SOLAR COOKERS INTERNATIONAL

Solar Cooker Review

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In This Issue

Solar Cookers International

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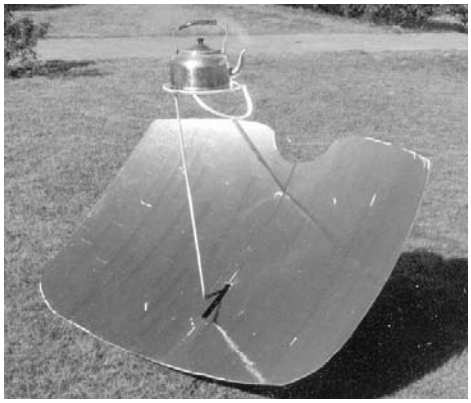
SCI assists communities to use the power of the sun to cook food and pasteurize water for the benefit of people and environments.

Development and application of solar cookers in China

*(Editor's note: This article is based on a report by **Chen Xiaofu**, deputy secretary general of the China Association of Rural Energy Industry. It has been edited for content and length.)*

Significant achievements have been made in China's solar cooker industry — especially in design theory, materials technology, technical standards and industrial production, dissemination and sales service — during more than 20 years of research and promotion. The industry has experienced the change from independent research to national cooperation and systemic study; from laboratory experimentation to industrial production; and from governmental support to semi-commercialization. With more than 560,000 cookers distributed, China is the world leader in solar cooker dissemination.



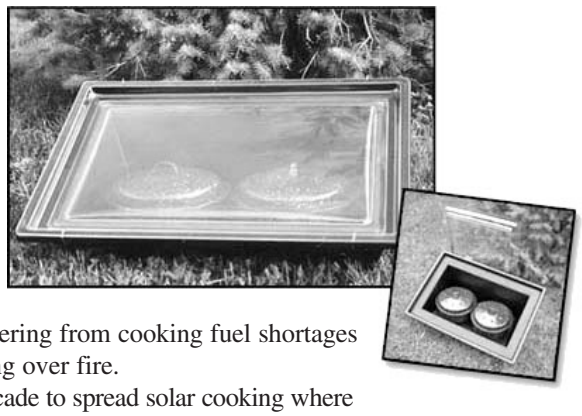
A common solar cooker in Beijing.

BENEFIT ANALYSIS

Economic benefits

The economic impact of solar cookers varies between regions. Research has shown solar cooks *Continued on page 2*

SOS "Sport" solar cooker now available!



Mike and **Martha Port**, of the Minneapolis, Minnesota-based **Solar Oven Society** (SOS), have spent years developing their new "Sport" solar cooker. Though they have had a few setbacks along the way, they are thrilled with the end product and are anxious to have their cooker in the marketplace and, ultimately, to provide some relief to people around the world suffering from cooking fuel shortages and health problems related to cooking over fire.

SOS has worked for more than a decade to spread solar cooking where it is needed most. Based on its experiences *Continued on page 4*

China from page 1

to save anywhere from 600-1000 kilograms of fuel wood per year, or 380-560 kilograms of fuel straw. Depending on the price and availability of cooking fuel in a given region, frequent solar cooks can save anywhere from 35 RMB in Qinghai Hualong to upwards of 600 RMB per year in Tibet, where cooking fuel is very expensive.

Social benefits

Solar cookers benefit the people of China in a number of ways. Solar cookers reduce the amount of time and energy families expend collecting fuel wood, especially in Gansu, Qinghai and Xinjiang. Where other cooking fuels are used, such as coal, solar cookers reduce reliance on less sustainable fuel sources and the transportation requirements of such fuels. Health and living conditions are also improved through the regular use of solar cookers. For instance, people living in poverty-stricken areas often have rice in cold water for lunch, instead of more nutritious meals requiring additional fuel. Besides cooking, there are a number of other uses for solar cookers. One use that improves local health and sanitation is the heating of water for cleaning and bathing.

Ecological benefits

In addition to economic and social benefits, there are ecological benefits to solar cooker use. Straw that might have been used for cooking fuel can be used as organic fertilizer on farms. Some regions with historically high rates of fuel wood use are beginning to see the return of greenery. For example, thanks to the application of the solar cookers, Xiaoling County in Yongjin became the model village of the virescence in the region in 1984.

RESEARCH

Solar cookers began to attract attention as a special technology at a seminar held in Shanghai in 1973. After the meeting, solar cooker technology was developed in many provinces. For example, the Heat-Box (HB) solar cooker was developed in Henan Anyang, and the Light-Aggregation Mirror (LAM) solar cooker was developed in Shanghai, Beijing and Gansu.

Design theory

Using the three rounds calculation graphing theory, and through studies of such factors as light reflection, absorption and heating efficiency, solar reflectors were designed to reflect greater amounts of sunlight to the bottom of the cooking pot. In calculating appropriate cooker shapes, major parameters were analyzed and calculated to optimize light efficiency of the solar cookers. Locations and demands of customers were also taken into consideration.

Structure design

Since users reside mainly in rural areas, solar cookers are designed for easy manufacture and operation, low cost, and to be competitive with traditional energy sources.

Testing method

The solar cooker testing method is listed in the National Standardization Program. This industrial standardization, authorized in 1992, has systematically summarized studies and experiences of the LAM solar cooker over the past 10 years — putting forward designs, models, specifications and testing methods — and has regulated the technical requirements and testing methods of solar cooker heat capacity.

Shell material and technique

The shell of LAM solar cookers can be made from a variety of materials including cast iron, concrete, glass steel, steel, aluminum, gypsum, wood, paper pulp and grass.

