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Rochester Academy of Science  
**BULLETIN**

"An organization of people in the Natural Sciences"



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ABOUT THE **ACADEMY** - The Rochester Academy Of Science, Inc. is an organization which has been promoting interest in the natural sciences since 1881, with special focus on the western New York state region. Membership is open to anyone with an interest in science. Dues are minimal for the Academy, and are listed in the membership application. Each Section also sets dues to cover Section-related publications and mailings.



For applications and/or more information contact membership chairman Stephen Busschaert, 54 Keswick Rd., Rochester, NY 14609; by telephone 288-5683; or by e-mail <sbusschaert@msn.com>.

The *Academy* Internet web page is <http://www.rasny.org>

The *Astronomy Section* Information phone number is (585) 987-5330. The *Astronomy Section* Internet web page is <http://rochesterastronomy.org>

This "**BULLETIN**" is produced monthly, *except July and September*, by the *Astronomy Section, Rochester Academy of Science*. The editor is Frank Bov, 16 Gladbrook Rd., Pittsford, NY 14534 Phone (585) 422-9910 (days) and (585) 385-1518 (evenings), e-mail <editor@rasny.org>

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**PRESIDENTS REPORT  
MARCH 2008**

Over the last year, I've met a number of you at various section meetings. I've learned a lot about science that I never thought I cared to know. Exploring the sciences with you has rubbed off; I have felt your excitement. I see daily news articles about great things we have learned; we are really in an age of discovery. I know many of these discoveries are due to large government programs and expenditures made dozens of years ago. But I'm worried about the future of science.

With all of the high priority expenditures that our government needs to make to address pressing problems, will they make room for expenditures in scientific research to match that of the past? It is our obligation to make sure science is not left out. Don't be afraid to stand up and speak for science to your representatives. It may not seem as important as the problems of the world but to many of us, it is the enjoyment in our lives, it is our lives and it is the way our country stays ahead of the world in a lot of technologies. It is the US's sustainable competitive advantage.

Stan Spector  
President, RAS

**REPORT FROM THE  
GRANTS COMMITTEE  
JANUARY 2008**

Requests for proposals for the Undergraduate Student Science Research Grants went out to all area colleges schools in September, 2007. Five proposals were received.

The following awards were made:

1. The top award of \$50 unrestricted went to Sarah Yoon-Miller at Hobart & William Smith Colleges for her proposal *Solid Phase Synthesis of Biologically Active Nitrogen Heterocycles*. The Chemistry Department at Hobart & William Smith Colleges also received a grant of \$500 sent to her advisor Dr. Erin Pelkey. Sarah expects her research to lead to analogues of anti-inflammatory chemicals.
2. Kyle Dunkle, a student at Niagara University was awarded partial support for his proposal, *Toxicity Assay of Cantharidin Derivatives Utilizing Hepg2 Cell Lines*. The Chemistry Department at Niagara University received a grant of \$250 sent to his advisor Dr. Christopher Stoj. Kyle expects his research to lead to compounds related to cantharidin which been shown

to inhibit cancer cells.

3. Justin Carmel, a student at Nazareth College was awarded partial funding of \$100 from the Grants Fund as well as \$50 from the Life Sciences section for his proposal *Determining the Accuracy of Commercial Aquarium Water Test Kits*. An award of \$150 was sent to his advisor, Dr. William Lammela in the Chemistry Department.
4. Matthew Jobbins was awarded partial funding of \$100 for his project, "*Synthesis of a Novel Boron Hydride Chelating Agent*." Mathew's advisor is Dr. Kelley Donaghy at SUNY College of Environmental Science and Forestry in Syracuse.
5. Dennis Buckley, at SUNY Geneseo was awarded partial funding for his project *Synthesis of a Halogenated Polyacetylene in Anaphalis margaritacea*. The Chemistry Department at Geneseo received a grant of \$100 sent to his advisor Dr. Eric Helms. Dennis believes that this polyacetylene, found in the roots of *A. margaritacea* may have important medicinal properties.

YOUR HEATING BILL

Last month we summarized alternative fuels and how they play in the global fuel supply story. This month we focus on the second portion of the talk “Your Heating Bill”.

This is a subject that interests everyone living in the Rochester area. I prepared a spreadsheet that calculates heating load for your home when you enter the amount of fuel used in a previous year and the efficiency of the furnace that consumed the fuel.

The costs for alternative heating systems and fuels are calculated assuming the heat load of your home does not change.

There are some surprising results. Historically, oil heat has been less

expensive than electric resistive heat. However, the economics have changed recently. When the price of oil reached \$3.28 per gallon, with a typical oil furnace, it now costs the same as resistive heating at 0.10 per kW-hr. If you live in a town where the cost of electricity is low, it makes sense to for you to heat with resistive heaters instead of gas or oil. In such a case, does the use of Compact Florescent Light bulbs , (CFL), make sense? One could argue that you should leave the lights on since all the heat is going into your home!

On the other hand, if you have a supply of inexpensive wood – and enjoy the exercise – you might consider investing in a chainsaw and burning wood to heat your

home. Twenty pounds of wood has roughly the same energy value as a gallon of oil (\$3.39 per gallon) and it does not contribute to the increase of greenhouse gases. That wood waste you threw out after the recent wind storm could have been heating your home.

Clearly, there is not one solution that is best for everyone.

A sample chart is attached based upon a home that heats with oil. A robust version of the spreadsheet will be loaded on to the website when completed.

