVAC a Down to Earth Approach to Comfort Heating/Cooling

It seems that in matters of HVAC, as most other human endeavors, we are always looking for "something for nothing", forgetting, usually, the sage advice offered by the acronymically inclined as "TANSTAAFL" (there ain't no such thing as a free lunch)! However, we can sometimes make the most of what nature has given us to improve the apparent efficiency of the comfort cooling and heating systems we design and install. Heat is such a elegantly simple quantity, it just wants to flow from a higher temperature source to a lower temperature sink. Where we run afoul of mother nature is when the temperature of our source is not high enough, or the temperature of our sink is not low enough. Given a mild enough climate, the typical air-source heat pump does a relatively effective job of migrating BTU's between conditioned spaces and the great outdoors. When conditions get extreme, however, the equipment that was adequate for heating and cooling may no longer be up to the task, resulting in an uncomfortable environment and, perhaps, an excessively high utility bill. Enter the geothermal HVAC system; while not a "free lunch", it permits us to make more efficient use of the BTU content of the earth beneath us.



Technically, anything involving the earth and the flow of heat could correctly be lumped under the "Geothermal Energy" category. We will, for purposes of this article, limit ourselves to that subset comprising geothermal heat pumps (leaving the discussion of the use of geothermal steam to generate electricity at the Geysers in the Mayacamas Mountains north of San Francisco, and the geothermal sourced central heating district in Reykjavik, Iceland which supplies 90-95% of the areas heating needs, to another time and place). Sometimes referred to as ground-water sourced heat pumps, they may also utilize the thermal capacity of lakes and/or rivers, to achieve their efficiency.

Geothermal heat pump technology, while not particularly new (it has been in used in the United States for over 50 years), has been more visible in recent years partially due to the drive to "green" approaches to comfort heating/cooling systems. The availability of federal and local monetary incentives certainly played some role in this increased attention to this approach to HVAC. The underlying principle of the Geothermal heat pump is the use of the relatively (thermally) stable layer of earth five (5) feet or more below the surface to provide a source for heat (when in heating mode) and a sink for heat (when in cooling mode). In some cases, the strata of earth utilized may be several hundred feet below grade, which introduces other issues (pumping loss being one of them).

Once one has decided to employ this technology, there are a number of choices to be made, all of which generally boil down to an economic analysis of initial installed cost (which can be 150 - 500% of the cost of a air-sourced heat pump) versus the payback period due to reduced operating costs. These choices include; *Open-Loop vs. Closed Loop, configuration of coils, materials to be used and the availability of financial incentives.*

**Open Loop Systems** represent, usually, the lowest "first-cost" approach to implementing geothermal heat pump technology. Subsets of the open-loop technology include "pump and dump" systems, without an injection well; "pump and dump", with an injection well and lake supply type systems. In all of these cases, a "once-through" pass is made though the heat exchanger by the water. The simplest system will source the water from a well and discharge the "return" water at any convenient point where it will percolate into the ground. A variation of the pump and dump is to add an injection well which can handle the rated flow of the system and recharge the water into the aquifer from which it came. Another open loop approach is to draw the water from a lake and return it to the same lake, at a point sufficiently removed from the point where it is taken from to preclude recirculation and inadequate mixing of the discharge.

All of the open-loop approaches, if they are permitted by local ordinances, tend to be the lowest cost to install, however, they are all adversely affected by pH, mineral content and the presence of anything which could plug-up the heat exchanger. As the effect of pH on the erosion of pump components is accelerated at higher temperatures, the warmer the climate, the more need for a neutral ph.

These open loop systems require approximately 1.5 gallons per minute of water, PER TON of capacity. This is not an insignificant amount of water, especially in areas suffering from shortages and droughts, and in many cases regulation will not permit this use, or, if the use of injection wells for recharge are permitted, additional treatment requirements may exist to ensure that the water returned to the aquifer is of the same quality as the water drawn out.



## CTTC - Geothermal HVAC a Down to Earth Approach to Comfort Heating/Cooling (Cont'd. from Page 8)

Further, since the water chemistry is difficult, if not impossible, to control with an open loop system, maintenance costs associated with repair and/or replacement of heat exchangers and piping damage caused by high or low pH or other contaminants will tend to be much higher than for a closed loop system. For this reason, these systems, even if permitted, will frequently fail a life-cycle economic analysis due to the increased need for maintenance and repair, as well as shorter equipment lifetime.

**Closed Loop Systems** generally will have a higher first cost than the open loop installations. This additional cost can be recovered in 5-10 years of operation, based on reduced maintenance needed, compared to the open loop systems. This cost, however, can be more accurately estimated as much of the repair/replacement work needed for open loop systems will not be required. As the same water is reused in the closed loop, the system operation is independent of available water supply capacity and may incorporate water chemistry correction as needed to maintain the correct pH to avoid equipment degradation.

The ground loops used in the closed system may be of several configurations, all of which will require proper design, taking into account the characteristics of the ground in which they are buried, to ensure that the earth area used is neither overheated or overcooled.

Once the decision is made to use a closed loop system, a choice has to be made as to loop orientation, topology and material. Generally, parallel connection of loop elements, with reverse-return connections will result in balanced flow to all loop branches. Loops may be installed in a vertical or horizontal orientation.

