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Solar Cooker Review

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SCI's New Executive Director

The SCI Board is pleased to announce the hiring of Mr. Terry Grumley as SCI's new Executive Director. A native of Wisconsin, USA, Terry earned his bachelor's degree in engineering at the US Naval Academy and a second bachelor's degree and a master's degree in management at Sonoma State University in California.



Terry brings a wealth of international development experience to SCI. For the past 13 years, Terry worked for PLAN International, a global, child-focused organization bringing long-term development programs to communities and families. PLAN has

14 donor countries at present, with Childreach being its US member. PLAN currently helps more than one million children and families in 42 developing countries. Terry began his work with PLAN as an Assistant Program Director in Honduras. He then served as PLAN's country representative first in Haiti, then in the Dominican Republic. For the past five years Terry has been the Country Director in Zambia, where he was responsible for opening a new PLAN program. In addition, he and his wife Maria were Peace Corps Volunteers in Guatemala, where Terry was a business advisor to an agricultural cooperative.

Terry met the board of directors during SCI's annual October retreat and planning session held in Sacramento, California. We are excited to have Terry's leadership as we move into a new century.

I would like to thank the following board members for their dedication and efforts as part of the Executive Director Search Committee: Co-chair Elvira Williams, Norge Jerome, Claude Thau, Linda Helm Krapf, and Jay Campbell.

During the challenging transition period SCI was fortunate to have former Board President John Collentine serving as acting Executive Director. His exceptional work and always-ready smile kept SCI on track. Also crucial in the transition period was the assistance of former Executive Director Bev Blum. And what a superb office staff SCI has—Virginia Callaghan, Ramon Kevin Coyle, and Kevin Porter!

Bob Metcalf, Co-chair,
Executive Director Search Committee

Threshold 2000

There is a "rising chorus of requests from Kenyan organizations...that SCI should plan to move into non-refugee communities as well," reports SCI's East Africa Regional Coordinator Margaret C.A. Owino. (See "East Africa Update" p. 6)

Margaret and SCI are carefully considering whether responding to these requests should be a strong new focus in the near future. SCI has been heading in this direction for several years, by building a track record in East Africa with a life-transforming product and a dissemination method based on local empowerment.

In 1993, SCI identified the need to go beyond its first function—that of a world clearinghouse sharing solar cooking research information, self-help manuals and links to solar cooking promoters. To make a greater difference, SCI needed to make solar cooking resources available inside the regions where needed most—sunny areas with serious cooking-fuel shortages. East Africa was selected as the place to start, with Nairobi, Kenya, considered a likely base.

In 1994, SCI developed the low-cost "CooKit" solar cooker, raised over \$80,000 to launch a pilot solar cooking project in an East African refugee camp, and began

meeting with organizations in Kenya and exploring project possibilities. In January, 1995, with cooperation from the Lutheran World Federation (LWF) and the United Nations High Commissioner for Refugees (UNHCR), SCI began its first refugee field project in a camp at Kakuma, Kenya. Three more pilot projects—elsewhere in Kenya, in Ethiopia and in Zimbabwe—were launched in the next two years.

With refugees leading the project within the Kakuma camp, solar cooking is manifestly proving its worth in fighting hunger, as thousands of families use their CookKits to supplement meager firewood rations.

In 1997, SCI passed the \$200,000 per year mark in donations and was able to seek a fulltime East Africa coordinator based in Nairobi. In March, 1998, Margaret Owino was hired. Over 5,000 refugees in Kakuma have received solar cooking training each year since Margaret began strengthening SCI's presence in the field.

In 1999, Margaret opened the East Africa Office in Nairobi, Kenya—SCI's much awaited base. With the support of SCI's tried and true member/donors in coming months, a growing East African resource center will emerge from that base to serve East African demand for solar cooking skills. What a gift for the new century!

President's Corner

Dr. Norge Jerome

Solar Cookers International is very pleased to announce the selection of a new Executive Director to guide and expand our work into the next millennium. Mr. Terry Grumley brings to his new position with SCI vast experience in international development—including fieldwork in Honduras, Haiti and the Dominican Republic and service as Country Director for PLAN International in Zambia. Welcome, Terry Grumley.

I must extend sincerest thanks to my colleagues on the Executive Director Search Committee who worked very diligently for months, reviewing scores of applications and interviewing many promising candidates. Many thanks also to John Collentine, who served as Interim Executive Director from April to October while the process of finding a permanent Executive Director went forward.

These past seven months have been a period of expanded responsibility for all, and our dedicated staff have continued forward, especially in East Africa, where our Coordinator, Margaret Owino, has done a masterful job of guiding our field projects. Several articles in this issue of the Solar Cooker Review reflect Margaret's talent and dedication in putting solar cooking skills into the hands of refugees.

After seven years on the SCI Board (two as Board President) I must step down, in accordance with our bylaws. It has been a pleasure and honor to serve with the fine humanitarians who make up SCI's leadership and membership. And please be certain, that I will continue to strongly support SCI's mission of spreading simple

solar cooking skills that let people help themselves while helping the environment. Thank you, all. It has been a great seven years, but the best is still to come.

We All Shine On!

On August 20, over 150 members and supporters of Solar Cookers International gathered in Sacramento to celebrate past accomplishments and future opportunities for SCI. The Shine On! event brought people together to share in the stories and experience the rich music, images, and flavors of eastern Africa, where SCI continues to spread solar cooking through field projects in refugee camps.

With the sounds of African drums softly playing in the background, guests were invited to read first-hand accounts of solar cooking successes through letters and articles displayed in the courtyard. These stories detail how lives and environments have been improved since the introduction of solar cooking and serve to inspire the volunteers, supporters, and staff to continue spreading the knowledge that is helping people across the globe.

Volunteers demonstrated useful skills, including how to cook using low-cost CookKits and how to determine if water is heated to correct pasteurization temperatures. Solar-cooked foods from Africa, including ugali and Ethiopian honey bread, were available to taste. To provide visual descriptions of SCI's field projects, the video "Letters from Kenya" was shown throughout the evening.

The highlight of the event was Dr. Robert Metcalf's enthusiastic slide presentation spotlighting the history of Solar Cookers International and its solar cooking dissemination programs around the world. At the end of this review, the standing-room-only crowd stood and made a toast to Beverly Blum and her accomplishments as the founding Executive Director of SCI.