Cast iron solar cookers were developed based on the traditional technique for the iron boiler, resulting in a shell with a thickness of three millimeters. Cast iron shells have high accuracy and little distortion, are easy to transport, and are durable.

Concrete solar cookers have good resistance to water and natural erosion. Concrete solar cookers have been around for quite some time, and are very common given that they are inexpensive, easy to shape, and relatively simple to construct. However, they are not portable and therefore need to be produced and sold on site.

Anti-alkali, glass-fiber strengthened concrete (GRC) solar cookers are fairly new. The concrete shell contains an anti-alkali, glass-fiber grid and steel bars, strategically placed to create a rigid concrete shell that is much lighter than previous models, making the cooker more portable. The GRC solar cooker is, however, more susceptible to damage from impact.

Glass steel solar cookers are light, easily shaped and simple to produce, but are susceptible to distortion and aging. Recent innovations have improved the durability of glass steel cookers.

A Chinese-style cooker shell, molded from clay by artisans in Nepal. (Photo courtesy of Hannu Virtanen.)

Reflecting material

Glass mirrors and vacuum aluminum plating membranes (VAPMs) are the two reflective materials currently employed. Glass mirror reflectors were always used in early solar cookers, and are still used today in thick concrete solar cookers because of their friction resistance, slick surface, reasonable price and four- to five-year lifespan. However, glass is susceptible to damage and is time consuming and costly to replace. VAPMs are becoming increasing popular because they are highly reflective and easily replaced. They generally have a two- to three-year lifespan.

PRESENT STATUS

Status of the domestic distribution and application of the solar cookers

For a number of years the government provided subsidies to help users afford solar cookers. A solar cooker valued at 40-60 RMB could be purchased for 10-30 RMB. (As of this writing, 1 USD equals approximately 8 RMB.) Though subsidies have been reduced since 1985, sales have increased.

Solar cookers have swiftly gained ground in regions with cooking fuel shortages, like Gansu province. For many years, Gansu farmers have had to grub grass and tree roots, and cut wood for fuel. They are therefore eager to have solar cookers, which can provide 15 percent of their total household energy requirements. In Yong Qing — a county in Gansu province — over 18,000 solar cookers were distributed over a three-year period, increasing the dissemination rate to 68.73 percent. Tibet, Qinghai and Hebei provinces have also had significant dissemination.

Table 1
Number of solar cookers in China

Year	Cookers
1989	113,000
1991	124,000
1993	140,000
1995	195,000
1997	224,000
2000	332,000
2001	500,000
2002	560,000

Manufacturing Status

Solar cooker production is done both by hand and by machine, and the process is continually changing.

A number of factories, located primarily in Jiangsu, Hebei, Henan, Gansu and Beijing, manufacture solar cookers. These factories have good technical capabilities and access to materials including cast iron, GRC and steel. Solar cookers are also built in family workshops, primarily in Gansu and Hebei, supplying rural populations. These cookers are typically made with concrete shells and reused glass mirrors, arranged in mosaic form, as reflecting material. They are popular given the high quality of the cookers and the fact that the cookers are sold on the spot.

Small glass mirror pieces are applied to the cooker shell in mosaic form.

Concluded on next page

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RECOMMENDATIONS

Region-specific sales and dissemination approaches

It is necessary to insist on the promotion of solar cookers as an important method to alleviate energy shortage and environmental degradation. Region-specific sales and dissemination approaches should be implemented. In low-income areas, local government should provide subsidies to make solar cookers affordable. In mid-level income areas, the government should encourage customers to purchase solar cookers by implementing sales strategies such as establishing commission sites and payment by installment, and perfecting the after-market service system.

Support for the solar cooker industry

It is suggested to continue budgeting for and put efforts into technology research, in order to maintain a leading role in the solar cooking field. Also, the government should support developed producers of solar cookers. Since profits from the sales of solar cooker are somewhat limited by low-income customers, it is necessary for the government to stimulate the industry by providing financial support and tax reductions resulting in lower production costs. With government-provided technical support, local factories should be established for the production and sale of solar cookers in remote areas.

Technology and quality control

Efforts should be made to improve the durability of reflective materials, and standardization and utilization of the product. Testing centers should be established to ensure solar cooker quality. Automatic tracking systems should be explored further, with attention on economics and practical use. Box-style solar cookers should also be developed to provide a portable alternative.

Strengthening cooperation and promoting communication

It is essential to cooperate with other developing countries and promote technology transfer and business development for mutual benefit.

Contact: Chen Xiaofu, deputy secretary general, China Association of Rural Energy Industry. Tel: 0086 10-65301463, fax: 0086 10-65301462.

SOS "Sport" from page 1

working in 27 countries, SOS identified the characteristics it wanted in its cooker: lightweight, attractive, effective, durable and affordable. Based on these attributes, a team of solar engineers, mostly retired, worked for four years to develop and test the Sport cooker. Many individuals and organizations contributed — either through prior research or active participation — to the development of this cooker; particularly former **Solar Cookers International** (SCI) board member Dr. **Paul Funk**, who contributed much to the overall design of the cooker, and **Richard Wareham** of the **Sunstove® Organization**, who contributed to the modified acrylic glazing idea.

Weighing 11 pounds and measuring 12 inches tall by 27 inches long by 17 inches wide, the Sport is quite portable compared to other solar cookers of similar capacity. It holds two medium-sized, three-quart pots or three smaller pots and can be used at a 30° or 60° slant to the sun. With good solar conditions, the Sport cooks at 200-300°F.