The **vertical orientation** will place the loop in deeper, more thermally stable ground, however, the pumping losses associated with deeper loop piping may become significant. While the vertical loops require significantly less real estate for installation, specialized drilling equipment and expertise may be required to properly install the loops. The pumping losses may be offset by the total overall piping length to be less than for an equivalent horizontal installation. At least one vendor is supplying a pipe-in-a-pipe configuration requiring only a single hole for each vertical branch and eliminating the need for a "U" bend at the bottom of the loop.

The installation of **horizontal** loop elements can be accomplished with a back hoe or trencher, typically at a depth of 5-10 feet below grade. Where extreme weather conditions can occur (resulting in a higher or lower temperature than the design values) over-design of the piping system may be necessary to allow for operation during these extreme weather events. The horizontal coils will typically require at least 1/2 acre for a reasonably sized house. A variation of the horizontal coils is the **"slinky"** configuration, where coils of piping are splayed out on the bottom of an excavation and back-filled. Although more piping is contained in the same square foot area than a normal horizontal installation, there exists the possibility of localized overheating of coils where two or more contact one another which can result in deformation of the tubing.

**Working fluid** choices for the closed loops can be plain water or a water-antifreeze mixture (for cold climates). If antifreeze is necessary, care must be taken to avoid contamination and/or toxicity issues.

**Materials** used for the buried loops are generally High Density Polyethylene (HDPE) or cross-linked polyethylene (PEX). HDPE is used more for vertical runs and PEX where flexibility is required. HDPE requires fusion welding to join sections. PEX may be joined by various mechanical means, depending upon the supplier of the material. In some cases, PEX tube with an oxygen barrier may be required, depending upon the material of the pumps and other equipment in the flow path.

In summary, the primary considerations in making a choice of system will more than likely be local regulations and economic analysis. If water consumption or contamination is an issue, the closed loop system would be preferred. However, if the payback period from savings in operational and maintenance costs is too long, the owner may not proceed with this technology, unless incentives are available from local, state or federal level programs.

**Don Kane, P.E.**  
**CTTC Chair - [cttc@ashraeli.org](mailto:cttc@ashraeli.org)**

## Membership

Through the past months we've enjoyed a series of lectures about some of the most sophisticated HVAC applications in the world. Throughout, we've maintained balance by offering a "Back to Basics" lecture series that underscores the importance of doing fundamental tasks right. In that same spirit, I'd like to go ahead and review one of the basic principles that helps build value in ASHRAE: uninterrupted membership.



So why is renewal and uninterrupted membership so important? Did you know that there are four membership grades with different benefits, and that they are based on your time in ASHRAE?

Many people enter ASHRAE as students. While students may not hold office in ASHRAE, they can participate in technical committees that essentially shape the industry. In addition students can begin to network with HVAC professionals and build bridges that will serve them well when they are ready to enter the workforce. In terms of building a solid resume, I can't think of a better way to spend \$20.

After graduation, students can advance to Affiliate Members. For three years this level of membership allows them to keep their fees relatively low while they build their network and advance their careers. As an added benefit, in addition to the obvious benefits such as access to discounted ASHRAE publications, affiliates are eligible for various products and services to include Group Health Insurance Benefits that are only available to ASHRAE members.

Affiliate members naturally advance to Associate Members after 3 years. Now that you have experience you are ready to get involved and change the world...or at least the way it's heated and cooled. Associate Members can participate in the governance of their chapters and take advantage of leadership opportunities all over the globe.

After 12 years, you become a Member. At this point you're confident in your professional skills, comfortable in leadership positions, and well established in the industry. Even better, you are eligible to hold office and vote all the way up at Society level. As an ASHRAE Member, you really can change the world through ASHRAE's global reach.

Unfortunately, none of this is possible if you allow your membership to lapse. Even if you've been a member for 20 years, if you allow your membership to expire (90 days past due) you lose your seniority, and the clock goes back to zero when you come back. Don't let this happen to you! Don't lose what you've worked so hard for. Renew your membership and hold your esteemed place in the conversation.

Don't forget to check our website at [www.ashraeli.org](http://www.ashraeli.org) for the most current information about your Long Island chapter.

Are you interested in being published? Do you have a testimonial about the benefits of ASHRAE that you'd like to share? If so, then please forward it to me at [membership@ashrae.org](mailto:membership@ashrae.org) for publication in our monthly newsletter.

Cheers!

**Lee Feigenbaum, LEED AP BD+C**  
**Membership Chairman**

## Student Activities

In February 12 the students of the HVAC/R program from Suffolk County Community attended a hand on demonstration of an actual overhaul of a Low Pressure 500 ton Centrifugal Chiller at the Eastern Campus Central Energy Plant located in Riverhead.

Professor Eugene Silberstein gave his class a detailed overview of the fully assembled Chiller explaining how it works along with identifying the key components. Next the students had the opportunity to get a tour of the disassembled chiller led by the servicing companies Technicians. The students got a look at parts such as the volute, impeller, inlet guide vanes, economizer and an explanation of how the refrigerant moves through the chiller.



We want to thank to the Mechanical Servicing Company and the SCCC staff for facilitating this unique opportunity to give some real life experience to these students of our industry.

If you are involved in a project that you could share with our Students please contact me at [rhalley@trane.com](mailto:rhalley@trane.com)

Our next Student activities night will be Tuesday May 13<sup>th</sup>

As always I looking for slightly use ASHRAE handbooks that you are no longer in need of so that we may give them out to students that can put them to good use.