Shine On! would not have been the success it was without the sponsorship of Tupper and Patt Hull, Lorrie and Richard McCurdy, Hal Hammond Graphics, Graphics Diversified, Bob Dreizler Chartered Financial Consultant, Ruland's Used Office Furnishings, Time Tested Books, Matt Kuzins & Kumpany, and Data Mailing Systems. SCI would like to thank the following planning committee members for countless hours of work and brainstorming: Jeanne Benson, Virginia Callaghan, Carlys Gilbert, Linda Hayward, Barbara Jodry, Bob Metcalf, Kevin Porter, and Alta Tura.

The work of SCI continues to Shine On!

Gifts That Keep Giving

Alternative Gifts International (AGI) offers gift giving that remembers the less fortunate. Solar Cookers International (SCI) is one of the beneficiaries of AGI's

work. Over the past four years AGI's donors have contributed 2645 solar cookers for refugee families in eastern Africa. For a free catalog call AGI (in the USA) at 800-842-2243 or write AGI, P.O. Box 2267, Lucerne Valley, CA 92356-2267. AGI's email is altgifts@sisp.net and web site is <http://www.altgifts.org>.

1999 SCI Board of Directors

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Jay Campbell
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Timely Plan for Financing Solar Cooker Projects

The very people who most need solar cookers—for their own survival and to protect their local environment from deforestation—are often the least able to afford to buy solar cookers. This fact has greatly slowed the dissemination of solar cooking.

Dr. Dieter Seifert, an engineer in the semi-conductor industry and dedicated solar cooker researcher, designer and promoter for 15 years, has a possible answer. It involves subsidies for solar cooking from entities that will save themselves money in the process while reducing "greenhouse" gasses in the earth's atmosphere. Here's a simplified look at how it works.

At the United Nations Climate Conference in Rio de Janeiro, Brazil, 1992, and subsequent meetings, agreements were made to reduce emissions of carbon dioxide (CO₂). Many industrial nations pledged to reduce their emissions by specific amounts. Germany, for example, where Dr. Seifert lives, pledged in 1997 to reduce CO₂ emissions by 20% (using 1990 as the base year, and the years 2008 to 2012 as the period when the reductions will be measurable.)

Under the international rules, there is a procedure called Joint Implementation/Clean Development Mechanism (JI/CDM), which allows a country to earn credit for reducing emissions by helping another country reduce its CO₂ output. JI/CDM thus provides an economic motive for industrial nations to fund

solar cooking dissemination in countries with deforestation/fuelwood crises. The donor country would get credit for reducing CO₂ emissions; the recipients would get a healthy, sustainable alternative to continued reliance on diminishing wood resources.

Dr. Seifert bases his calculations on the performance and costs of the SK line of deep-focus, parabolic solar cookers, which he has been developing and improving since 1984 and which were proven effective in International Solar Cooker Tests in Spain and South Africa. Dissemination of these cookers and supporting workshops is coordinated by EG-Solar at the State Vocational School in Altoetting, Bavaria. Thus far over 6,000 SK12 and SK14 cookers have been distributed in more than 60 countries around the world.

To illustrate the great potential of solar cooking, Dr. Seifert starts with the estimate that one cooker can save about two tons of firewood per year, i.e. about 50% of a typical family's consumption. Two tons of wood, if burned, would generate 3.7 tons of CO₂. (Yes, the smoke is heavier than the wood, because when burned, the carbon molecules in the wood pick up oxygen molecules.) Over 15 years, at 3.7 tons per year, one cooker would eliminate 55 tons of CO₂ pollution.

The cost of producing and maintaining one SK cooker for 15 years is about US \$150 if the cookers are produced locally. Divide \$150 by 55 tons, and the cost of reducing CO₂ through solar cooking comes to about \$2.70 per ton.

Although no definitive numbers are available regarding other methods of reducing CO₂ emissions, various sources indicate that the \$2.70 per ton figure for a solar cooking project would be among the lowest-cost methods available. An added consideration is that the solar cooking method—especially in combination with reforestation and fuel-efficient wood stoves—saves trees, which absorb CO₂ from the air while releasing oxygen. Furthermore, the human benefits of a global solar cooking project are enormous.

This low-cost approach for the industrial world to meet its treaty obligations can make an enormous difference in the quality of life for literally billions of people. At least 2000 million people live in areas of cooking fuel shortages, and their need to cook is currently leading to massive destruction of the very environment the people need to survive. Dr. Seifert estimates that 220 million SK cookers would be needed to serve this population. At \$150 per cooker and by phasing cooker dissemination over 15 years, the cost of a global forest-saving, CO₂-reducing program using solar cookers would be about \$2,200 million per year—again, far cheaper than alternative methods industrial nations might choose to meet their obligation to reduce CO₂ pollution. With 220 million cookers in use, CO₂ emissions would be reduced by 800 million tons per year.

While reducing CO₂ pollution and the threat of global warming, this global solar cooker program could reduce the harvesting of firewood in many areas to a sustainable level—that is, to the point where wood is consumed no faster than new wood is growing.

However, this cost-effective, humanitarian and forest-friendly solution to CO2 pollution is unlikely to be put into effect unless Joint Implementation authorities in various industrialized countries are convinced that large-scale solar cooker dissemination and use are credible and cost-effective. Successful solar cooking projects already underway in developing countries will help establish credibility and give solar cooker promoters valuable experience in arranging financing of cooker purchases, setting up distribution systems, etc. Through feedback from new solar cooks, such projects lead to improvements in cooker design, and through training programs, these projects create a cadre of local experts.

As Dr. Seifert has written, "The program needs favorable basic conditions and bilateral or multilateral agreements. A network of innovation institutions and associated partners, especially NGOs, is necessary to support the global program."

Dr. Seifert's idea of financing solar cooker dissemination through the JI/CDM process can be adapted by solar cooking promoters in any country that has pledged significant reduction of CO2 emissions. (Those favoring cookers other than the SK line can adapt the idea to their own cookers.) Solar cooker organizations should contact those authorities in their own countries who are responsible for achieving CO2 emission reductions through Joint Implementation efforts to learn how a solar JI/CDM program might be started.

In the United States, contact the US Initiative on Joint Implementation (part of the US Department of Energy) at PO-6/GP-196, 1000 Independence Ave., SW, Washington, DC 20585, or call 202-586-3288. One of the most likely sources of funding in the USA for a JI project would be an electric utility company that has signed the "US Climate Challenge."