Jeff Gutterman  
Director, RAS  
Chairman, Delphi’s Next  
Generation Fuels Forum

Home Heating - Fuel Consumption Calculator

My Address

Step 1	Determine yearly load for your house Enter typical yearly oil consumption Average Heating Season	750	Gallons	Efficiency	81%	Yearly BTU 85,050,000
		6100	Heating Degree days			

Step 2 Enter fuel prices and burner efficiency

	BTU	Cost \$	Units	Efficiency	BTU/\$	Amount	Cost \$/Yr
1 gallon heating oil	140000	3.39	\$/gal	81%	33451	750	2543
1 kW-hr Electricity	3412	0.10	\$/kW-hr	100%	32808	24927	2592
1 Therm Nat gas	100000	1.84	\$/Therm	85%	46196	1001	1841
1 Cord wood (Apple A'25M	22,000,000	180	\$/cord	70%	85556	6	994
1 Cord home (free)	20,000,000	40	\$/cord	58%	290000	7	293
1 ton pellets wood dust	13600000	243	\$/ton	70%	39177	9	2171
1 ton pellets w binder	17500000	243	\$/ton	70%	50412	7	1687
1 ton coal	21,000,000	100	\$/ton	60%	126000	7	675

Daily Fuel Consumption

Temp F	Oil gal.	Pellets lbs	Wood lbs
50	1.8	34	44
45	2.5	46	59
40	3.1	57	73
35	3.7	68	88
30	4.3	80	103
25	4.9	91	117
20	5.5	102	132
15	6.1	114	146
10	6.8	125	161
5	7.4	137	176

Daily Cost

Oil \$	Pellets\$	Wood\$	Elec. Heat \$
6.25	4.15	2.44	6.37
8.34	5.53	3.26	8.50
10.42	6.91	4.07	10.62
12.50	8.30	4.89	12.75
14.59	9.68	5.70	14.87
16.67	11.06	6.52	17.00
18.76	12.45	7.33	19.12
20.84	13.83	8.15	21.25
22.92	15.21	8.96	23.37
25.01	16.59	9.78	25.50

EVENTS for MARCH 2008

(For updates to events, check the Academy web site, <http://www.rasny.org>, or appropriate Section web site.)

Tue 04 FOSSIL MEETING

7:30 PM in the main lobby at the Rochester Museum and Science Center. George McIntosh, Director of Collections at RMSC has generously offered to give us a specially guided tour of the new "Expedition Earth" exhibit, focusing on the newly designed Devonian diorama. If you'd like to join us for dinner at the Pomodoro Grill, 1290 University Ave, at 5:30 PM, please RSVP by 3/3 to Anne Roth-Blizzard at <Annethefossil@aol.com>

Fri 07 ASTRONOMY GENERAL MEETING

7:30 PM at RIT, Gosnell Hall, room A300. This month's meeting features Alice Quillen, professor of Physics and Astronomy at U of R, plus short talks by members Visitors are always welcome. Come early and socialize. For information, contact Carol Latta at 230-9548, or <cosmos@rochester.rr.com>

Sat 15 RAS BULLETIN

Articles and event notices due for the April, 2008 newsletter.

Sat/Sun 15/16 LIFE SCIENCES OPEN HOUSE

2:00 to 9:00 PM at Karen Wolf's home, 1397 Five Mile Line Road, Penfield NY. This will be a casual time for members to socialize and learn about the opportunities and activities within the RAS that overlap Life Sciences. We would also like your opinion of our field

trips, and whether we should attend trips of other Nature-oriented groups. At 2:30 we can walk around Bauman's Farm Market. A dish to pass supper will be around 6:30. For information, contact Karen Wolf, 670-9709.

Tue 18 MINERAL MEETING

7:30 PM Brighton Town Hall, 2300 Elmwood Ave., Downstairs Conference Room. Bob Hiler and other Mineral Section members, will review the recent Tucson Gem and Mineral Show. Refreshments. Visitors welcome. Members please bring specimens of dolomite to show. For information, call Al Mura at 227-9931 or check the Academy web site for updates.

Wed 19 RAS BOARD MEETING

7:00 PM Brighton Town Hall, 2300 Elmwood Ave., Stage Conference Room. All are welcomed.

Sun 23 Life Sciences Field Trip

to Letchworth Park. Meet at 9:00 AM at the Double Tree Inn in Geneseo to car pool, or at the Mt Morris entrance to the park. Bring lunch. We plan to attend the 10:00 AM Signs of Sprig walk (3 miles-2 hours). At 2:00 PM, we will meet in the conference room at the Visitor Center for Indoor Ed-Venture-Winter Fungi. Leader, Doug Bassett. Call Karen Wolf at 670-9709 to arrange car pool details.

Mon 24 PUBLIC FORUM BIOFUELS- PROMISES AND PROBLEMS

7:00 to 9:00 at the Brighton Town Hall Auditorium, 2300 Elmwood Ave. Featured speakers are Jason Masters, President of Northern Biodiesel and Jeff Gutterman, PE, Chairman, Delphi's Next Generation Fuels Forum. A participatory discussion will follow the presentations. The program is co-sponsored by The Federation of Monroe County Environmentalists and The center for Sustainable Living. For information, contact Carol at <info@fmce.org> or call 585-663-2981.

Wed 26 DISTINGUISHED SCHOLAR LECTURE

7:30 PM in Eisenhart Auditorium Kevin Zippel, Ph.D. will speak on *2008 Year of the Frog: Confronting the Amphibian Extinction Crisis*. Dr. Zippel is Program Director for the Amphibian Ark. Tickets are \$15 for non-RMSC members, \$8 for students. Call (585)697-1942 for more information and reservations.

EVENTS IN APRIL

Thur 02 RAS SPRING LECTURE

7:00 PM at Nazareth College Art Center, room 183. The speaker will be Don Siegel, and his talk is titled *The Scientist in the Courtroom: Sex, Lies and Videotape*. Look for more information in next month's issue.