**Richard Halley**  
**Student Activities Committee Chair**

## Grassroots Government Activities Committee (GGAC)

### Governor Cuomo Announces NY Green Bank Is Open for Business Albany, NY (February 11, 2014)

Governor Andrew M. Cuomo today announced the start of business operations for the New York Green Bank, which will work to stimulate private sector financing and accelerate the transition to a more cost-effective, resilient and clean energy system. The largest green bank in the nation, the NY Green Bank is seeking proposals from private sector lenders, investors and industry participants that facilitate the financing of creditworthy clean-energy projects in New York State.



"The NY Green Bank will be the catalyst for significantly accelerating the flow of private capital to energy efficiency and renewable energy projects and will send a message to the financial markets that expanding our clean energy economy is a priority for New York State," Governor Cuomo said. "Today's announcement that the NY Green Bank is 'open for business' confirms the State's unwavering commitment to a more cost effective and resilient energy system, to creating green jobs and to providing a cleaner environment for all New Yorkers."

Through a request for proposal (RFP), the NY Green Bank seeks financing proposals from industry participants and financial institutions in which NY Green Bank participation will facilitate private market financing of renewable energy and energy efficiency projects that have difficulty accessing financing due to market barriers.

Eligible proposers include energy service companies, developers, equipment manufacturers or others that provide equipment, materials and/or services related to renewable energy and energy efficiency projects along with financial institutions or other third-party capital providers that are financing, or intending to finance, such projects.

"New York is taking the first step with this RFP to envisioning its clean energy future whereby private investment is leveraged to scale-up the development and deployment of energy efficiency and renewable energy projects across the state," said Richard Kauffman, Chairman of Energy and Finance for New York and Chairman of NYSERDA. "This step combined with other efforts the state is undertaking to expand its cleantech economy will make New York a more affordable, sustainable and energy efficient place in which to live and work."

"We are excited to start engaging the market and finding innovative ways to bring more attractive clean-energy investments within reach of the private sector," said Alfred Griffin, President, NY Green Bank. "This announcement underscores Governor Cuomo's commitment to establishing public-private partnerships that can expand clean-energy markets, drive scale in deployment of commercially proven technologies, and enable investors and businesses to take advantage of attractive clean-energy project opportunities across the State."

Projects to be supported by the NY Green Bank can include a broad range of commercially proven technologies, including solar, wind and other renewable energy generation technologies; residential and commercial/industrial energy efficiency measures; electricity load reduction; on-site clean generation, and similar projects that can support the State's clean energy objectives.

Examples of the types of investment partnerships the NY Green Bank may engage in include credit enhancements, co-investing with the private sector in a loan fund for clean energy, loan warehousing/short-term project aggregation or other similar arrangements.

Last December, Governor Cuomo announced the initial capitalization of \$210 million for the NY Green Bank, including \$165 million redirected from other clean-energy programs by the New York State Public Service Commission and \$45 million from the Regional Greenhouse Gas Initiative. This was the first step in capitalizing the \$1 billion NY Green Bank initiative announced by Governor Cuomo in his 2013 State of the State address. A recent study found that the NY Green Bank's self-sustaining model can drive significant value for the use of public dollars by leveraging multiples of private capital, allowing the State to benefit from more clean-energy projects, jobs and investment.

For more information regarding proposals for financing arrangements through the NY Green Bank, please visit [www.greenbank.ny.gov](http://www.greenbank.ny.gov).

**Charlie J. Lenik, P.E.**  
**Grassroots Government Activities Chair**



## History - The First Century of Air Conditioning – John Gorrie, The Visionary

Dr. John Gorrie of Apalachicola, Fla., is recognized as the first to propose, scientifically discuss, construct and operate a refrigeration machine for comfort cooling. What perhaps began as an attempt to save the lives of a few seamen from malaria and yellow fever altered the living pattern of the civilized world.



### Florida in the 19th Century

When John Gorrie arrived in steamy Apalachicola in 1833, there were really two Floridas: East Florida, administered from Saint Augustine, America's first European settlement in 1565, and West Florida, administered from Pensacola, first established by the Spaniards in 1698. Four hundred miles of impenetrable jungle separated the two cities. Travel between them required about 24 days sailing time around the peninsula.

Florida, which had been ceded to the U.S. in 1821, was still a Territory when the young doctor decided to open practice there. The governor of the Territory was William Duval, who had followed Andrew Jackson's brief tenure. "Old Hickory" - a sobriquet attached to Jackson by his many admirers - had first come to the Territory fifteen years earlier when he briefly invaded Spanish Florida to quell the Seminole Indians who were "harassing" the frontier settlements. This was the period of the First Seminole Wars. After his first year as governor, Jackson moved onto the national scene, becoming the seventh president of the United States in 1829. Old Hickory was in the White House when Dr. John Gorrie hung out his shingle in Apalachicola.

At the end of two-and-a-half centuries of Spanish occupation, Florida was still little more than a frontier military outpost dependent upon an annual subsidy from the Spanish Crown for its survival. But with the ceding to the U.S., growth and commercial development leaped forward.

The first territorial census in 1825 was incomplete and unreliable, but estimates put the population of Apalachicola at 5,780. The entire population of Florida was about 28,000, with only 317 persons in South Florida and around 20,000 Apalachee and related tribes in the Western panhandle.

Before the advent of the railroad, city-building in the U.S. took place only along coastal and river ports. Apalachicola is strategically situated on the Bay of Apalachicola and the mouth of the Apalachicola River. An 1837 map shows a well laid-out town with a rationally designed scheme to utilize the prevailing breezes and provide maximum thermal comfort in this semi-tropical climate. Great attention was paid in those days to proper community design of streets and buildings; there was a "natural" approach to working with the environment to achieve comfort and conserve energy.

