

# Lawrence Berkeley National Laboratory

## LBL Publications

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LBL Newsletter

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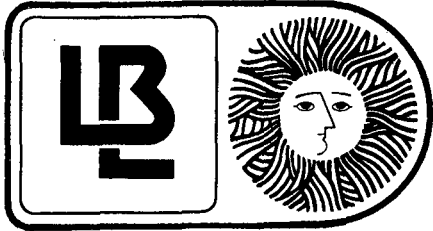
Lawrence Berkeley National Laboratory

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Lawrence Berkeley Laboratory  
**Energy and Environment Division**

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NEWSLETTER

May 1979

Editor: Jeffrey Kessel

**For Reference**

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\* DIVISION NEWS \*

- In response to some requests we have received as to whom to contact in the Division Office for particular questions, the following is a list of Division Office personnel and their main functions:

*Dorothy Bottini* - Divisional Personnel Administrator. Coordinates all new hires, changes in status, salary administration, employee relations, and training. Also divisional petty cash and notary public. (Extension 5270)

*Garth Burns* - Budget administration of all division equipment and fabrication accounts, liaison between Purchasing Department and research groups on sub-contracting. Budget administrator for Aerosol Research. (Extension 5289)

*Elton Cairns* - Division Head and LBL Associate Director. (Extension 5028)

*Linda Jacobs-Curletto* - Secretary to Division Administrator and Division Office budget administrators. (Extension 5940)

*Jeffrey Kessel* - Editor of Division Annual Report, Newsletter, and WPASS. Technical and staff assignments for Elton Cairns. (Extension 5297)

*Dharmakaur Khalsa* - Budget administrator (for Combustion, Oil Shale and Chemical Analysis groups). (Extension 6231)

*Sandy Mocco* - Secretary to Division Head. (Extension 5028)

*Roland Otto* - Assistant Division Head. (Extension 5296)

*Angela Smothers* - Division Office receptionist, processes guests and consultants, bi-weekly time reporting. (Extension 5410)

*Karen Sterkin* - Graduate student and contract personnel. Foreign travel. (Extension 5914)

*Barbara West* - Division Administrator. (Extension 6581)

*Mary Worth* - Budget administrator (for Chemical Process groups, various other research projects, and the division overhead account). (Extension 5807)

*Sharran Zeleke* - Monthly payroll, personnel action forms (changes in status), and domestic travel. (Extension 6246)

- *Nabil Amer's* Applied Laser Spectroscopy Group is starting a new program in the area of amorphous photovoltaic devices. They will be investigating the optical and phototransport properties of hydrogenated amorphous silicon. This material offers the first real promise for an economical photovoltaic solar cell. Previous types of solar cells, made from crystalline substances such as silicon, are very costly due to the difficulty in manufacturing large pure single crystals.

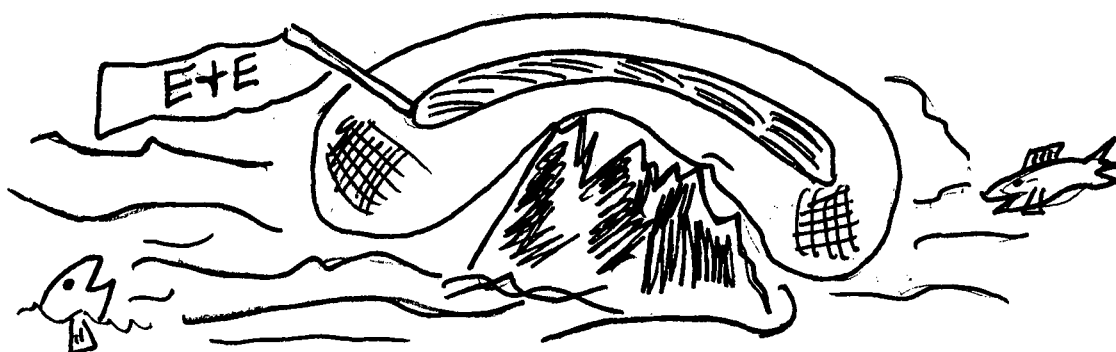
- A note from *Bob Budnitz*:

"Today, finally because 'spring has sprung,' Barbara and I went to the Potomac Garden Center to use up our \$40.00 gift certificate, so graciously presented to us last summer as a going-away gift at the lovely party. As a surprise coincidence, something unusual happened that is worthy of note.