The cooker's durable outer casing is made from post-consumer recycled soda bottles. (Approximately 68 20-ounce bottles are used in each cooker.) The acrylic window, or "glazing," is insulated from heat loss with a one-inch thick air gap created by clear polyester film containing special UV absorbing agents. The walls of the cooker are insulated with closed-cell polyisocyanurate that won't absorb water and, according to product literature, does not out-gas at solar cooking temperatures. Optional reflectors will be available in the future, extending the cooking season and increasing temperatures.

In the United States, the Sport sells for US $98.97 plus $19.97 shipping and handling, and $6.93 sales tax for Minnesota residents. Included at this price are two black cooking pots, an oven thermometer, and SCI's water pasteurization indicator (WAPI). No assembly required.

Through a special arrangement with the manufacturer, Solar Cookers International will receive a percentage of the proceeds to support its nonprofit work spreading solar cooking worldwide. To direct funds to SCI, **please mention seller ID #002 when you order**. (Note: the on-line order form does not yet allow for the seller ID to be inputted. Until this is resolved, please order by mail or phone if possible.)

To order the Sport, contact: Solar Oven Society, 3225 Hennepin Avenue East, Minneapolis, Minnesota 55413, USA. Tel: (612) 623-4700, fax: (612) 623-3311, e-mail: sos@solarovens.org, web: http://www.solarovens.org.

Solar pioneers Kerr, Cole honored

In 1976**, Barbara Kerr** and **Sherry Cole** developed the simple cardboard solar box cooker that enabled tens of thousands of people worldwide to solar cook, and ultimately led to the creation of Solar Cookers International.

Barbara (left) and Sherry.

Both Barbara and Sherry were recently honored by the **Gladys Taylor McGarey Medical Foundation** for their pioneering work in the field of solar cooking. Barbara's award includes this inscription: "She created methods and materials and ensured that they reached those who needed them most in emerging countries throughout the world. In doing so, she enhanced and perhaps even preserved countless lives."

Solar Cookers International congratulates Barbara and Sherry on another round of much-deserved accolades. Way to go!

Volunteer opportunity

Tom Sponheim, webmaster of **Solar Cookers International**'s website "The Solar Cooking Archive," is looking for a volunteer to transcribe interviews conducted with a number of solar cooking activists from around the world. The interviews are part of the ongoing series "Calling All Solar Cookers," located on the Internet at http://solarcooking.org/media/broadcast.

Contact: Tom Sponheim, e-mail: webmaster@solarcooking.org.

Improved international directory

Since the mid-1990s, one way that **Solar Cookers International** has served the world solar community is by promoting networking and information exchanges through the publication of an international directory of solar cooking experts and advocates. For example, someone interested in promoting solar cooking in Haiti can consult the directory to find others who are involved with solar cooking in that country so that ideas and experience can be readily shared. In 1996, the international directory was added to our "Solar Cooking Archive" website at http://solarcooking.org/directory.asp.

Since late 2002, the on-line directory has been substantially upgraded with hundreds of new listings added and dozens of obsolete listings removed. In addition, new features have been added that allow viewers to instantly learn more about many of these solar cooking experts. The on-line directory is updated monthly.

Please send additions or corrections, by e-mail, to: ramon@solarcookers.org.

Solar Cooker Review

Solar Cooker Review is published two or three times per 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 US $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 Solar Cookers International, 1919 21st Street, Suite 101, Sacramento, California 95814-6827, USA. You may also send them by fax: (916) 455-4498, or e-mail: info@solarcookers.org

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SCI is a 501(c)(3) nonprofit organization assisting communities to use the power of the sun to cook food and pasteurize water for the benefit of people and environments. We do not sell, rent or trade names of our donors. Tax ID # 68-0153141.

Solar Cooker Review is available online at: solarcooking.org/docs.htm#newsletters

SHEP teaching solar cooking to Kenyan pastoralists

Alison Curtis, a longtime promoter of solar cooking, sent reports on continued efforts to share solar cooking skills with pastoralists in Kenya. As a representative of the **Solar Health and Education Project** (SHEP), Ms. Curtis helped organize two workshops this past February benefiting Samburu and Masai communities.

Kiwayu workshop

The first workshop — held in Kiwayu, Lamu district, Coast province — benefited seven villages within the **Kenya Marine National Reserve** (KMNR) locality, including several that had previously received solar cooking training. Thus, the workshop not only served to educate new solar cooks, but also provided follow-up education to experienced solar cooks and a forum to discuss the further spread of solar cooking and possible inclusion of solar cooking and pasteurization topics in school curriculum.

Ms. Curtis planned the workshop, along with KMNR staff members **Issa Ally**, **Haroun Kombo** and **Zeinab Musa**. Workshop participants included teachers, housewives and school leavers from the following villages: Ndau, Kizingitini, Kiwayu, Chandani, Mkokoni, Bonni, and KWS. Participants were divided into groups based on their knowledge of solar cooking, and each group was given topics to discuss and was responsible for preparing a solar-cooked meal consisting of fish, eggs, rice and tea, as well as solar pasteurizing water. They used solar panel cookers made of donated Tetra Pak materials.

A solar panel cooker made with Tetra Pak materials.

The first group consisted of five teachers and two public health workers. They discussed the possibility of incorporating simple solar technologies into local school curricula and the use of solar energy to make contaminated school water safe for consumption. After exploring benefits and constraints, the group concluded that solar technologies should be taught to students and that drinking water should be solar pasteurized if possible. Public health workers will visit schools and meet with school environmental clubs to educate students about the need for and use of solar technologies, and school teachers will include discussion of solar technologies in their science courses. Success indicators will include student and teacher record books and student interviews. The goal set for incorporating solar water pasteurization into schools is to have 10-liter water tanks of safe water available to students.