Before the coming of the railroads in the late 1850s gave the South many inland cotton depots, Apalachicola was the sole outlet for all cotton grown in the Chattahoochee Valley of Georgia and Alabama as well as the Florida panhandle. The second largest seaport in the Gulf, it was by no means a backwoods town by contemporary standards. Tall ships from around the world sailed in and out of this vital cotton port in great numbers; more than 200,000 bales of cotton moved through the port in one year. Summers, it was not unusual to see the port hospital crowded with seamen afflicted with malaria and yellow fever. It was suspected that they were the source of the periodic fever scourges that swept through this semitropical area. In 1840, nearby St. Joseph was ravaged by epidemics of cholera and yellow fever and more than 100 persons died of the fever in Apalachicola in 1841.

### Why Apalachicola?

When Dr. John Gorrie first arrived in Apalachicola, a large segment of Apalachee Indians was still living near the river. But in 1840, the remnants of this once large nation was removed by the federal government and resettled on a western reservation.

Few historians have examined the hybrid nature of antebellum America; its unique ethnic and social mix, its covert miscegenation among black, white and red-skinned people despite the pronunciamientos to the contrary. While capitalism flourished in the North with a diversified economy founded upon industry, manufacturing, commerce, agriculture, finance and a free, wages-based labor market, the mode of production in the South was slavery based on the plantation system. Mainly agricultural with labor provided by slaves held as private property. Florida, not yet a state, strongly favored slave holding and though she gained statehood in 1845 while Dr. John Gorrie was mayor of Apalachicola, she left the

## History (Cont'd. from Page 13)

Union in 1861, a secessionist State.

Why did John Gorrie come to Florida? Why did this young, exceptionally talented and well-educated doctor, who had taken his training in New York and first practiced in his hometown of Charleston, S.C., decide to settle in Apalachicola? Charleston, later the scene of the precipitating act of the Civil War, was one of the most important and cultured cities of the Union. It had everything to offer a handsome young doctor who was accustomed to wearing velvet trousers and an embroidered waistcoat, buckled shoes, and lace cuffs [with] a coat that came from Paris and fitted him like a glove.

Very little reliable information about this remarkable American is available to researchers, but what is known about him leads us to the assumption that his main motivation to practice medicine in Apalachicola was caring for patients suffering from malaria and yellow fever. Another clue may perhaps lie in his close association with Dr. Alvin Wentworth Chapman. Chapman, a Yankee from Southampton, Mass., came to Apalachicola six years after Gorrie. They became best friends. After graduating from Amherst with honors, Chapman set up practice in Apalachicola because, "I wished to escape the 'blue' Presbyterianism, predestination, damnation and all the rest that made life, particularly the Sabbaths, miserable" in New England.

### Background and Education

The early history of John Gorrie is shrouded in mystery. Like that more famous American, Alexander Hamilton, he was born on St. Nevis in the West Indies, and like Hamilton, his father was of Scottish descent. His mother, however, as one story goes, was a young Spanish beauty who fled Spain with the middle-aged Captain Gorrie at the turn of the century. When political problems broke out in St. Nevis, Gorrie brought his young wife and baby son to Charleston for safety. Some reports have it that John was actually born in Charleston after his pregnant mother arrived from St. Nevis. At the time, 1803 to 1804, the U.S. population was about 5.5 million - less than one half the number now living in Florida. Thomas Jefferson was president. Waterpower was the major source of energy.

After settling his wife, Captain Gorrie returned immediately to St. Nevis and John never saw his father again. But monthly remittances arrived from St. Nevis, and mother and son lived without want. The young Gorrie attended the finest private schools in Charleston.

In his early twenties, Gorrie attended the College of Physicians and Surgeons of the Western District of New York, popularly called the Fairfield Medical School, and earned his Doctor of Medicine at the age of 24. He returned, after his graduation, to Charleston, home of his mother, but moved to Abbeville after her death. It was in Abbeville that he came to know the son of John C. Calhoun and through him, the famous man himself. Gorrie became a regular guest at the Calhoun house and undoubtedly some of Calhoun's democratic spirit - as well as his slave-holding philosophy - colored the young physician's political views.

The commercial history of Apalachicola begins just around the time Gorrie established his residence there. The bank of Apalachicola incorporates in 1839 (capital, \$500,000). Two newspapers, *The Gazette*, and *The Currier*, are published that year. The first racetrack in Florida is opened, and many elegant homes are constructed in Apalachicola and nearby St. Joseph. But they build no manufactories here. The desperate resistance of Northern craftsman to subjection by the machine in those early throes of the Industrial Revolution does not stir the agricultural South where King Cotton reigns.

It is axiomatic that mechanical invention will flourish naturally in technological environments where the demand for creative pursuit is high and where the inventor has ready access to sophisticated tools, skilled labor and well-outfitted job-shops in which to fashion working models. It comes as a surprise, therefore, to see a high-tech invention originate in a slave-holding, retrograde agricultural society. Even more remarkable is Gorrie's *catalogue raisonne*.

### Man of Many Talents

John Gorrie was a true Renaissance man. One year after his arrival in Apalachicola, the young physician-scientist was appointed postmaster - "salary \$131.20 per annum." He became mayor in 1837. Physician, physicist and inventor, he served also at various times as city councilman, treasure and president of the Branch Bank of Pensacola. He was one of the first doctors to practice in the U.S. Marine Hospital system - today the Public Health Service - and developed many of the principles of public hospital administration. He supervised the draining of swamps around the bustling port city, and during his term as mayor he recommended a plan for a city hospital for poor and needy patients. He was responsible for

## History (Cont'd. from Page 14)

the first ordinance requiring inspection of the city market by the city marshal, avoiding rotting meat and fish and overripe fruit. All this activity notwithstanding, the good doctor made time to become the founder of Trinity Church of Apalachicola.