We bought:	3 azalea bushes @ 5.95 ea	17.85
	1 lb seed potatoes	.17
	6 tomato plants @ .75	4.50
	3 zucchini plants @ .75	2.25
	2 impatiens plants @ .75	1.50
	3 broccoli, squash flats @ 1.69	5.07
	2 ground cover plants @ 1.69	3.38
	2 pepper plants @ 1.69	<u>3.38</u>
		38.10
	5% tax	<u>1.90</u>
		\$40.00

Now only a fool or a physicist would call that a coincidence! We really had no idea, being lousy with numbers, how much we were getting, but when it came to \$40.00 exactly we just about fell over! ...May our potatoes, zucchini, broccoli, squash, peppers, and assorted flowers all grow heartily in the Maryland red-clay soil."

- The new Publication Work Order forms are available from TID or in the Division Office. In order for TID to begin work on a paper, the author should phone Laura Glines at x6504 for an LBL number for the paper. The work order form should then be sent to the author's program leader who will either initial it (as an authorization for typing and editing), or sign it (as an authorization for publication). Authors in the Energy Efficient Buildings Program and the Environmental Program should send the forms to Elton Cairns.
- *Barbara Boyce* wrote a cautionary tale appearing in the first issue of LBL's FOLIO, a new bi-monthly newsletter/literary magazine published by the Employees' Arts Council. The tale, "Confessions of an Endangered Specie," warns of the organic dangers lurking in yogurt and vitamin C, and of the marital problems arising when hubby finds his beer being used to pickle garden slugs. A must for your summer reading list.



- Now is the time to plan for this year's Energy & Environment rafting trips. We have a new "Admiral" -- Phyllis Hillis (x4635) will be coordinating arrangements. The first trip will be Wednesday, June 13, when the "Meatgrinder" and "Troublemaker" Rapids of the Chili Bar Run of the South Fork of the American River will challenge us. Cost is \$19.00 per person. Contact Phyllis as soon as possible if you are interested in this trip as space is limited.

Saturday trips are more difficult to reserve, and cost \$27.00 per person. If you are interested in a Saturday trip, please call Phyllis as soon as possible to ensure the possibility of arranging reservations.

\* TRIPS, CONFERENCES, AND PRESENTATIONS \*

# CRUNCH

*Sid Phillips* served on the panel at a recent one-day forum in April held at Ohlone College in Fremont. The title of the forum, whose keynote speaker was Congressman Don Edwards, is "Crunch--the Energy Squeeze On Your Pocketbook (What You Can Do About It Now)." We hope Sid will share some of his knowledge on this depressing subject with us here at LBL.

- *Nabil Amer* attended the March Meeting of the American Physical Society held in Chicago. Nabil, *Neil Bergstrom*, and *Joe Costello* contributed a paper on laser-rippion scattering from a monolayer at the water-oil interface. This research is part of an effort to investigate the physics of liquid-crystalline emulsion systems, which have the potential for being used to recover oil from oil shale waters, or to clean up oil spills at sea.
- *Peter Persoff* and *Phyllis Fox* attended the 12th Annual Oil Shale Symposium in Golden, Colorado, April 18-20, 1979. Peter presented the paper "Control Strategies for Abandoned In Situ Oil Shale Retorts" and Phyllis the paper, "Partitioning of Major, Minor and Trace Elements During Simulated In Situ Oil Shale Retorting." While in the Colorado area, Phyllis attended meetings of the DOE Oil Shale Management Team, the Paraho Oil Shale Data Evaluation Group, the ASEV Environmental Task Force and the PNL Assessment Team.