The second group consisted of nine new solar cooks. They discussed advantages and limitations of solar cooking, how solar cookers work and the need for black, lidded-pots. They developed an action plan, which includes the use of solar cookers when possible, the education of others in their villages, and the starting of (or joining of) solar cooking clubs. They hope to obtain solar cookers and additional training from SHEP through KMNR.

The third group consisted of experienced solar cooks. They reviewed the status of current solar cooking efforts in their respective villages, shared recipes and contemplated the idea of expanding the solar cooking program into an income generating activity. Current issues include high winds, cooker and pot shortages, and poor record keeping. The group looked at ways to address these issues and set objectives for each village. For example, the village of Ndau set a target of having 12 homes that solar cook, while Kiwayu village aims for 20 homes.

Ilparakuo workshop

The second workshop — held in Ilparakuo, Magadi division — was planned by SHEP in conjunction with **African Medical Research Foundation** (AMREF). The lead trainer was **Charles Leshore** of AMREF, who was assisted by two local people previously trained by SHEP.

The workshop had 34 participants representing the following villages: Murantawua, Ilparakuo, Oyarata and Komiya. Topics included the need for solar cooking, benefits and limitations of solar cooking, how to solar cook and solar pasteurize, and project objectives. After a solar cooking demonstration, the participants were divided into groups and each given a meal to solar cook. Using solar CooKits (panel cookers designed by **Solar Cookers International**) and solar panel cookers they made from Tetra Pak materials, participants cooked meat stew, eggs, rice, ugali and tea, and solar pasteurized water.

The participants had a variety of comments and questions. One person asked how replacement cookers and supplies would be made available, given that the materials are not common in the area. A suggestion was made that a small committee be formed to look into this issue, and that monies be kept collectively for the purchasing of supplies as needed. This idea was enthusiastically received, and Ksh. 1,500 was collected on the spot. Another person, after seeing how simple solar cooking is, commented that since solar cookers are so easy to set up and use, he envisioned a situation whereby children become notorious thieves, stealing household foods and disappearing with the solar cookers into the bushes to cook for themselves. This comment was met with much laughter!

When the food had cooked, the participants lined up to taste it. It was apparent from their reactions that they were convinced that traditional foods could be cooked with the sun. To quote Mr. **Timbau Olesiere**, a workshop participant, "I consider this initiative from AMREF through SHEP and Alison Curtis as a cow given to us. The only thing left for us to do is to milk it. You all know that we, the Masai, consider the cow — especially a lactating one — as the greatest gift one can offer. It is good that we came here today to get this wonderful knowledge. I am appealing for you not to let this knowledge go to waste. Let's utilize it. … I personally pledge to be on the front line in any future projects by contributing in mobilization efforts."

Four participants were appointed to a committee responsible for creating an action plan to continue the spread of solar cooking in their villages and to request and schedule further workshops as needed. A second workshop is already planned for Murantawua.

Contact: Alison Curtis, SHEP, Chalet Hohliebi, Lenk 3775, Switzerland. E-mail: avcurtis@bluewin.ch.

Speaking of money

by Virginia Callaghan, SCI development coordinator

"Give thanks to all of our friends," asserted volunteer **Bob Metcalf — Solar Cookers International**'s fundraising chairperson — as he was leaving for his annual teaching journey to Tanzania and Kenya. "I am delighted to relay the very good news that SCI's fundraising goal for 2002 was reached and exceeded!"

Our success became certain just before New Years Eve, when the year-end contributions were counted and pushed us over our goal. Whew! We were relieved and delighted.

Great thanks go to SCI's past and present volunteer board of directors for giving generously and inviting others to do the same. Donors and friends, you are the moon and the stars. Thank you.

Big news just in … **Leslie Latham**, with the Hunger Committee of the **Presbytery of Geneva** in Dresden, New York, just announced that their 2003 SCI contribution would be $10,000. Bright skies!

The rice and lentil challenge

by Ramon Coyle
SCI database coordinator

The above picture shows Mrs. **Pol Wau**, a resident of Kakuma refugee camp, along with her Solar CooKit and the 60 kilograms of wood the CooKit can save her in just 20 meals. This picture was published in **Solar Cookers International**'s last annual report, describing how she cooked 450 grams of dry rice and 300 grams of dried legumes in her CooKit using absolutely no wood, while the same meal required 3 kilos of wood to cook over a three-stone fire.

Since the picture was published, SCI has heard doubts about how and whether a CooKit can cook that much food at one time.

I set out to examine that question.

On a bright and nearly windless day in mid-May, 2003, I weighed 450 grams of white basmati rice, similar to the rice cooked by Pol Wau. I then measured the volume of the rice, poured it into a black pot, and then added about 115 percent as much water by volume as rice. I then measured 300 grams of red lentils, similar to the legumes cooked by Pol Wau, measured the lentils again by volume, poured them into a second black pot and added about 150 percent as much water as lentils.

The rice and lentils sat in their water for 40 minutes while I dealt with a sudden interruption in my plans.

I put the lids on the pots, put them in two separate plastic bags, raised the pots above the floor of the cooker about 1.5 centimeters by placing two small sticks under each pot (inside their bags) and then closed the bags with small wires.

The pots were 3.3-liter pots. They were black (with small white flecks) steel pots with a thin enamel coating. Sitting side by side in the CooKit, they filled almost the entire space.

Two pots, side-by-side, fill the CooKit.

Although I would have preferred slightly smaller pots, I did have the advantage of using pots that easily conduct heat to the food. Using two pots larger than the ones I used would have been impossible.