The *Journal of the American Medical Association* had this to say about him in 1893: "Gorrie is said to have been one of the foremost practitioners in the South in his day, and to have made many valuable contributions to the medical literature...the entire country should be interested in securing for this devoted physician and neglected inventor the distinction he deserves as a scientific student of medical problems, working for the benefit of his patients and devising a great sanitary invention calculated to be of ever increasing benefit to humanity."

Gorrie's dedication to community affairs and time-consuming civic duties notwithstanding, he was constantly performing scientific experiments. Thoroughly familiar with the work of Cullen, Faraday and Perkins, his investigations into cold led him to conclude that ice was a "reservoir of electricity," Essential to his patients' health. He was convinced that he could save the lives of his dying malaria patients if only he could reduce the room temperature in his hospital. As early as 1842, he built his own galvanometer to measure the connection between electrical current and blood flow.

### Searching for a Cure

Malaria, Dr. Gorrie believed, was a vapor, and that somehow there was a connection between this vapor and the swamp. He was unknowingly in hot pursuit of the mosquito. Mosquitoes were a dreadful nuisance in tropical Florida and caused much suffering, particularly to sedentary patients who were defenseless against the critters. To protect patients from these terrible insects, gauze curtains were hung around the patients' beds. These curtains were thought "to be sifters of the atmosphere and decomposers of the fevers" and that they had a neutralizing effect on the vapors of the swamp. Atmospheric impurities were ever present in Gorrie's mind. He believed all diseases stem from three principle causes; atmospheric impurities, contagion and debauchery. "Debauchery" meant overeating and overdrinking, and these excesses reduced the body's resistance to diseases. Though malaria was called "summer sickness," the connection between the mosquito and the prevalence of the insect in summertime had not yet been made.

In an 1841 account of Dr. Gorrie's visit to investigate the deaths from yellow fever in St.

Joseph, one newspaper wrote; "Dr. Gorrie brought with him from that place (St. Joseph) a list of 27 deaths, 20 of them in eight days, and we have heard of six more since his arrival." That summer, 47 persons died in Apalachicola. It was said that there were "ghost ships adrift in the Atlantic with a cargo of dead men aboard - dead from the fevers."

As early as 1842, Gorrie devised an air-conditioning system to treat his fever-stricken sailors by blowing air over buckets of imported ice into the sickrooms. No description of the air-blowing mechanism has thus far been discovered. In the age before electrical power (Thomas Edison's first electrical power plant in the world opened in 1882 on Pearl Street, New York City). Was the "blower" steam driven, manually operated by a slave, or was some kind of wind sail or wind scoop used? Ice in those years was delivered to the Gulf ports by sailing ships out of Boston and New York where it was harvested from northern lakes during winter and stored in insulated icehouses.

### Ice Harvesting

Icehouses along northern wharves were a major industry. Endless chains (the forerunner of the transmission belt assembly line) transported ice between icehouse, schooner and wagon. Tools and equipment long since out of use, such as horse-drawn ice planes, ploughs, and cutters, breaking-off bars, ice saws, caulking bars, grapples, hoisting tongs, skids, etc., constituted a good size supporting industry. Once in the home, the ice was stored in a refrigerator or icebox not too different from present-day domestic refrigerators. All this represented large capital investment and jobs. Vested interests in those industries strongly influenced the resistance bulwarks Gorrie encountered once he had perfected his ice-making machine and sought to market it.

But shipping schedules in those days were unreliable. Storms around Cape Hatteras and the Florida coast accounted for many shipwrecks. Further shipping delays were incurred by fierce competition between Northern and Southern businessmen who fought over bank credits and prices of delivered ice. The retail price of Boston lake ice - when available at the Gulf ports from Apalachicola to Brownsville before the Civil War was 10 cents a pound- expensive indeed. Dr. Gorrie

## History (Cont'd. from Page 15)

determined to find a better way. What better way than to make it? So, armed with his knowledge of the laws of thermodynamics and his understanding of the transformation of energy, he set about to develop his rational cold-air refrigerating system to provide cold for his fever patients.

### The Cold Air Machine

Writing in the *Apalachicola Commercial Advertiser* in 1844 under the *nom de plume* "Jenner," Gorrie proposed that "the houses of warm countries be built with equal regard to insulation, and a like labor and expense be incurred in moderating the temperature and lessening the moisture of the internal atmosphere," to reduce the threat of malaria. He theorized that elevated temperature and high humidity "prevents a large portion of the human family from sharing the natural advantages they possess" and "causes mental and physical deterioration to the native inhabitants."

In another article titled "On Prevention of Malarial Disease" (June 1, 1844) he wrote: "The proposed engine for ventilation, and cooling air in tropical climates by mechanical power is simple in its construction, requires but a small expense of power, admits of being complete in its operation, and its parts if well made are not liable to be injured by wear. It consists essentially of two double-acting force pumps - one for condensing, and the other for rarifying air - and an air magazine or receptacle for condensed air. It may be placed in any part of a house or ship...."

The doctor went on to describe the function of his compressed air refrigerating system and correctly predicted a future when "fruits, vegetables, and meats would be preserved in transit and thereby enjoyed by all."