In areas of firewood shortage, NGOs that are interested in pursuing the JI/CDM strategy for funding solar cooker projects should alert their partner agencies from industrial countries that have pledged to reduce CO2.

"I have no financial interest (in promoting solar cooking)," says Dr. Seifert. "It is a matter of effective help for people who are forced by their poverty to destroy their own natural resources by burning trees and bushes, harvest remainders and dried manure and who cannot find a way out of their misery without external help. A small fraction of the financial means necessary for CO2 reduction that would have to be invested in the industrialized countries would suffice to overcome a global crisis, which will become a global catastrophe if no remedial measures are taken."

Dr. Seifert can be contacted at Siedlungsstr. 12, D-84524 Neuotting, Germany, or by e-mail at bdiv.seifert@t-online.de

Information about SK parabolic cookers can be obtained from E.G. Solar, Neuoettinger St. 64C, D-84503 Altoetting, Germany, or by e-mail at EG-Solar@t-online.de

Funding of solar energy programs by Joint Implementation is already a reality. The US Department of Energy has announced a Joint Implementation solar electrification project in Sri Lanka that will market and install 812,000 small-scale photovoltaic units (also known as solar home systems).

SAF-WAT Indicators Recalled

SCI's research committee has reported finding one defective SAF-WAT water pasteurization indicator. As a consequence, SCI is withdrawing SAF-WATs from the market and is issuing a recall of all SAF-WATs. Owners of the small, square, bi-metal SAF-WATs are urged to contact SCI to request a free WAPI water pasteurization indicator as a replacement for each SAF-WAT. If possible, please return your old SAF-WATs when requesting replacement WAPIs. Future issues of the Solar Cooker Review will report new developments in SAF-WAT research.

SCI Board Members in the News

In May, SCI board member Bob Metcalf received a distinguished alumni award from Earlham College in Richmond, Indiana, for his work with solar cookers during the past 20 years.

Board member Beverlee Bruce appeared in the October 25, 1999 issue of Monday Developments, a periodical of InterAction, a coalition of 160 private US relief, development and refugee agencies to which SCI belongs. In an article about Northern NGOs in Africa, she defended the role of NGOs in development and relief work, while acknowledging some of the challenges they face.

East Africa Update

Kakuma

About 450 new solar cooks per month have been trained in Kakuma this year; a projected 5400 families will have been served in 1999 by year's end. After nearly five years of SCI involvement, there now are about 15,000 solar cooks in Kakuma, and each new solar cook has received a Solar CookKit. Over the five-year period, roughly 6,000 CookKits have worn out, leaving some 9,000 families equipped for solar cooking. An additional 4,000 families have not yet received training or cookers. The total population of the Kakuma 1 camp exceeds 80,000 people.

(In addition, thousands of refugees have left Kakuma, returning to their homes or being re-settled elsewhere. Among these were hundreds of trained solar cooks. Their continuing usage of solar cooking skills is unknown.)

According to observations by the Kakuma Solar Cooker Project staff, those with solar cookers prepare nearly one fourth of their meals using solar energy. This is roughly five percentage points below expectations for this stage in the project. Staff is seeking means to boost usage. (See "Inside Kakuma")

Project staff have learned to make solar CookKits from cardboard boxes, shiny gift wrap and glue. Basket CookKits made by local Turkana people, with reflective materials glued to panel surfaces, are also being investigated as an alternative for local production. Success in this latter endeavor would provide some income for local people while reducing SCI's transport costs.



The Solar Cooker Project operates within the Lutheran World Federation (LWF) management of Kakuma. Solar Project staff have become involved with LWF's other energy saving projects, including teaching methods of fuelwood conservation (use of wind-breaks, covering of pots, starting a second pot warming on top of a pot that is directly over the fire, etc.) and building fuel-efficient mud stoves.

LWF is virtually managing the project. LWF ensures that staff incentives are paid on time and that careful records regarding SCI money are kept. LWF has assigned one of its officers to work closely with the Solar Cooker Project staff. LWF has also provided storage facilities. Mr. Ojiambo, manager of stores for LWF, assisted in a stores management training for Solar Cooker Project staff who are responsible for storing and dispensing solar CookKits, pots and related supplies. (Mr. Ojiambo had an opportunity to witness solar cooking and to sample solar-cooked foods. His comment was, "How can I get one of these kits? I now believe that the sun can cook and roast meat, too. Mmmmm!")

Both the project supervisor and the three project monitors have been equipped with bicycles for good transport around the camp. The bicycles also contribute to the prestige and visibility of project staff in the eyes of their fellow refugees.

In 1999, project staff received additional training in observing and recording data concerning solar cooker usage. They have also been equipped to make replacement cooking bags available to those who need them and have learned how to promote reusing of worn out bags. In 1999, we negotiated a 10% price reduction in the cost of CookKits and nearly 50% in the cost of plastic cooking bags.

Persistent inquiries about solar cooking programs continue to be heard from the Kakuma 2 and Kakuma 3 camps nearby, as well from local Turkana people. A small number of Turkana have received training from Project staff, but a full-scale

program for either the Turkana or for the other Kakuma-area refugee camps would require a major commitment of resources.

AISHA

In Aisha refugee camp in Ethiopia, all 2040 families were to have received training and CookKits by the end of 1998. However, 50 families have come forward saying they have not yet received CookKits. This complaint is being investigated. An additional 149 families report that after 2 1/2 years of usage, their CookKits have worn out.

The main activities of our eight refugee staff in Aisha are home visits and group meetings to give users the opportunity to ask questions and jointly solve any problems. Staff is also ensuring that replacement bags are accessible and is making observations on uptake and usage. Staff suggests that families seeking additional CookKits should have to earn them by painting pots or by gluing reflective foil onto plain cardboard CookKits.

Staff is also teaching other firewood conservation measures and ways of reusing worn-out plastic cooking bags. An elder in Aisha has used the old bags for making ropes. "If I had more of this stuff I would make many ropes for my camels," he said. What was once a problem is now a solution.

A manufacturer of the plastic bags has been identified in Ethiopia. We are still trying to identify an Ethiopian manufacturer of CookKits.

REGIONAL OFFICE

We have established our regional office in Nairobi and have equipped it in a serviceable, if spartan, fashion. The process of registering as an NGO in Kenya continues, but is lengthy.