I started cooking at 9:20 a.m. Pacific Standard Time in Sacramento, California, 38.5 degrees north of the equator. I checked on the food three hours later, and the rice was perfect — all the water had been absorbed, the rice was soft, but each grain was identifiable — it wasn't a mush. I took the rice away and moved the lentils to the center of the CooKit. An hour later, they were well cooked, starting to be overcooked. Most of the water had been absorbed, but not all of it.

The finished product? Rice and lentils cooked to perfection!

Thus in four hours, I cooked enough rice and lentils to feed my wife and me three meals each, even though I had a small hole in the plastic bag that insulated my lentil pot.

When I started cooking, the sun was roughly 50 degrees above the horizon, rising to nearly 70 degrees at zenith, and declining a few degrees by the time I finished.

The photo above shows the finished rice and lentils and some useful accessories — potholders, sunglasses, and the sticks used to raise the pots above the CooKit floor, so that heat is not drawn away from the food and conducted into the ground.

Late-breaking news

by **Dave Anderson**
SCI board president

I'm happy to announce that the board of directors has invited **Beverly Blum** to return as **Solar Cookers International**'s executive director, following **Terry Grumley**'s resignation. Bev, an SCI founder and previous executive director, had retired four years ago. "I'm delighted to be back and to again work with board, staff, volunteers and solar cooking leaders around the world toward our shared mission to spread solar cooking and solar water pasteurization. As we grow and draw inspiration from each other to meet the ever-growing need for these skills, I believe this first decade of the third millennium is the time for much wider spread of the solar cooking solution."

SCI seeking board nominations

The nominating committee of **Solar Cookers International** is seeking nominations for the board of directors. Board members raise funds and set agency goals.

For information and application forms, contact Solar Cookers International, 1919 21st Street, Suite 101, Sacramento, California 95814, USA. E-mail: info@solarcookers.org.

Special thanks

Solar Cookers International (SCI) would like to give a special thanks to **Hal Hammond**, owner of **Hal Hammond Graphics**, and **Bill Gomes**, owner of **Graphics Diversified**, for their generous donations of goods and services. We now have a large supply of SCI postcards at our disposal because of their generosity.

Power to do good

You light the way.

- ☼ Support Solar Cookers International (SCI) by giving what you won't miss
- ☼ Honor loved ones on special occasions
- ☼ Designate some percent to SCI in wills and insurance policies
- ☼ Give stocks or real estate for income and estate tax benefits
- ☼ A Trust can provide you lifetime income
- ☼ Urge friends and family to support SCI

Yes, I want to support SCI.

☐ Enclosed is my gift of $_____

☐ Please send more information about SCI projects and services

☐ I have designated SCI in my will/ insurance policy

☐ Please send five newsletters to share with friends

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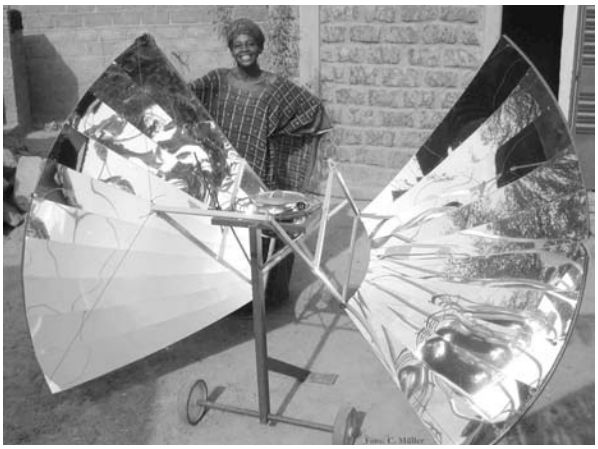
Connect with Virginia Callaghan at (916) 455-4499 to discuss donations and stock transfers. Consult your financial planner for additional information. Thank you.

News You Send

AFRICA AND EUROPE

BURKINA FASO/ GERMANY



The Papillon.

When folded, the Papillon fits through doorways.

Chef **Willi Heinzen** reports that a powerful solar cooker developed by **BSW Alternative Energy** is now produced in several developing countries. Similar to "butterfly" cookers found in Asia, the Papillon is essentially a parabolic cooker consisting of two reflective "wings" with a gap in between to allow for comfortable use by the cook and folding of the reflectors for transport and storage. With its power and ability to cook multiple pots of food simultaneously, the Papillon meets the cooking needs of large families of up to 15 people as well as those of small restaurants and street vendors.

The Papillon was created to meet specific requirements set forth by users of "Bamako" parabolic cookers in Burkina Faso. The cooker needed to have 50 percent more power than the Bamako, be narrow enough to fit through a 70-centimeter doorway, accept pots up to 20 liters in capacity, provide better accessibility to the cooking pot, and reduce or eliminate reflected radiation received by the cook.

Solar Energy for West Africa (SEWA) — a German nongovernmental organization that has been promoting the Bamako since 1994 — recently incorporated 70 Papillons into its project in Gaoua, Burkina Faso. The cookers were manufactured in country with training provided by BSW.

The Papillon can be manufactured where needed or purchased as a kit. For those who cannot afford to buy the cooker outright, BSW has devised a scheme whereby donors can contribute money to a revolving credit fund to help provide cookers to those in need. Then, with money saved from fuel purchases, loans are paid back over a period of approximately 18 months. Once the money has been paid back, another family can use the funds to purchase a cooker in a similar fashion.

Contact: Willi Heinzen, BSW Alternative Energie e.V., Hauptstraße, D-55452 Burg Layen, Germany. Tel: +49 (0) 6721-965 585, e-mail: Willi.Heinzen@t-online.de, web: www.bsw-energie.de or www.solar-papillon.com.