About three years were required to perfect a working model. Gorrie traveled to Cincinnati in 1848 where the Cincinnati Iron Works constructed two small model ice machines. Once constructed and tested, six months were spent disassembling the large working model in Cincinnati, shipping it down the Ohio and Mississippi rivers to New Orleans, and reassembling it. More than once the scientist complained about "defects of mechanical contrivance and unskilled workmanship." No two thermometers (made for him in New Orleans) could give him reliable readings.

### The Patent

Gorrie petitioned for his patent (No. 8080) in 1848, but Northern newspapers aligned with the ice trade ridiculed his person and attacked his ideas so vehemently that all backers shied away from him. He never received a penny for his marvelous invention. But this new machine provided both ice and air cooling for history's first air-conditioned hospital ward. His process was the predecessor of the compressed-air ice-making machine used almost universally aboard ship in the early twentieth century. Just as the Wright brothers created a machine that changed the land-bound transportation systems of all before them, so John Gorrie's achievement was a machine that changed humankind's ability to change the environment. The importance of the centuries-old practice of ice harvesting in the preservation of food is beautifully expressed in the ancient Chinese poem, "Shih Ching" from *The Book of Odes*, circa 1100 BC.

*In the days of the second month We cut out the ice with great blows singing d'iong-d'diong-d'dion.*

*In the days of the third month We cart the blocks to the ice houses to store ... In the days of the fourth month We go as the sun rises to offer a sacrifice of lamb and onions.*

In the tiny Dr. John Gorrie State Museum on Sixth Street, off Florida State Road 65 and US 98 in Apalachicola, some original documents as well as a model of the first mechanical refrigeration machine may be viewed. Another model is in the Smithsonian Institute. The records are on file in the U.S. Patent Office under the Serial No. 8080

### Father of Air Conditioning?

In 1972, Raymond B. Becker of Gainesville, Fla., published his book *Gorrie, M.D., Father of Air Conditioning and Mechanical Refrigeration*. Twenty years earlier, Margaret Ingels, one of the first women graduate engineers in the U.S., had published her book, *Willis Haviland Carrier, Father of Air Conditioning*. Both authors, it appears, took "poetic license," to use an imprecise phrase.

Without question, Willis Carrier (1876.1950) was one of the great men in the history of air conditioning, but he was born 28 years after John Gorrie wrote in the *Apalachicola Commercial Advertiser*: "If air were highly compressed, it would heat up by the energy of compression. If this compressed air were run through metal pipes cooled with water, and if this air cooled to the water temperature was expanded down to atmospheric pressure again, very low temperature could be obtained, even low enough to freeze water in pans in a refrigerator box."



## History (Cont'd. from Page 16)

"There are advantages to be derived from generation of cool air within any building and this is equally applicable to ships as well. It might enable the hardy mariner to better serve mankind, he who contributes so much to our wealth and pleasure by transporting for us from shore to shore, the rich production of the tropics - as animals when divested of life, and fruits which may be preserved entirely with all of their juices in a low temperature (atmosphere). This principle of producing and maintaining cold might be made instrumental in preserving organic matter for an indefinite time and thus becoming an accessory to the extension of commerce."

In 1851, Gorrie received confirmation of patent No. 8080 for the "first machine ever to be used for mechanical refrigeration and air conditioning."

But even before Margaret Ingels named Willis Carrier the "Father," George D. Howe declared that, "Dr. Gorrie's claim to fame does not rest on his production of ice by mechanical means. However, his machine was commercially practicable and his process of refrigeration underlies the entire fabric of the great cold storage industry of today."

In the most recent article on the subject, "John Gorrie, Pioneer of Cooling and Ice Making," Bernard Nagengast, past chair of the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. Historical Committee, concludes: "It would be a fabrication to claim that Gorrie is the father or the inventor of mechanical ice making or refrigeration. On the other hand, a claim can be made that Gorrie is the father of air conditioning. This claim can be made based on the fact that he was probably the first to propose, scientifically discuss, construct and operate a refrigeration machine for comfort cooling. However, it would not be proper to title him as "the inventor of air conditioning." No one person can make that claim. The development came through the contributions (some great and some small) of many individuals over time, building on the success of others."

John Gorrie is the linchpin in the development of air conditioning. Leonardo Da Vinci built a water-driven fan to ventilate the boudoir of his patron's wife circa 1500; Dr. William Cullen invented a machine to freeze water in 1775; Jacob Perkins patented an ice-producing machine in 1834; and many others contributed to the development of what is presently "air conditioning." But it was Dr. Gorrie in the 1840s who was the first to design and build a refrigeration machine for comfort cooling.

### Unrecognized Genius

At the cusp of the century, George Whiteside, who owned the first ice plant in Apalachicola, persuaded the Southern Ice Exchange to erect a monument to the man he considered the inventor of the ice machine. It was dedicated April 30, 1900, 45 years after Gorrie's unfortunate early death. The monument stands in one of Apalachicola's city squares, a tardy testament to the world's first iceman.