- *Tica Novakov* was invited by the Institute for Atmospheric Optics and Remote Sensing to be a speaker at a symposium: Environmental and Climatic Impact of Coal Utilization. *Tica* presented a paper titled "Oxidation of SO<sub>2</sub> to Sulfates in Water Droplets Containing Carbonaceous Particles." Earlier in April *Tica* presented a paper, "Role of Carbon Soot in Sulphate Formations," to the Joint Meeting of the American and Japanese Chemical Societies, held in Honolulu.
- *Les Packer* will be presenting a paper, "Light-Energy Conversion by Bacteriorhodopsin" to a DOE Solar Photochemistry Conference to be held at Asilomar, CA, June 20-22. *Les* will then return to Asilomar for a conference of the American Society of Photochemistry and Photobiology, where he will present a paper, "Light Induced Proton Movements in Halobacterium Envelope Vesicles Coupled to Cation Extrusion Measured by a Spin Probe Technique."
- *John Shinn* presented a paper in Washington, D.C., in April at the annual meeting of the Scanning Electron Microscopy Society. *John's* paper was titled "Scanning Electron Microscopy Study of the Solubilization of Coal Under Moderate Conditions."
- *Ted Vermeulen* attended the Annual Meeting of the Southern California Section of the American Institute of Chemical Engineers in Anaheim in April, where he presented a paper, "Catalytic Coal Conversion Using Zinc Chloride in Organic Media."
- At the Fuel Chemistry Division of the American Chemical Society Meeting in Honolulu on April 5, *John Shinn* presented a paper (co-authored by *Ted Vermeulen*) titled: "High-yield Coal Conversion In a Zinc Chloride/Methanol Melt Under Moderate Conditions."

\* RECENT LBL REPORTS \*

- The following reports are listed in *TID Reports*:

JANUARY 1979

- LBL-06879 A New Absorption Cycle: The Single-Effect Regenerative Absorption Refrigeration Cycle, Feb. 1978, 38 p., K. Dao.
- LBL-07860 Analysis of the California Solar Resource, Volume 1: Executive Summary, Nov. 1978, 13 p., P. Berdahl, D. Grether, M. Martin, and M. Wahlig.
- LBL-07878 Draft Interim Validation Report Domestic Crude Oil First Purchaser System, Dec. 1978, 264 p., M.O. Stern, J.P. Burkett, R.W. Denham, J.X. Reeves, and R. Thomas.
- LBL-07886 The Determination of Energy Savings for Passive Solar Buildings, Sep. 1978, 48 p., B. Andersson and R. Kammerud.

- LBL-07896 Energy Conservation: Policy Issues and End-Use Scenarios of Savings Potential, Part 1, Summary, Sep. 1978, 45p., P. Benenson, R. Codina, B. Cornwall, D. Dornfeld, B. Greene, J. Elliott, W. Kempton, C. Langlois, H. Nelson, J. Nides, F. Rouse, C. Sullam, R. Barnes, and N.M. Bradburn.
- LBL-07896 Energy Conservation: Policy Issues and End-Use Scenarios of Savings Potential, Part 3 Policy Barriers and Investment Decisions in Industry, Sep. 1978, 51p., P. Benenson, R. Codina, B. Cornwall, D. Dornfeld, B. Greene, J. Elliott, W. Kempton, C. Langlois, H. Nelson, J. Nides, F. Rouse, C. Sullam, R. Barnes, and N.M. Bradburn.
- LBL-07896 Energy Conservation: Policy Issues and End-Use Scenarios of Savings Potential, Part 6 End-Use Energy Conservation Data Base and Scenarios, Sep. 1978, 397p., P. Benenson, R. Codina, B. Cornwall, D. Dornfeld, B. Greene, J. Elliott, W. Kempton, C. Langlois, H. Nelson, J. Nides, F. Rouse, C. Sullam, R. Barnes, and N.M. Bradburn.
- LBL-07899 On The Equilibrium Transition Temperature of Thermoelastic Martensitic Transformations, Sep. 1977, 3p., Submitted to J. Mater. Sci., H.A. Mohamed.
- LBL-08405 Conceptual Design of an Advanced Absorption Cycle: The Double-Effect Regenerative Absorption Refrigeration Cycle, Sep. 1978, 54 p., K. Dao.
- LBL-08436 Draft Interim Validation Report Domestic Crude Oil Entitlements System, Dec. 1978, 405p., P.J. Nagarvala, D. Freedman, P. Hayes, M. Karayel, I. Katz, N. Singh, A. Toprak, and J. Boe.
- LBL-08446 Determination of Nitrogen in Atmospheric Aerosols by Proton Activation Analysis, Nov. 1978, 18p., Submitted to Anal. Chem., M. Clemenson, T. Novakov, and S.S. Markowitz.
- LBL-08480 Physiological Studies of Lignocellulose Degradation by the Thermotolerant Mold *Chrysosporium Pruinosum*, Dec. 1978, 24p., To be published in *Developments in Industrial Microbiology*, S.L. Rosenberg.
- LBL-08520 A New Solar Thermal Receiver Utilizing A Small Particle Heat Exchanger, Nov. 1978, 1p., To be presented at the 13th Intersociety Energy Conversion Engineering Conf., Boston, MA, August 5-10, 1979, A.J. Hunt.
- LBL-08606 Draft Interim Report: National Program Plan for Passive Solar Heating and Cooling, Dec. 1978, 126p., A. Various.