ETHIOPIA

A group of Ethiopians have contracted with **Sun Ovens International** for the exclusive right to manufacture, assemble and market Global Sun Ovens® in Ethiopia. **Sun Ovens Ethiopia** (SOE) is looking for support from expatriates and friends of Ethiopia to pre-purchase 2,000 ovens to be delivered to friends and family living in Ethiopia. The first assembly plant will be located in Addis Ababa. For more information, or to purchase an oven, visit the SOE Website: http://www.sunovensethiopia.com.

MOZAMBIQUE

As a volunteer for **Campus California Teachers Group**, **Miho Kobashi** spent six months in a remote village in Mozambique. While there, she met **Keith Warren**, of the Eduardo Mondlane University, who taught her how to make and use solar cookers and gave her supplies to do the same.

With her new skills, Miho led three solar cooking workshops titled "Experience the solar cooker!" At first the solar cookers were met with skepticism. Many asked, "Miho, there is no fire, how can you cook?" Using cardboard solar box cookers that they made, workshop participants cooked rice, bread, potatoes and eggs. "We cooked the rice and the bread. It was perfect," said Miho. "Everyone was so amazed. … I cannot forget their faces when they ate the food made by the solar cooker and they started laughing from this amazing experience they had."

Contact: Miho Kobashi. E-mail: timflis@hotmail.com.

SPAIN

Rosa and friends prepare lasagna.

Rosa Garcia Kirmse reminded us of a fun way to teach our friends about solar cooking. Last summer she held a "solar oven party" for many of her friends interested in renewable energies. Using solar box cookers built from plans by **Jose Manuel Jimenez**, Rosa and her friends cooked a feast of lasagna, rice and vegetables.

Contact: Rosa Garcia Kirmse, Urb. Cortijos las Negras No 121, Las Negras-Nijar, Almeria 04116, Spain. Tel: 660 847407.

THE AMERICAS

ARGENTINA

Proyecto Fertil is a small community improvement project in the town of Salsipuedes, Argentina. On the surface, the project aims to help low-income families by teaching solar cooking and advanced gardening skills. As one organizer put it, the larger goal is to create a community "network that sustains us and contains all of us, where responsibility, perseverance, the work and the protagonism of each person is fundamental." Proyecto Fertil, which is funded by **Fondo CAMPER** of the island of Mallorca, Spain, "seeks to generate food and energy savings, but, above all … the establishment of a new social framework [involving] the promotion of values, a productivity in which resources flourish and self-esteem is reinforced, a harmonious contact with nature, and cooperative interpersonal relations."

The solar cooking portion of the project energized the community to rally around those values.

The project began with the selection of 20 representative families to receive gardening and solar cooking assistance while committing to help spread skills to other community members. Each family was required to send at least two members to the week of training activities, which was led by **Manolo Vilchez** of **Fundación Tierra** of Barcelona, Spain. Twenty SK-series parabolic solar cookers, designed by Dr. **Dieter Seifert** of Germany and paid for by Fondo CAMPER, were shipped to Salsipuedes, and Manolo led the community in assembling them, five or six per day.

Each day also included lessons in using the powerful cookers, safety measures and related concerns. Spontaneous enthusiasm sparked a group of participants to gather recycled materials and use them to build a cooker that could bake a loaf of bread in 1 hour and 40 minutes. Finally, 20 new solar cooks prepared 16 different kinds of food in a large cooking demonstration in the streets of Salsipuedes.

The solar cooking activities drew large crowds of people from far away, and according to one project leader, the project's next meeting was the most energized in its history. "To maintain this sentiment of readiness, hope, unity, solidarity and production is our task from now forward," another organizer added.

A solar feast prepared by enthusiastic new solar cooks.

Organizers of Proyecto Fertil will continue helping people master solar cooking and expanding the project.

Contact: Manolo Vilchez, Fundación Tierra, C/ Avinyó, 44, 08002 Barcelona, Spain. Tel: 34 + 933 040 220, fax: 34 + 933 040 221, e-mail: info@terra.org, web: www.terra.org.

EL SALVADOR

Five students from Colegio Garcìa Flamenco, a high school in San Salvador, recently built three solar cookers for a science exhibition. They built a box cooker, a parabolic cooker and a solar panel cooker similar to SCI's CooKit. Their successful project drew media attention, and inspired the students — **Herbert Aguilar**, **Leonardo Escobar**, **José Antonio Canizalez**, **Rubén Zelaya** and **Diego Flores** — to plan workshops in poor communities. The first one in 2003 will be in San Miguel Tepezontes.

Herbert Aguilar demonstrates a small parabolic cooker.

"We are interested in promoting solar cooking as a social contribution to our country, which needs it as much because of poverty and scarcity as because of the environmental benefits in discarding the use of firewood for cooking," the students say. The five young men have had an interesting time, since they now "have to concentrate a lot on how our mothers cook." Aguilar, a spokesperson for the students, says, "We are very happy cooking in the solar box cooker. It is fun, but at the same time we feel useful — we know how important it is to spread the use of these cookers in our country, which is so polluted."

Contact: Herbert Aguilar, Colonia Montebello, Final Avenida Montes Urales y Calle Los Pirineos, No. 14 A, San Salvador, El Salvador.

ASIA AND PACIFIC

INDIA

Mamata Dutta, a researcher with the **Indian Institute of Management Calcutta** (IIMC), reports on some of her activities over the past couple of years. In 2001 she led a series of solar cooker training courses for women at **Ramakrishna Mission** in Narendrapur, Kolkata. India's **Ministry of Non-Conventional Energy Sources** (MNES) sponsored the courses.

In addition, Ms. Dutta has written a number of articles on solar cooking, including "SOLARCOOKER: An Eco-Friendly Drive to Protect Environment," which is included in an IIMC series of working papers to be published, and "Role of Solar Cooker in Non-Conventional Energy Development," published in a souvenir by nongovernmental organization **Ganatantrik Nagarik Samity, Howrah**.