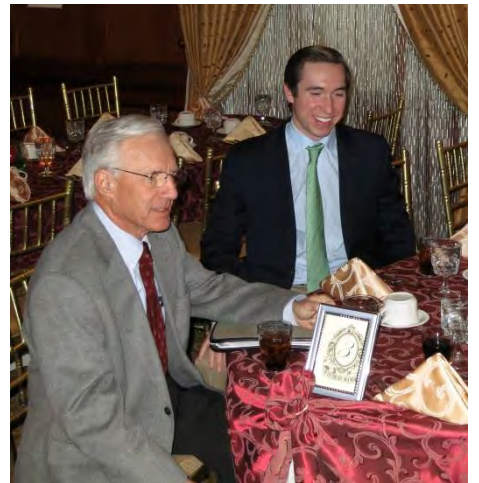
Late into the Civil War, Congress established the National Statuary Hall in the House of Representatives and authorized each one of the States in the Union to dedicate a statue of its most esteemed citizen, a person "illustrious for his historic renown or distinguished service" so that visitors to the Capitol could see the most revered person of each State. After Appomattox, after the Reconstruction, after the bitterness had waned and the Union began to heal, the Southern States, one by one, placed a replica of their most eminent citizen on display in the Hall. Florida bestowed this most singular honor on John Gorrie, its greatest scientist and beloved doctor. His statue - sculpted by C. Adrian Pillars in 1913, 58 years after Gorrie's death - was first unveiled in 1914.


Although the lack of money defeated him, Gorrie was neither motivated by profit nor dazzled by technological development. What drove him was the engine of social consciousness, the regulating idea of social responsibility. It was the search for a way to save lives that led him to his great invention. His modest statement that what he created might better serve mankind. Is as bracing as a fresh sea breeze; it reveals his true humanism.

Dr. Gorrie is unknown to most present-day Floridians. Aside from a few readers of specific history, he remains unrecognized, though his contribution is enormous. His work opened the gates to modern technology and changed forever the way America - and the world - lives and works.

It is sad to reflect that this sterling American was never able to secure financial support for the production of his machine and died at mid-life, discouraged, financially broken and unaware that his vision of the future would someday be realized.

## February Meeting Photos



  
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# ASHRAE Golf Outing - Monday, May 5, 2014

## 15<sup>th</sup> Annual LI ASHRAE GOLF OUTING

**Monday – May 5th, 2014**



Place: Cherry Valley Club  
 Brunch: 11:00 am  
 Shotgun: 12:30 pm  
 Reception: 5:30 pm  
 Dinner: 6:30 pm



**This Event fills up fast, to guarantee a spot RSVP Soon.**

**(2) Foursome Limit Per Company.**

*Proper golf attire and shoes are required. Locker room and shower privileges are included.*

**CHECKS MUST BE IN BY APRIL 11, 2014 (No Exceptions)**

*Fax, Email or Mail entire sheet or cut this half and return*

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 Address: \_\_\_\_\_ Phone: \_\_\_\_\_  
 City, State, Zip: \_\_\_\_\_ Fax: \_\_\_\_\_

I have read and understand the Cherry Valley Rules and Regulations (Signature): \_\_\_\_\_

Guest 1: \_\_\_\_\_ Company: \_\_\_\_\_  
 Guest 2: \_\_\_\_\_ Company: \_\_\_\_\_  
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## ASHRAE Golf Outing - Monday, May 5, 2014

**Cherry Valley Club**  
**28 Rockaway Avenue at Third Street**  
**Garden City, NY**  
**Telephone: (516)746-4420**  
**Fax: (516)746-4421**



### Program:

**11 a.m. Brunch in the Clubroom & Lounge** – including Omelet station, deluxe deli board with rolls, chicken scarpiello, dan-ish, croissants, bagels & cream cheese, sliced nova, fresh fruit and cheeses, Good Humor ice cream cart.

**12:30 p.m. Shotgun Start Golf** – Playing individual scores. Prizes for long drive, closest to the pins, low gross and callaway. Refreshments at the halfway house will include packaged snacks and whole fresh fruit, hot dogs, beer & soda. A snack cart will also be on the course. Carts, forecaddies, driving range, locker room and showers are all included in the price.

**5:30 p.m. Following Golf - Open Bar with hot and cold horsd'ouvres in the Main Lounge.** Fresh mozzarella with sundried tomatoes, cajun chicken, spring rolls, baby lamb chops, sesame chicken, turkey canapés, fried oysters, cheeses, fresh fruit, lobster halves, fresh clams & oysters, shrimp and crab claws.

**6:30 p.m. Reception Dinner – Awards and raffle in the Main Dining Room.** Carving stations of beef tenderloin & turkey breast. Chafing dishes of chicken & salmon featuring the chef's specialty, pasta station with marinara or vodka sauce, and choice of tossed or Caesar salad. Viennese dessert table following the dinner featuring pastries, fruit, cookies, assorted cakes and pies. Full beverage service throughout is included.

Women are also invited to attend and participate. There are locker room facilities available. The Cocktail hour and Dinner will also be available for those who cannot attend during the day for the golf.

**Note:** We are limited to 128 golfers. Openings will be filled on a first come-first serve basis. Corporate sponsorships will be available and raffle items will be welcome. Proper golf attire is a requirement for the golf course. Soft spikes are required. Please wear a jacket for the dinner.

### Directions:

**From the North Shore of Long Island:** Take the Long Island Expressway to Exit 34 South (New Hyde Park Road Southbound), Grand Central Parkway (Northern State Parkway) to Exit 26 South (New Hyde Park Road Southbound) or Jamaica Avenue (Jericho Turnpike) Eastbound to New Hyde Park Road. Travel Southbound on New Hyde Park Road for approximately 5 to 7 miles to Stewart Avenue (You will cross over a set of railroad tracks). Take Stewart Avenue eastbound for approximately 1-1/2 miles to Cherry Valley Avenue. Travel Southbound on Cherry Valley Avenue for 1/2 mile, Cherry Valley Avenue becomes Rockaway Avenue. Continue on Rockaway Avenue and the entrance to Cherry Valley Club will be on your right.