Margaret C.A. Owino at work in the new regional office

Our East Africa Advisory Council serves as a sounding board, and members frequently provide practical assistance to SCI in Kenya. We are forming closer linkages with other organizations interested in solar energy and especially in solar cooking. The members' request has been that SCI should plan to move out into non-refugee communities as well.

We have worked with the organizing committee for Kenya's Solar Day this year and last year. For Solar Day this year, we had 30 CookKits on display for the public. A solar-baked carob cake was presented to Kenya's Minister for the Environment during the Solar Day activities.

SCI's Margaret C.A. Owino and Kenya's Minister for the Environment

Working with Faustine Odaba of the Rotary SOLA COOK project, we conducted an awareness workshop for ten school inspectors representing seven school districts.

Training of home science teachers in the schools in their districts and inclusion of solar cooking in school curricula are distinct possibilities.

We have also contributed on a regular basis to the magazine of Kenya's SOLARNET.

In terms of touching lives positively, those reached bear witness and those yet to be reached cannot wait. We are gratified by individual testimonies such as "My food ration lasts almost to the time of the next distribution because I do not barter much of it for firewood or charcoal" or "We, the Sudanese, are very poor and so we only have one meal a day. This method of cooking enables us to prepare (additional) small meals for our children, the sick and the aged."

The main issue in 2000 and beyond is, should SCI activities continue to be limited to the refugee camps or should SCI systematically begin to respond to the rising chorus of requests from Kenyan organizations? Grassroots efforts are springing up, but without good advice and access to supplies, such efforts are bound to remain low level.

—excerpted from Annual Report 1999—Projects: Kakuma and Aisha, by Margaret C.A. Owino, SCI's East Africa Regional Coordinator.

The Blind Solar Cooks of Kakuma

Ms. Norah Darius, a teacher working with blind people in Kakuma, invited the Solar Cooker Project to teach solar cooking as an independent living skill. Thirty-two visually impaired people have received solar cooking training so far. Some of their comments on solar cooking:

"We can now attend classes as our food cooks. Life is more bearable."

"Because of our condition, we cannot go around looking for firewood. It is difficult enough trying to walk around. However, now we just pick up the CookKit and take it out in the sun and it cooks."

"Meat and rice cooked in the CookKit tastes very nice and we cannot burn."

"I got blind after a long illness and I am old and weak but I am happy with solar because I can make porridge, and meat if I get it. I also warm my water for bathing and keep away skin diseases. I boil my drinking water and I am very happy."

"We shall go back to Sudan with new knowledge. Though we are blind, and even though Sudan is forested, solar will forever be part of us. God bless the donors."

"I was blinded when still very small. I am not married and have no such hopes. I have no children to help me and I cannot work for pay. However, with solar, I can cook potatoes and I don't have to be so dependent on other people's pity."

Zimbabwe Project Update

A new Solar Cooking Project Coordinator, new teaching materials and new allies are among the latest developments in the Zimbabwe Solar Cooking Project.

The Zimbabwe Project began in 1996 with a grant from the United Nations Educational, Scientific and Cultural Organization (UNESCO).

Since then, public interest in solar cooking has run ahead of the project's capacity to make solar cooking truly accessible to all that can benefit. SCI partners with the Development Technology Center (DTC) at the University of Zimbabwe, which coordinates the project in Zimbabwe. DTC has been working to build the project's capacity to address three key components that must be in place before a solid commercial market can flourish: 1) rising awareness about solar cooking; 2) availability of affordable cookers and supplies; and 3) thorough consumer instruction by experienced solar cooks and an extended period of consumer support and encouragement, usually through local women's programs, while new cooking techniques become comfortable habits. There has been great progress in the first two, and the third is just being developed.

The DTC recently announced the hiring of Ms. Christine Mutandwa as the new Solar Cooking Project Coordinator. Ms. Mutandwa is a former Home Economics teacher and Advisor for the Zimbabwe Farmers' Union, with extensive experience in gender training and agricultural extension services.

As part of an agreement with SCI, Ms. Mutandwa will develop support services for existing and future community promoter groups throughout Zimbabwe. She also will set up a training program for business trainees, coordinate development of a national education campaign, improve local teaching materials and build a national working coalition and communication network among all participating organizations.

Some 90 Zimbabwe Girl Guides' leaders and scouts are doing excellent work in raising solar cooking awareness after excellent training by SCI Board member and International Girl Guides' Trainer Barby Pulliam. Meanwhile, the Zimbabwe Farmers Union has recently begun publicizing and demonstrating solar cooking in the Zvimba region of the country

Rotary International and Bulawayo-area Rotary Clubs are providing essential long-term support and volunteer assistance to Bulawayo-area solar cooking trainers. SCI is supporting DTC's long-term efforts to build similar support systems in several other parts of Zimbabwe, working with conservation organization AZTREC in Gutu,

Methodist Women's Program in Epworth, Hlekweni Rural Center, and Girl Guides and Rotary Clubs in Harare, Matopos and Plumtree.

SCI has helped refine consumer instruction and training of trainers and develop teaching materials specific to Zimbabwe in local languages. A Zimbabwe Solar Cookbook is also in the works. The work on training materials has been done with input from Zimbabwe's first twenty solar cooking trainers as well as with advice from solar cooking trainers involved in SCI's projects in Kenya and Ethiopia. All of these African contributors are now long-time solar cooks and are well experienced in promotion.

Another key contributor to the improved instruction materials has been Barby Pulliam. We have drawn heavily from her Girl Guides training program as well as from the experience of hundreds of independent solar cooking promoters worldwide.

News You Send

AFRICA AND EUROPE

Kenya



The 4th annual Solar Day celebration was held on September 25th in Nairobi. This year's theme was "Renewable Energy Education." Solar cookers were among the many technologies displayed at the event. The solar cooking booth hosted by SCI's Margaret Owino and Nadir Aden, Ms. Faustine Odaba, Lutheran World Federation staff, and other local and refugee volunteers, drew some of the largest crowds.