Contact: Mamata Dutta, 29 James Long Sarani, P.O. Box Joka, Kolkata - 700 104, India.

ISRAEL

Randi Shulman — a former "Green Apprentice" at **Kibbutz Lotan**, located in the Arava Valley in southern Israel — gave a solar cooking presentation at the kibbutz. Shulman, along with organic gardener **Doron Rosenthal**, discussed the advantages of cooking with the sun, demonstrated how to make and use simple solar box cookers, and baked a meal of spicy eggplant curry, dhal, sticky rice and brownies. According to Program Coordinator **Mike Kaplan**, it was an excellent presentation. "From all [the] lectures this month, the one that stood out in my mind was the solar oven lecture. … Wow, what a lecture!"

Contact: Randi Shulman, e-mail: rkshulman@yahoo.ca; Kibbutz Lotan, e-mail: info@birdingisrael.com, web: http://www.birdingisrael.com/KibbutzLotan/index.htm

NEPAL

In 2001, **Allart Ligtenberg** visited the small village of Bhandar and was encouraged by the number of solar cookers he saw there. As he reported in the November 2001 *Solar Cooker Review*, "The high point of the trek actually occurred at lower altitudes … in the stretched-out village of Bhandar. We noticed a number of SK-14s

[parabolic solar cookers from Germany] there. So we decided to stay at a lodge because of its SK-14 cooker in the yard. According to the lodge keeper about 35 cookers were in use in this village of 400 families. Almost 9 percent!"

With funding acquired in late 2002 through a **Rotary** "New Opportunities Grant," Rotarian **Klaus Schulte** is working to bring 80 additional SK-14 solar cookers to the villagers. The cookers are being produced by silversmiths in Kathmandu, transported by bus and carried over the Himalayas in big baskets. According to Project Manager **Temba Lama** the first 30 cookers have been delivered.

Contact: Klaus Schulte, e-mail: Klaus.Schulte@telia.com.

NIGERIA

The **Association for the Popularization of Solar Energy for Domestic and Industrial Use** will hold its second national workshop and exhibition on solar cooking, solar drying and household lighting from November 3-5, 2003.

Contact: Dr. **Rose Achunine**, College of Education, Imo State University, P.M.B. 2000, Owerri, Imo State, Nigeria. E-mail: roselynkechi1@yahoo.com.

PAKISTAN

The core objective of the **Building and Construction Improvement Programme** (BACIP), a project of the **Aga Khan Planning and Building Services**, is to "consider and promote the measures related to the habitat of the desolate communities of the Karakoram, Hindukush and Himalayan mountain villages in Northern Areas and Chitral of Pakistan, and enable these communities to be transformed into a healthy living built environment through sustainable improvements." To that end, BACIP produces a number of energy efficient and renewable energy-power products, including a new line of solar box cookers.

One of three new BACIP solar box cooker models.

After intensive research on radiation intensity and weather conditions of northern Pakistan, three solar cookers were developed, ranging in size from 25 inches long by 21 inches wide to 31 inches long by 25 inches wide. Costs are expected to be US $30-40 each. According to Professor **Nadeemullah Khan**, a BACIP consultant, many surveyed families indicated the need and demand for such products in this energy-scarce region.

Construction materials were selected based on performance and local availability. The design allows for easy replacement of glass if damaged.

Contact: Prof. Nadeemullah Khan, BACIP, Department of Architecture, Mehran University of Engineering and Technology, Jamshoro, Sindh, Pakistan. Tel: 92-221-772293, e-mail: nadeemullah01@hotmail.com or Nadeemullah-01@yahoo.com.

SRI LANKA

The **EMACE Foundation of Sri Lanka** reports that it has expanded its solar cooker program. Originally it worked in villages in the four districts of Anuradhapura, Kurunegala, Puttalam and Hambantota. Now it is working to expand the program into 11 more villages, in the areas of Jaffna, Trincomalee, Vavunyia, Mannar and Batticaloa.

While EMACE staff have the skills to build solar cookers, the group is looking for funding to purchase a machine that will allow for increased production of wooden solar cookers as well as wooden furniture with the goal of making the program financially sustainable.

EMACE is working on a local recipe book that shows how to adapt traditional Sri Lankan recipes for solar cooking. Also, two very large solar box cookers have been built. One, in Puttalam, will be used as a solar bakery. The other, in Kurunegala, will be used to aid a pottery industry.

In addition, EMACE has been recruited by **Solar Household Energy, Inc.** to conduct a survey of the villages where solar cookers have been introduced to examine the benefits of solar cooking to people's health.

Contact: **Alison Martin** or **E. Abeyrathne**, EMACE Foundation of Sri Lanka, 15 Mihiri Pedesa, Asiri Uyana, Katubedda, Moratuwa, 10400, Sri Lanka. Tel: 94-1-612837, fax: 94-1-610080, e-mail: emace@slt.lk.

SUN for LIFE

SUN for LIFE (SFL), a nongovernmental organization (NGO) based in Geneva, Switzerland, works to empower poor women and fight deforestation and desertification.

SFL has been active in India, Mali, Peru, Ethiopia, Madagascar, Djibouti and Morocco through partnerships with local independent NGOs. It trains local women in the construction and use of solar cookers, enabling them to become trainers themselves. With additional funding, SFL hopes to expand its activities to other developing countries.