FEBRUARY 1979

- LBL-06887 Ozone Induced Conductance Increases Assayed with Lipid Impregnated Filter Membranes -- Effect of Vitamin E, Nov. 1978, 18p., To be submitted to Toxicology Lett., P.K. Sheih, R.J. Mehlhorn, and L. Packer.
- LBL-07811 Some Analytic Models of Passive Solar Building Performance: A Theoretical Approach to the Design of Energy-Conserving Buildings, Nov. 1978, 366p., Ph.D. Thesis, D.B. Goldstein.
- LBL-07824 Infiltration -- Pressurization Correlations: Detailed Measurements on a California House, Dec. 1978, 24p., To be presented at the Air Infiltration Symposium at the Annual Meeting of ASHRAE, Philadelphia, PA, January 30, 1979, and to be published in ASHRAE Transactions 1979, Vol. 85, Part I, D.T. Grimsrud, M.H. Sherman, R.C. Diamond, P.E. Condon, and A.H. Rosenfeld.
- LBL-07872 Energy Use and Conservation in Industrialized Countries, Nov. 1978, 45p., Presented at the Conf. on Energy Productivity, New York, NY, Nov. 2-4, 1978, L. Schipper.
- LBL-07874 Characterization of Particulate Amines, Aug. 1978, 16p., To be published as a Chapter in Nitrogenous Air Pollutants, D. Grosjean, ed., Ann Arbor: Ann Arbor Science Publishers, Inc., L.A. Gundel, S.G. Chang, M.S. Clemenson, S.S. Markowitz, and T. Novakov.
- LBL-07897 Filtration of Solvent Refined Coal Suspensions, Sep. 1978, 149p., M.S. Thesis, R.J. Steininger II.
- LBL-08388 The Compatability of Wind and Solar Technology with Conventional Energy Systems, Dec. 1978, 68 p., Submitted to Annu. Rev. Energy, Vol. 4, E. Kahn.
- LBL-08426 A Strategy for the Abandonment of Modified In-Situ Oil Shale Retorts, Nov. 1978, 11p., Presented at the Environmental Control Symposium, Washington, D.C., Nov. 28-30, 1978, J.P. Fox, P. Persoff, M.M. Moody, and C.J. Sisemore.
- LBL-08568 DOE-1 BDL Summary, Jan. 1979, 44p., A. Various.
- LBL-08583 Modeling Passive Solar Buildings with Hand Calculations, Jan. 1979, 7p., Presented at the Third National Passive Solar Conference, San Jose, CA, Jan. 11-13, 1979, D.B. Goldstein.
- LBL-08594 Report to the William and Flora Hewlett Foundation, Dec. 1978, 10p., E. Eisner.