Cookers on display in Nairobi

Malawi



Chief Mzukuzuku tests food for doneness

Henderson Kaponda writes of over 3,000 people experiencing solar cooking at the Mabiri Agriculture Show held in Mzimba, a northern Malawi district. Invited guest Chief Mzukuzuku encouraged the solar cooking team to spread the new technology to each and every village in the area and hopes every Malawian will someday have solar cooking skills. It was also noted that clinics for mothers with young children advise the mothers to pasteurize drinking water and milk using solar cookers to help prevent water-borne diseases. H. Kaponda, c/o Embangweni Hospital, Post Box #7, Embangweni, Malawi

Mali



Gnibouwa Diassana continues to demonstrate solar cooking in and around the Bla district. March 13th: 80 business people and craftsmen experienced solar cooking. One blacksmith said, "We have eaten the meat and we will tell to others that solar cooker is a reality and it is the best way to save our trees." March 16th: 70 men and women were taught how to dry vegetables using solar energy. June 6th: 120 participants learned solar cooking skills in the village of Mougana. In addition to these demonstrations, solar cooking is being taught in the schools. Primary school students, ages 14-17, are taught how to solar cook as part of the family economics curriculum. Students have the opportunity to experience solar cooking first hand, ask questions and provide comments. G. Diassana, BP 26, Bla, Mali

Sierra Leone

After receiving solar cooking materials and instruction, a large refugee family sustains itself by cooking bread in a solar box cooker, and they use any extra bread as barter for other necessary goods.

Tanzania



Stanley Wootton Kitandala, a primary school teacher in Kigoma, has developed a solar cooker that is drawing crowds of onlookers at his demonstrations at schools, in market places and on the streets in villages and towns. His cooker consists of a large metal bowl in which is placed a rather small dark pot with the food. The large bowl is covered with clear plastic to let the sunlight in and trap the heat. Curved reflectors are mounted on the side of the bowl facing the sun. "My aim," he writes, "is to provide solar cookers at the cheapest price—US \$9." Mr. Kitandala currently supports the solar cooker project out of his teacher's salary and is looking for a sponsor to enable him to expand. S.W. Kitandala, EAGT Church-Mjimwema, P.O. Box 391, Kigoma, Tanzania

Mr. Kitandala's simple solar cooker

Zambia



Rotarian Nic J. Money has helped to organize a solar cooking program in Lusaka. The program, which has been in existence for approximately one year, is sponsored by the Rotary Club of Lusaka Central and the Lusaka Girl Guides. The Rotarians hope for a gradual shift away from timber-based cooking, toward using the sun to cook when possible. 50 people have already been trained to use the CookIt, the cooker that SCI board member and Girl Guide trainer Barby Pulliam taught Mr. Money to use. Rotarian Wilfred Pimentel, an SCI advisor, also helped introduce the CookIt. N. Money, P.O. Box 50691, Ridgeway, Lusaka 10101, Zambia

THE AMERICAS

Costa Rica

Sol de Vida, a solar cooking promotion group in Costa Rica, has been awarded the 1999 National Prize in Energy—Innovative Project. This recognition is granted annually by the Executive Power, the Ministry of Environment and Energy, the National Power and Light Company, the Chamber of Industries of Costa Rica and the Association for the Investigation and Development of Energy and the Environment. Sol de Vida is best known for its programs of construction and use of solar cookers, its ExpoSol educational facility on solar and environmental matters, and its annual Fiesta del Sol event. The 10th Fiesta del Sol is scheduled for February 21 to 27 in Santa Barbara de Santa Cruz, Guanacaste, Costa Rica. For information, provisional telephone number is 506-283-29-05, fax is 506-234-62-53, and email is arraiga@sol.racsa.co.cr

Cuba

The Botanical Garden in Havana, Cuba, has a demonstration project to show how a food service can be both in harmony with the environment and financially viable. Local cultivation of food, recycling and solar cooking are all part of the program for eating in a way that is healthy, natural, delicious and economical. The Botanical Garden offers documentation on its experience and a cookbook for solar ovens. They seek both finances for expansion of the project and contacts to help them make a documentary video about this activity.

Dominican Republic

According to Sophie Jakowska, many solar cookers were displayed in conjunction with children's exhibits at the third anniversary celebration of Mirador del Norte National Park. The cookers aroused so much interest that workshops are now being planned for adults and children in the near future. S. Jakowska, Ph.D., Arz. Meriño 154, Santo Domingo, Dominican Republic, tel/fax: 809-687-3948

Trinidad and Tobago

Galen Schuck recently made both box and panel cookers while visiting the Raja Yoga Meditation Center in San Fernando. He successfully cooked rice the same

afternoon, making believers of some skeptics. G. Schuck, 10049 S. Majestic Canyon Road, Sandy, Utah 84092, USA

Homemade cookers in San Fernando

USA

California

Deris Jeannette, of ClearDome Solar Ovens, is in the process of developing three production cookers that are lightweight and unbreakable. The heating containers are made of heat-resistant food-safe polycarbonate plastic and the reflectors are made of durable aluminized acrylic plastic mirrors or flexible Mylar. Two models are currently available, the Solar Sportsman 175 for US \$99 plus shipping and the Backpacker for US \$54.99 plus shipping. Plans for making your own ClearDome from inexpensive, common items are available for US \$5. The Solar Sportsman 175 does not require adjustments to follow the sun's path, and heats food to 175°F in about four hours and up to 200°F during a full day. It weighs approximately five pounds. ClearDome Solar Ovens, 2514 Jamacha Road #502-pmb 11, Rancho San Diego, CA 92019, USA, web: <http://www.cleardomesolar.com>

ClearDome's Solar Sportsman

ASIA AND PACIFIC

India

Dr. S. Mullick of the Humanity Association in Howrah, India, writes to tell of a solar cooker created by Mr. B.N. Kundu of the same organization. The design calls for a fixed "hot plate" where sunlight is focused. An insulated "cage" is built around the hot plate with three glass windows to let in sunlight. Through one window, the sunlight shines directly. Two banks of focused mirrors shine additional light on the hot plate through the other two windows. Both the cage and the arms on which the mirrors are mounted rotate around the hot plate, so that the windows and mirrors are always in proper alignment. This rotating structure is attached by rope or cable through a pulley system to a gearbox connected to a centrifugal governor. This system allows the mirror/window structure to rotate at 15 degrees per hour, the same rate at which the sun moves across the sky. The motive force of the tracking system is derived from falling weights; once the unit is set to work by lifting the weight and adjusting the mirrors at the beginning of cooking, there will be no need to attend the system until the cooking is over. Mr. Kundu says the cooker will cook 1 kg of rice and proportionate quantities of pulses and vegetables in one hour and 1 kg of mutton in two hours. This cooker cost 2000 rupees to build in 1981 and would probably cost much more today. Mr. Kundu's services are available to advise those interested in building and using this cooker. For more information, contact Dr. S. Mullick at the Humanity Association, 39 Hem Chakraverty Lane, Howrah 1, India, email: subir.mullick@gems.vsn1.net.in

Inside Kakuma

The Solar Cooking Project staff in Kakuma 1 refugee camp in northeastern Kenya consists of 32 trainers, 3 monitors and 1 supervisor—refugees all. They are paid a small “incentive” or stipend in exchange for serving as the eyes, ears, hands, hearts and minds of solar cooking promotion in the camp.