The SFL solar cooker is specially designed so that materials needed for its construction can be found relatively easily anywhere in the world, even in remote areas. The total cost of an SFL solar cooker is low, roughly equivalent to that of one meal at a local restaurant. Materials used are cardboard boxes, string, a thick needle, a few thin wooden sticks, paste or glue, a sharp knife, black paint, aluminum foil, natural insulating materials such as straw or rice hulls, rocks and a clear plastic sheet. Women to be trained in construction of the cookers must find the materials on their own so that they learn how to obtain the materials needed for the oven and can explain this to other women. The effort they put into getting the materials motivates them to take good care of the cooker they build and use.

SFL has produced a video that illustrates the construction process of its cooker. This video is accompanied by music rather than words to avoid language barriers. A step-by-step construction procedure for its model and other information can be found on the SFL Website.

SFL is a voluntary organization with no paid staff. It does not give away or sell solar cookers, nor does it award grants or give out loans. SFL welcomes ideas and suggestions, as well as names and addresses of organizations and women who might be interested in becoming field trainers in their own region.

Contact: **Zoy**, e-mail: zoy@sunforlife.com; **Mireille Vouillamoz**, e-mail: mireille@sunforlife.com; or **Maria van Heemstra**, e-mail: mariavh2000@yahoo.com.
Web: www.sunforlife.com.

Renewable energy workshop coming to Costa Rica

"Renewable Energy for the Developing World," an annual workshop led by **Solar Energy International** (SEI), will be held this coming year at **Rancho Mastatal** environmental learning and sustainable living center. The center is located in the last virgin rainforest of Costa Rica's Puriscal County. The property shares a significant border with the splendid La Cangreja national park.

The six-day workshop, which begins on February 16, 2004, will include classroom sessions and labs, and will have a strong hands-on component. The workshop will focus on three main areas: solar electricity, solar hot water and solar cooking. There will also be survey coverage of wind and hydroelectric systems, and social and financial issues surrounding renewable energy in the developing world. The workshop fee is US $600.

Contact: Solar Energy International, P.O. Box 715, 76 South 2nd Street, Carbondale, Colorado 81623, USA. Tel: (970) 963-8855, fax: (970) 963-8866, e-mail: sei@solarenergy.org, web: http://www.solarenergy.org/workshops/auto/RenewableEnergyintheDevelopingWorldHandsOn.html.

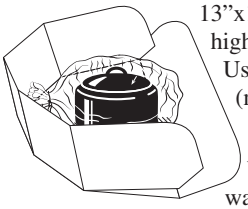
Tributes

Tribute gifts have been given to SCI by:

Kevin Blake in honor of his wife, **Rose Blake**
Carol N. Gerlitz in memory of her husband, **William A. Braddock**
Carol N. Gerlitz in honor of her son, **Eric S. Johnson**
SCI in memory of volunteer David Martin's father, **Mel Martin**
Mackay Locke in memory of **Mel Martin**
Targe and Joanne Lindsay in memory of **Shirley Vandervort**
Targe and Joanne Lindsay in memory of **Martha Moore**

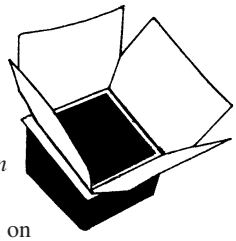
Catalog of SCI Materials

CooKit: 1-pot panel cooker, convenient for home and camping. 1 pound, foil on cardboard, folds flat to 13"x13"x2". Comes with 2 high-temperature cooking bags. Use with a black, covered pot (not included). $20

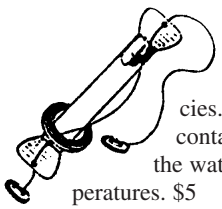


Sun Toy: just like the CooKit, but made of crushable, water-resistant foam. Needs staking in the wind. $20

Global Sun Oven: 1-pot box cooker made of durable molded plastic for years of use. Temperatures to 350°F. 21 pounds. Comes w/carry handle. $229 + *$22 shipping (within continental U.S.)*



Black Pot: 3-liter roaster, porcelain on steel. $10



Water Pasteurization Indicator: reusable and durable, great for camping and emergencies. The **WAPI** uses a plastic tube containing soy wax, which melts when the water has reached pasteurization temperatures. $5

Teacher's Kit: Includes CooKit, black pot, WAPI, plans and other supplies for teaching solar cooking. $40

Video: ***Letters from Kenya***. Describes a refugee camp solar cooking project, 5 minutes. $15

SCI T-shirt: Organic cotton. S, M, L, XL, 2XL $20

PUBLICATIONS

A. **Plans—*How to make, use and understand solar cookers, 9th edition***. Includes instructions for making solar cookers from cardboard and foil, solar recipes, and solar cooking tips. Each one you buy makes one available to an educational institution overseas. $5

B. ***The Case for Solar Cooking***: illustrates the world-wide importance of solar cooking. $5

C. ***Leaders Guide***: important concepts in the promotion of solar cooking. $5

D. ***Field Guide***: guidelines for creating a solar cooking project. $5

E. ***Trainers Manual***: step-by-step manual for teaching solar cooking, includes many diagrams. $10

F. ***International Conference Proceedings***: 1994, $15

G. ***The Expanding World of Solar Box Cookers***: Barbara Kerr's classic textbook on solar box cookers. Includes several plans. 79 pages. $15

COOKBOOKS

*A. **Cooking with Sunshine***, L.Anderson, R.Palkovic. $10

B. ***Eleanor's Solar Cookbook***, E.Shimeall. $10

C. ***Solar Cooking Primer***, H.Kofalk. $12

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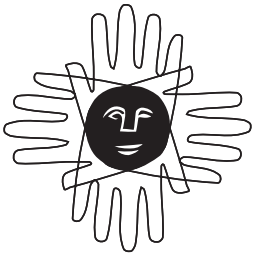

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