\* NEW EMPLOYEES \*

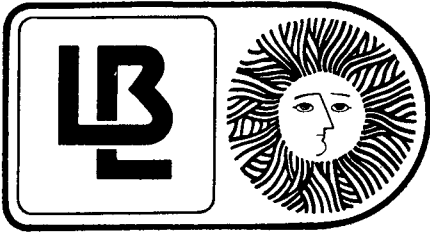
- *Robert Miksch* joins the Ventilation Group for research on organic pollutants in indoor environments.
- *Richard Sakaji* and *Steve Onysco* have joined the Oil Shale Program for research on the treatment of oil shale waters with Professors *Robert Selleck* and *David Jenkins*.

\* ENERGY & ENVIRONMENT DIVISION SEMINARS \*

TUESDAYS, 4 P.M., BLDG. 90, ROOM 3148

15 May	John Cooper, LLL "The Aluminum-Air Battery for Electric Vehicles"
22 May	Iris Borg, LLL "The Free World's Major Oil-producing Regions--Past, Present, and Future"
29 May	No Seminar
5 June	Laura Nader, UCB "The People Problem in Energy Planning"
12 June	To Be Arranged
19 June	Peter Zambas, ARCO Solar "Photovoltaic Solar Energy"
26 June	No Seminar
28 June (Thursday)	Roger Glassey, Energy Information Analysis-DOE Title To Be Announced

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NEWSLETTER

June 1979

Editor: Jeffrey Kessel  
(90-3026, ext. 5297)

Lawrence Berkeley Laboratory

## Energy and Environment Division

### \* DIVISION NEWS \*

- The Energy & Environment Division Review Committee recently submitted its report to *Andy Sessler*, who has passed it along to *Elton Cairns*. The report had an overall strongly positive attitude toward the research undertaken by the Division. Sections of the report will be distributed to the relevant principal investigators.
- An on-site review of LBL's Institutional Plan was conducted June 6 by representatives of the Office of Energy Research (OER) of the Department of Energy. Presentations were made by Energy & Environment people on a variety of topics, including coal research, conservation, electrochemical research, and the proposed Energy Research Laboratory.  
  
The HQ representatives at the meeting emphasized the importance of the LBL Institutional Plan as a planning document--apparently all changes from the Institutional Plan will have to be reviewed at a very high level.
- A call letter for input to the Institutional Plan went out of the Division Office on June 7. Responses from Program Leaders/Pis are due back on June 20.
- *Bob Budnitz* sent in a clipping from the *Washington Post* warning travelers that a 16-month construction project on the George Washington Memorial Parkway will make it difficult to leave downtown at 4:00 p.m. and catch the evening return flight to San Francisco. Travelers beware.
- Travelers also beware of possible delays in getting your R&As signed in the Division Office. Please be sure to submit the forms in advance of need, and allow a day or two to get the form signed.
- *Sabri Ergun*, *Carlos Figueroa*, *Larry Schaleger*, and *Manu Seth* announced at the recent Biomass Energy Systems Conference in Golden, Colorado, that they had succeeded in producing the first barrel of oil from wood chips at a DOE pilot plant in Albany, Oregon. The oil is equivalent to No. 6 bunker oil and is suitable for use as a sulfur-free fuel for electric power plants. Sabri estimated that the oil could be produced commercially for about \$26 per barrel in crude form, making it competitive with imported crude oil at today's prices. As possible sources for wood chips, it should be noted that lumbering operations utilize only 40-80% of the trees processed. In addition, there are sizeable forests of fast-growing scrub trees which are not suitable for lumber.
- *David Goldstein's* doctoral dissertation on building energy modeling has recently been selected by Garland Publishing Company of New York for inclusion in its series titled *Outstanding Dissertations on Energy*.

- The second Energy & Environment Division whitewater rafting trip is now planned for the Stanislaus River on Thursday, July 26th. The Devil's Staircase and the Widowmaker await those who pay \$24 for the one-day trip. If you are interested in this, please contact *Phyllis Hillis* at Ext. 6426. No previous rafting experience is necessary.
- Using a new approach to opto-acoustic detection, *Nabil Amer* and *Robert Gerlach* of the Applied Laser Spectroscopy Group recently achieved a detection level of 2 parts in  $10^{11}$  for ethylene, a hydrocarbon combustion product.
- *Jesse Goodlow* is an illustrator from TID who has recently located in Building 90. His services are available to Energy & Environment Division personnel--contact him at 90-1060, Ext. 5717.