**From Local Points North:** Take Old Country Road or Stewart Avenue to Franklin Avenue. Travel Southbound on Franklin Avenue to Fourth Street (just after crossing over railroad tracks). Turn right on Fourth Street and continue until it ends (Rockaway Avenue). Cross over Rockaway Avenue into the Cherry Valley Club's parking lot.

**From the South Shore of Long Island:** Take the Southern State Parkway to Exit 19 (Peninsula Boulevard-Hempstead/Garden City). Travel Northbound on Peninsula Boulevard for approximately 1/2 mile to President Street. Bear left on President Street (Northbound) for approximately one mile and cross over Hempstead Turnpike. President Street will become Cathedral Avenue. Continue on Cathedral Avenue for one mile to Fourth Street. Make a left on Fourth Street (Westbound) and continue until it ends (Rockaway Avenue). Cross over Rockaway Avenue into the Cherry Valley Club's parking lot.

**From Local Points South:** Take Hempstead Turnpike to Franklin Avenue. Travel Northbound on Franklin Avenue to Fourth Street. Turn left on Fourth Street and continue until it ends (Rockaway Avenue). Cross over Rockaway Avenue into the Cherry Valley Club's parking lot.



## ASHRAE Golf Outing - Monday, May 5, 2014

### Cherry Valley Club Golf Outing Guidelines



To add the enjoyment of your day, we ask that you abide by Cherry Valley Club's basic rules of The Club, dress, golf etiquette & safety, golf carts, and care of the course.

#### Club Rules

1. Smoking is not permitted in the Club House.
2. Cell Phones are permitted in the parking lot only. Use of Cell Phones beyond the parking lot is strictly prohibited. This includes the Golf Course.

#### Dress Code

1. Jeans, designer or otherwise, are not acceptable on club property. This not only includes pants, but skirts, and cut-offs.
2. T-shirts and tank tops are not in keeping with the atmosphere of the club and as such, are not acceptable. The definition of T-shirt includes those with psychedelic coloring or suggestive printing.
3. If the Main Dining room is going to be utilized for any purpose, jackets are required.
4. Short shorts are not permitted on the golf course, practice tee or putting green by either male or female. Bermuda shorts of acceptable length are permitted. Jogging attire and denim pants are not considered proper attire for the golf course.
5. **Soft spikes** are mandatory at all times on our fine golf course. If your shoes need soft spikes, arrive early so we can change them. There is a nominal fee. There is **no** exception to this rule.

#### Golf Etiquette and Safety

1. Slow play shows lack of consideration for the players in your group and, more important, for the players behind you. Golf is made much more enjoyable if all players adhere to the following points in the conduct of play:
  - Minimize the time spent looking for balls by watching the flight of balls hit by everyone in your group. If a ball appears to be lost or out of bounds, hit a provisional ball before leaving the tee.
  - Signal the players behind you to play through if it becomes apparent that a ball will not easily be found and you are holding up play.
  - Don't rush addressing and striking the ball but move briskly between shots.
  - If your ball is some distance from the golf cart and the exact club selection is in doubt, take several clubs with you when you leave the cart to walk to the ball.
  - When play reaches the area of the green, park the golf cart(s) behind the green or adjacent to the next tee. Walk briskly off the rear or side of the green after putting out. Mark your score cards after your group is off the green.
  - Once a score of double par has been posted, pick up and move on to the next hole.
2. No player should play until the players in front are out of range.
3. If your ball appears headed for a player or group of players immediately shout "fore" in a loud clear voice.
4. No one should move, talk or stand close to or directly behind the ball or the hole when a player is addressing the ball or making a stroke.

## ASHRAE Golf Outing - Monday, May 5, 2014

### Cherry Valley Club Golf Outing Guidelines (Cont'd.)



#### Golf Carts

- 1.No more than two people are to be in a cart at one time.
- 2.No more than 2 bags are to be carried on one golf cart.
- 3.Members and their guest must observe all cart directional signs and use cart paths and designated golf cart parking areas where provided.
- 4.Good judgment, reasonable care, and observation of club rules are expected of any member or guest when operating a golf cart. Damaged golf carts will be repaired at the responsible member's expense. Each member or guest who rents a golf cart agrees to indemnify and hold Cherry Valley Club harmless of and free from any and all damages, judgment, court costs, attorney's fees or other expenses incidental to and incurred by Cherry Valley Club which may arise from misuse of a golf cart by such member or guest.
- 5.Members and their Guests must keep golf carts at least 10 yards away from greens trees or traps. They should keep a reasonable distance away from soft or wet areas and they must respect directional signs.

#### Care of the Course

- 1.Before leaving a sand trap, a golfer should carefully rake and smooth over all holes and footprints made by him.
- 2.From tree to green, a player should ensure that any turf cut or divot displayed by him is replaced at once and pressed down, and that any damage to the putting green made by a ball is carefully repaired.
- 3.Golf bags should never be brought onto a green. The flagstick should be carefully handled to ensure that no damage is done to the hole or the putting green. Don't dent the green with the flagstick or by leaning on your putter.
- 4.In taking practice swings, players should avoid causing damage to the course by taking divots. This is particularly true on the tees and in the vicinity of the greens.
- 5.Only putters are to be used on the practice greens. A separate practice green adjacent the driving range is available for chipping and sand trap practice.

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