In addition to training new solar cooks and distributing solar cooking supplies, the trainers also conduct follow-up visits to the homes of new solar cooks and lead follow-up meetings of each group of new trainees to provide additional tips, answer questions and promote joint problem solving and recipe sharing.

The monitors coach the trainers, assist in trainings and group meetings, and are in charge of issuing and re-ordering supplies. The supervisor solves problems for the staff and keeps the project running in coordination with the camp management, Lutheran World Federation (LWF).

The staff makes replacement cooking bags available to those who need them and has recently begun to teach methods for reusing worn bags by converting them into mats, baskets, sturdy tote bags, ropes, traditional pot hangers (to keep food supplies out of the reach of rats), fans, and miscellaneous containers. A sleeping mat, larger and more comfortable than standard camp issue, has also been designed. Staff members also create new recipes to share with the community.

(See the first section of “East Africa Update” p. 6, for more about staff activities.)

Faustine Odaba (right), Field Coordinator for Rotary International’s SOLAR COOK project and SCI advisor, and her daughter, Estella, demonstrate how used plastic is woven into new items

Although some project staff had never held a pencil before becoming trainers, they have learned to keep written records of trainings, home visits and group meetings. They have also been trained in observing and recording usage of solar cookers.



Garang' Majok, a Solar Cooker Project monitor, records information on cookers to be used for data collection

As teachers, neighbors, and camp residents, the Solar Cooker Project staff members are steeped in knowledge of camp life, the needs of the people and the importance of solar cooking in people's lives. Their observations and suggestions are crucial to guiding policy as the project continues to mature.

According to staff observations, people are gaining definite benefits from solar cooking, but in many cases use of the cookers is still spotty. The solar cooking benefits being realized include:

- fewer children or cooks getting burned
- solar cooking saves time to be spent on other useful activities
- solar cooks save on firewood, most of which is obtained by bartering their food ration, so more food is available
- food does not burn or stick to the pot, so people can eat all the food
- girls work loads are lessened and they can go to school
- smaller families reap the maximum benefit, since they get smaller firewood rations
- fewer waterborne diseases
- tastier foods with all the vitamins
- less air pollution in compounds and shelters
- fences are not being destroyed in the hunt for firewood
- solar Cookits are portable and the energy used is free
- pregnant women like it since they do not like the fire in their condition

Despite the refugee population's growing experience with these solar cooking benefits, old habits die hard, and wood is still commonly used. Low sales of

replacement bags indicate that most families are not making maximum usage of their cookers yet. The project staff sympathize with the people who say they can't afford to buy new bags.

The staff reports that some families say that their CookKits or pots have been stolen, while others say their CookKits have been damaged by rain. Staff also reports that some families only use the CookKits when firewood rations run out, while other families don't solar cook at all (but use the training-provided pot over a fire). The general staff observation is that those families who do use their cookers frequently gain the most benefits.

To boost usage, the trainers brainstormed ideas for activities they can pursue:

- setting a good example by regularly using their CookKits
- demonstrate new recipes to interested families
- discuss the advantages of solar cooking at every opportunity
- promote solar cooking through songs and dramatic skits
- spark questions and dialogue by dressing in their project uniforms
- always carry replacement cooking bags for those wanting to buy

The project staff is also involved in such ongoing and sensitive issues as the long-term, local sustainability of solar cooking in Kakuma. That is why they have learned to make Solar CookKits by gluing reflective paper to cardboard. They have recommended that families wanting a second or third CookKit should also make their own, as a way both of "sharing project costs" with SCI's donors and of transforming the refugees from recipients of charity to true owners of a technology that is integrated with their cultural skills. In addition, they have suggested that families earn replacement cookers when their old CookKits wear out by working on project activities such as painting pots and gluing reflectors.

Truly, the refugees who work as the Solar Cooker Project staff are the bridge between SCI and lasting solar cooking benefits in the lives of the refugees.

Sample Solar Recipe from Kakuma

One way project trainers encourage solar cooker usage is by creating and sharing new recipes adapted to solar cooking. Here is one created by Ms. Niel Jok, one of the project monitors.

Meat (or Fish) in Okra soup

Cut meat into small pieces and place in solar pot.

Add chopped onions, tomatoes, salt, spices.

Stir well.

Peel okra and place evenly into the pot.

Add 1/4 cup water.

Cover pot and place into plastic bag, then into CookKit.

Solar cook 1 to 1 1/2 hours.

Messages for the Board and Supporters of SCI

During their 1999 advanced training course, led by SCI's East Africa Coordinator Margaret Owino, the refugee staff members of the Solar Cooker Project in Kakuma were asked for individual messages they'd like forwarded to SCI's Board of Directors, members, donors, volunteers and supporters. Thirty-four trainers and monitors and supervisor Shadrack Alumai enthusiastically responded:

Din'g Majak "Greetings from the beneficiaries."

Rachel Athiek "We greet you in the name of the Lord."

Mary Akuot "We are happy with the training workshop."

Nyanchol Den'g "We all need bicycles."

Tabitha Nyanuot "This technology is a wonder, so let us continue."

Anisa Osman "Continue with your support for us."

Rachel Achol "I am really educated now."

Veronica Achol "We are happy with the board, donors and Margaret."

Mary Yar "Pay us a visit and witness for yourselves."

Rachel Nyiel "I would like to see the inventor of this wonder."

Vernoica Atiliu "It is a wonder. Teach us more."

Martha Kajele "Our knowledge is increasing every day. Thanks."

Kuer Ang'ok "We are so confident. Our coordinator visits us frequently."

Antony Malong "We need more training and books to read."