\* TRIPS, CONFERENCES, AND PRESENTATIONS \*

- *Paul Berdahl* attended the Second International Conference on Infrared Physics, March 5-9, in Zurich. He presented a paper, titled "Routine Spectral Measurements of Infrared Radiation from the Atmosphere." Paul has been doing research in this area as part of the Solar Energy Program's efforts in the area of radiative and passive cooling.
- *Nabil Amer* attended the Executive and Technical Program Committee Meeting of the Optical Society of America to review papers for the First International Photoacoustic Conference, to be held in August at Ames, Iowa. Following this meeting Nabil went to New York City where he was an invited participant at the Second Joint US-USSR Light Scattering Symposium, held May 21-May 25. Before returning to LBL, Nabil went to Princeton, New Jersey, where he participated in a DOE/SERI review workshop on amorphous photovoltaic solar cells.
- *Max Sherman* will attend the ASHRAE summer meeting in Detroit. Max will present a paper titled "Infiltration Pressurization Correlation: Surface Pressures and Terrain Effects."
- *Steve Selkowitz* presented a paper, "Energy Conservation Potential of Daylighting," to meetings of the Illuminating Engineering Society (IES) in Seattle and Berkeley.
- *Lee Schipper* recently completed a trip to Western Europe and Japan as part of an international project on residential energy use and conservation opportunities. Lee exchanged data with many researchers in France, Germany, and the Scandinavian countries. He also met with the Japanese manufacturers of some energy efficient air conditioners, and a heat exchanger suitable for use in residences. This device permits maintenance of normal ventilation rates for protection against pollution build-up, while capturing the waste heat from the outgoing air flow. Lee gave invited presentations in Munich (with *Alan Meier*), Frankfurt, Varese (Italy), Stockholm, Grenoble, Tokyo, and also presented the results of his study of Energy Use and Conservation in Kenya at a meeting sponsored by the UN and the Beijer Institute in Nairobi in early May. In London Lee stayed with former LBL guest *Amory Lovins* and fiancee.

\* NEW EMPLOYEES \*

- *Jacqueline Bernier*, a graduate of UCB in Real Estate and Urban Economics, joins *Sam Berman* for research on appropriate technologies for rapid-growth areas. Energy boomtowns, springing up in rural locations near coal and other energy deposits, pose numerous problems for urban planners. This research will investigate technologies suitable for power, sewage, waste, and water supply.
- *Franklin Hurlbut*, a professor in the UCB Department of Mechanical Engineering, has a joint faculty appointment and will be working with *Frank Robben* on combustion research.
- *Elia Sterling* will be working this summer with the Ventilation Group at the Walnut Creek Research House and the Richmond Field Station on research on indoor air pollution. Elia is an architect with a research background in the use of air-to-air heat exchangers to extract heat from the outgoing ventilation air in residences. This will save energy while maintaining acceptable levels of indoor air pollutants, and will probably see increasing use as houses become more leakproof to reduce energy losses caused by air infiltration.
- *Karen Sterkin* left the Division on June 13 to take a position in the Business Office of the International House at UCB. *Sharran Zeleke* will take the functions of Karen's job: graduate student and contract personnel, and foreign travel.

\* SEMINARS \*

TUESDAYS, 4 P.M., BLDG. 90, ROOM 3148

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|-----------------------|---|
| 19 June               | Peter Zambas, ARCO Solar<br>"Photovoltaic Solar Energy"   |
| 28 June<br>(Thursday) | Roger Glassey, Energy Information Administration<br>"The EIA Mid-term Energy Forecasting System"<br>(Bldg. 70A, Rm. 3377) |
| 10 July               | Dan Nix, California State Energy Commission<br>TBA (Nuclear Safety Research)  |
| 19 July<br>(Thursday) | Prof. Shozu Murikami<br>TBA (Energy Use in Japan)   |
| 24 July               | Lee Schipper, LBL<br>"Commercial Energy Use and Efficiency in Kenya"  |