Rehema Khamis "Because we are in the project, we have gained more knowledge."

Teresa Aliai "I am very happy and I can't wait to take the knowledge back to Sudan."

Joseph Anderea "I am very happy."

Yuang Magot "More durable CookKits, please."

Flora Dudu "We welcome new ideas and knowledge."

Santino Makol "Please continue with your support."

James Wol "Organize exchange visits, too."

Garang' Majok "The whole community appreciates."

Niel Jok "The project helps all widows, children and even the blind."

Adeng' Majok "We appreciate the developments—monitors now have bicycles."

Etaferau Tadese "The invention is classic. It helps people and the environment."

Lucy Asha "The struggle continues. Do not get tired."

Regina Ernest "Even though we are refugees, we are the first to know this wonder."

Martha Athou "I am happy in my heart and in my life."

Amina Isa "Shukran—being involved in the project is our livelihood. Shukran."

Sofeya Mohammed "Thanks. Visit us."

Amina Ahmed "We are happy with coordinator's visits, and we are learning a lot."

Tizita Cory "Thanks to our donors, we have life long skills and knowledge."

Assumpta Aneng "We are grateful to Lutheran World Federation and the UN High Commissioner for Refugees for allowing the project in the camp."

Mary Kwany "Can we have shoes also?"

Shadrack Alumai "We feel the spirit of change. We know more about our work."

More Girl Guides in Africa Solar Cook

SCI Board member, longtime solar cook and Girl Scout leader Barby Pulliam made her fifth visit to Africa recently in response to requests from Girl Guide organizations for solar cooking workshops.

This year's trip began in Zambia, with an eight-day workshop on solar cooking topics in Chingola for Girl Guide representatives from Zambia, Zimbabwe, Malawi, Uganda and Kenya, along with representatives of the Soy Nutrition Organization, the Agricultural Department of Zambia, the Chimpanzee Orphanage and the Luanshya Rotary Club.

In Malawi, Barby gave two workshops—one in Blantyre for 26 attendees and one in Mzuzu for 19. In Blantyre, Barby met with the executive director of the National Association of Preschools and enlisted her support in spreading solar cooking.

In Zimbabwe, Barby returned to Epworth, one of the first two communities where SCI trained solar cooking teachers. Barby gave a four-day workshop for 18 people from Girl Guides and from the Methodist Women's center. Helping Barby with the workshop were several of the women first trained as solar cooking teachers in Epworth in 1996.

Next was a four-day course involving 39 people in Gutu. AZTREC, a local conservation group, set up the workshop. AZTREC also provides a staff member, Elizabeth Mpfu, to coordinate a solar cooking project in Gutu.

Barby's last big stop in Zimbabwe was in Bulawayo where 15 people received a four-day training program featuring nine women from nearby Ntabazinduna who were trained as solar cooking teachers by SCI in 1996. At the end of the event, three of the women from Ntabazinduna—Jane Khumalo, Edith Nyoni and Beatrice Khabatha—were named "Master Trainers."

Barby also led a four-day workshop at a teacher's college north of Maputo in Mozambique. All eight participants are college students, and seven are Girl Guide leaders.

Year 2000 will also be a busy one for Barby. She has tentative bookings for Girl Guide solar cooking workshops in Côte d'Ivoire, Ghana, India, Malaysia and Peru.

The basic costs of workshops and transportation costs for Girl Guide workshop attendees come from the Girl Scout Solar Cooker Fund. Local Girl Guide Associations hosting workshops provide Barby with a bed or a soft spot on the floor, plus meals. Barby has paid her own travel costs from her own pocket.

Barby Pulliam's latest mission to Africa builds upon four prior trips. She had taught solar cooking to hundreds of Girl Guides from seven African countries and has coached many in how to spread solar cooking skills. Her most recent trip re-

emphasizes Barby's dedication to solar cooking, to teaching others, to empowering Girl Guides to promote solar cooking and to networking with Rotary clubs and other organizations.

New Scouting Badge Announced

An unofficial solar cooking badge program has been developed for Brownie/Girl Guides and Scouts. The requirements follow.

For Brownie Guides and Brownie Scouts (must complete five of the following, including those that are starred):

1. * Learn what happens when trees are cut down in order to make cooking fires. Explain to your Brownie pack or your family what you have learned. Or, if deforestation is a problem in your country, learn what is being done to solve that problem. Explain this to your pack or family.
2. * Alone or with others build a Quickie or Cookit solar cooker. Learn why it works and demonstrate how to use it and how to take care of it.
3. Explain the advantages of cooking with the sun instead of with wood, charcoal or paraffin. With others, put on a drama to help your Brownie pack, school class or a community group understand the differences between solar and traditional cooking.
4. With your Brownie group make an exhibit to show how the sun can cook food. Take your exhibit to a place where lots of people are, and help explain solar cooking to the people who come to see it. You might do this at a community fair, church, school or market.
5. * Learn to solar cook a food that most people in your community eat regularly. Cook it for your family, and report to your Brownie pack how they liked it. Keep notes on how long it took to cook and what the weather was like on that day.
6. Demonstrate safety precautions necessary when solar cooking.

For Girl Guides and Girl Scouts (must complete six of the following, including those that are starred):

1. * Find four countries that have a severe shortage of cooking fuel. Discover what Girl Guides or Girl Scouts there are doing to help solve the problem. Or, find out the rate of deforestation or forest growth in your country. If deforestation is a problem, learn what is being done to solve that problem.
2. * Alone or with others build a solar cooker or pasteurizer and learn how to use it.
3. Explain the advantages of cooking with the sun instead of with wood, charcoal or paraffin. With others put on a drama to help your Girl Guide or Girl Scout group or a community group understand the differences between solar and traditional cooking.

4. Take part in a community education campaign to make people aware of the problems of deforestation, polluted water and lung disease and the ways that solar cooking can help to overcome those problems.
5. * Become proficient at solar cooking your country's staple grain dish, vegetables and at least one baked food like bread or cake.
6. Solar cook at least four meals for your family. Make notes on weather conditions, time of year, time of day, length of time you cooked each dish and your family's comments about the food.
7. Teach a family member or friend how to cook with the sun.
8. Demonstrate the "integrated cooking method." In a meal you cook for your family or patrol, use a solar cooker, a fuel-efficient stove and a hay box or other stored-heat device.

Badge design by Meghan Sedgley, Age 12, El Dorado Hills, California, USA

A valuable resource for this badge is the 3rd edition of the Solar Cooking Manual for Girl Guides and Girl Scouts, free to Guide Associations where there are critical fuel shortages and available at modest cost to others. A cloth badge is also available. For more information contact Barby Pulliam, 3523 Rolph Way, El Dorado Hills, CA 95762, USA, tel: 916-933-1133, fax: 916-933-1134, email: barby@barby.com, web: <http://www.barby.com>

World Solar Cooking and Food Processing International Conference

by Bill Lankford

From 64 nations around the world, nearly 300 people interested in solar cooking met in the beautiful northern Italy town of Varese for five days in early October. Organized by the World Solar Academy, this was the first time that such a high level, international solar cooking conference has been held since the World Solar Summit in Harare, Zimbabwe in 1996. United Nations Educational, Scientific and Cultural Organization (UNESCO), the European Commission, and numerous other government and private organizations sponsored the lavish event.

Participating as invited speakers were Margaret Owino, SCI's East African Coordinator, SCI Board members Shyam Nandwani and Bill Lankford, and long time SCI associate Paul Funk who gave an important paper on standards for evaluating the thermal performance of solar cookers. Professor Nandwani spoke on his 20 years of solar cooking in Costa Rica, and Professor Lankford described the integrated nature of his Central American solar cooking development program. Former SCI Executive Director, Bev Blum, displayed a CookKit solar cooker, and set up a literature table for SCI's solar cooking program.

However, it was Margaret Owino who stole the show. She gave the invited paper that received the most enthusiastic audience response of the conference, she chaired the working group on women and solar cooking, and gave another short invited paper in the same session. During the exuberant closing ceremonies it was

Margaret, who, as MC, led the joyous outpouring of gratitude for the conference organizer, Stefania Grotti and her staff. Towering over everybody in spectacular African dress, she personified the spirit of the final moments of the conference.

At the conclusion of the conference, the conclusions and recommendations of the seven working groups were collected and distributed, and "The Varese Declaration" was prepared. These documents will serve to guide solar cooking development in the years ahead. While the strong emphasis was on the market to determine solar cooking growth, there was the recognition that subsidies and "non-commercial distribution modes" will be needed as well. There also seems to be growing attention to the end user as a key element in the whole process. In the working group reports it was recognized that there is a great need for a "solar cooking clearinghouse" of information and for a "worldwide documentation center." SCI has considerable experience in both of these areas.

In reflection, although a goal of the conference to engage more developed world governments in supporting solar cooking development probably fell short, (the United States government was characteristically absent), the demonstration of broad world wide interest and creative energy of NGOs should move us forward dramatically. With our new Executive Director on board, SCI should be able to take its place in these expanding opportunities.

It is anticipated that the next world conference will be held in November, 2000, in South Africa to share the results of a multi-year, multi-million dollar effort to initiate commercial development of solar cooking in South Africa sponsored by the German technical cooperation organization GTZ.

New Email Discussion Group Address

The solar cooking discussion group is now hosted by internet provider Topica. Most procedures remain the same, but the addresses have changed. Here is a summary of the changes:

To join the list, send a blank email message to: solarcooking-l-subscribe@igc.topica.com

To be removed, send a blank email message to: solarcooking-l-unsubscribe@igc.topica.com

To send a message to the group, email it to: solarcooking-l@igc.topica.com

If you belong to the list, and would prefer to receive the day's messages in a single batch (known as "digest mode"), mention this in an email message from the account you are registered under to the list owner: tsponheim@accessone.com

The list is for those who want to share information on solar cooking and water pasteurization. It is open to anyone regardless of location. New subscribers are

encouraged to write a short introductory message describing their interest in solar cooking. Please do not quote large portions of mail that you reply to, and limit your contributions to appropriate topics, given that many members pay for their email access by the byte.

New System Cooks 20,000 Meals Daily!

The world's largest solar cooking system started functioning last week [May 27th, 1999] at Taleti [India], near Mt. Abu. Installed by the Brahma Kumaris organization with assistance from the Ministry of Non-conventional Energy Sources, the system is designed to prepare meals twice a day for 10,000 people.

During trials conducted in the months of March and April this year, the system cooked as many as 33,800 meals on a single day, besides boiling 3000 litres of water for preparing tea.

The system employs a total of 84 parabolic mirrors, which concentrate solar radiation on to receivers containing water. The solar heat converts the water into steam, which is used to cook rice, *dal* and vegetables.

The system is divided into six units, each of which can be operated independently to cater to fewer numbers of persons. The design of the system is based on a concept developed by Wolfgang Scheffler of Switzerland.

The system can prepare all items, which can be cooked by steam. It can save substantial amounts of conventional fuel, which would otherwise be required for generating steam or cooking food.

The system at Taleti has been saving up to 400 litres of diesel [fuel] per day. Besides this saving, solar cooking is also environment friendly and reduces air pollution.

—originally published by the India Express Network at <http://www.indiaexpress.com/news/technology/19990527-1.html>

For more information, visit <http://www.bkwsuau.com/solar>

Corrections

In the March 1999 Solar Cooker Review we incorrectly listed the Solar Solutions (inflatable solar still) phone number as 619-587-3670. The correct number is 858-695-3806.

In the same issue, we mistakenly named the pictured man on page 7 as Sanu Kaji Shrestha. The person is Sudhir Shrestha.

Solar Cooker Review

Solar Cooker Review is published two or three times a year, with the purpose of presenting solar cooking information from around the world. Topics include solar cooker technology, dissemination strategies, educational materials, and cultural and social adaptations. From time to time we cover related topics such as women's issues, wood shortages, health, nutrition, air pollution, climatic changes, and the environment.

Solar Cooker Review is sent to those who contribute money or news about solar cooking projects. The suggested subscription price is \$10/year. Single copies are sent free to select libraries and groups overseas.

We welcome reports and commentary related to solar cooking for possible inclusion. These may be edited for clarity or space. Please cite sources whenever possible. We will credit your contribution. Send contributions to SCI REVIEW, 1919 21st ST STE 101, Sacramento, CA 95814-6827, USA. You may also send them by fax 916-455-4498, or email info@solarcookers.org

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Contributors to this Review

Bill Lankford, for report on international conference
Bev Blum, for project information
Tom Sponheim, for email discussion group information

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