



Solar Cookers International *Harnessing the sun to benefit people and the environment*

SOLAR COOKER REVIEW

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SCI's mission:

*Harnessing the sun to
benefit people and the
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SAFE WATER AND SOLAR COOKERS



Maurine Achieng Owiti's family receiving an SCI-provided Safe Water Package from SURE representatives Jecinta and Margaret, January 2013—Photo by John Amayo

A glass of water is something most of us assume will be available and safe to drink whenever we're thirsty. In 2010, the UN General Assembly even declared that access to safe drinking water is "a human right".

Unfortunately there are still hundreds of millions of people in developing countries for whom safe water is not a given. Solar Cookers International, inspired by the work of Dr. Bob Metcalf, one of its founding members, has for many years spread the concept of safe water through pasteurization with its solar panel cooker known as the CookKit.

Non-profits in Kenya, run by former SCI staffers, are currently benefitting from Metcalf's technology, from the generosity of his new non-profit International Water and Health Alliances and from donations by Solar Cookers International of Safe Water Packages which include: a CookKit, a supply of heat-resistant plastic bags, a cooking pot, a clay pot for safe water storage, a Water Pasteurization Indicator (WAPI), a fuel-efficient stove and a retained-heat cooking basket.

Metcalf has found that in places where fuel is scarce or very expensive, (cont. p.4)

CHINA'S LARGE-SCALE, SOLAR COOKER CARBON CREDIT PROJECTS

Over the past two years, U.S. government officials and representatives of the Global Alliance for Clean Cookstoves have told members of the solar cooking sector in Washington, D.C. that they will not consider solar cooking as a viable clean cooking technology until they can be shown solar cooking projects "at scale" which demonstrate the utility and the acceptance of this technology. With close to one and a half million parabolic solar cookers in use (cont. p.9)

Thoughts On Solar vs. Fuel-Efficient Wood Stove Cooking

By Tom Sponheim, SCI webmaster



I have been an avid solar cook for the past twenty-five years. I am also the proud owner of a small rocket stove, which burns twigs and small branches very efficiently. It's clear to me that there is a role for both of these technologies in solving the problems that poor people around the world face in cooking their meals. However, a strange rivalry seems to exist between advocates of fuel-efficient woodstoves and advocates of solar cookers.

Once during a demonstration of fuel-efficient woodstoves the person cooking looked up at me and said, "I'd like to see you boil a liter of water in five minutes using a solar cooker!"

This actually is possible with a parabolic solar cooker, however since most of my work has been with simple, slow-cooking panel-type solar cookers made from cardboard and aluminum foil, I had to admit it wouldn't be possible to boil water that fast with one of my solar cookers.

An accurate but insolent response to his question might have been, "I'd like to see you cook without wood!" or "I'd like to see you cook without tending the fire!" Of course he could have replied with the devastating, "I'd like to see you cook at night!"

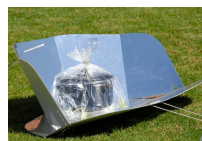
Considering the seriousness of the issues addressed by these two cooking methods, such a childish exchange would be counterproductive and miss the point. Each type of cooker has its own set of advantages and disadvantages.

The disadvantages of solar cooking are obvious to everyone since solar cooking is dependent on weather, time of day, etc. The disadvantages of fuel-efficient woodstoves are less apparent. I possess both types of cookers, but why is it that when given a choice on any sunny day, I always opt to cook with my solar cooker?

If we look at the steps required to cook with each device, it becomes apparent.



StoveTec rocket stove



CookKit panel solar cooker

Fuel-efficient woodstove	Solar cooker
<ol style="list-style-type: none"> 1. Collect the firewood and dry it. 2. Chop or break firewood into small pieces. 3. Add tinder and small twigs to the stove. 4. Light the stove. 5. Fan the flames until the smoking subsides and a smoke-free, self-sustaining fire is achieved. 6. Place the pot on the stove. 7. Add small twigs and branches to the fire at least every 5 minutes during the entire cooking time. 8. Monitor the cooking pot to make sure that the intensity of the fire is correct. Keep children away so they don't burn themselves. 9. Stir the food as necessary to keep the food from burning or sticking to the bottom of the pot. 	<ol style="list-style-type: none"> 1. Position the cooker so that it is pointing a bit ahead of the sun. 2. Place the cooking pot inside a plastic bag. 3. Set this into the solar cooker. 4. Turn the cooker at most once to track the sun. 5. Enjoy a hot solar cooked meal after one to three hours of working in your garden, reading a book or playing with your kids.

As you examine each set of steps, the disadvantages of fuel-efficient woodstoves become apparent. Other than reducing the amount of firewood that must be collected, the use of a fuel efficient stove does not free women to do other important tasks while their food is cooking—caring for their children, running a small business, attending school, etc. On every sunny day, a solar cooker can free a woman to do whatever she wants. Watch the video *Making Cornmeal with a Solar CookKit* on YouTube to see what refugee women in Chad are able to do while their food cooks in the sun.

A Note from SCI's Executive Director

Over the years, Solar Cookers International has provided a discussion forum for making solar cooking technology more efficient, more durable and more accessible to those who need it most. Gathering the global solar cooker community through the Solar Cookers World Network online resource and in the pages of the Solar Cooker Review make real the possibility that the three billion people who currently cook over open fires can all have access to solar cooker technology.

At SCI, we hear from individuals in many countries, who with little outside funding are conducting their own research to create a more durable Cookit and to find an alternative for the heat resistant bag that is used with the Cookit. Others are working on sophisticated tracking and thermal storage devices for box and parabolic solar cookers. Another group is discussing on-line a revised international standard for testing and rating all types of solar cookers. Every week new videos are posted which document innovations created in backyards and garages to meet the need for solar cookers that are better, longer lasting, more efficient, and more affordable.

In addition to these technical advances, the issues of financing and creating efficient supply chains are of concern to both charitable and for-profit solar cooking enterprises. These issues were discussed in great detail at the recent Solar Food Processing Workshop held in India and co-sponsored by one of SCI's own board members, Deepak Gadhia, considered by many to be the 'father' of the solar cooking movement in India. We'd like your input on these issues. Tell us how Solar Cookers International can better support these R&D (research and development) efforts.

Each meal that is solar cooked makes a difference to the health of an individual and to the health of our planet. As a global solar cooking community, let us focus our collective efforts on increasing the number of those meals prepared in solar cookers, one dish at a time.

Let's keep this conversation going.

Julie Greene

25 Years Ago at SCI

"One might say that the founding of Solar Cookers International on July 11, 1987, was the beginning of an effort to link solar cooker promoters everywhere in the world, since its intent was largely educational and networking."

-Excerpt from Barbara Knudsen's, 2004 paper,

George Clooney, Solar Cookers and *The Men Who Stare at Goats* Part II



George Clooney in "The Men Who Stare at Goats", Overture Films-Momentum Pictures, 2009

Hollywood studios usually do a fairly good job providing filmmakers with technically accurate props for every scene. In the case of George Clooney's 2009 film, "The Men, Who Stare at Goats", something must have gone terribly wrong. The screen shot above, taken from the film, shows Lyn Cassady, a "psychic soldier" played by Clooney preparing to cook a raw hamburger with something he refers to in the film as a "solar cooker", but which in reality looks more like an upside-down megaphone.

Where did the prop department find this thing? Why didn't someone take a few minutes to "Google" solar cookers and search through the vast trove of information on SCI's wiki? If they had they would have learned what a real solar cooker looks like and how it works. I'm certain that SCI would have been delighted to send them a free Cookit.

Were they deliberately looking for a solar cooker that didn't work so Clooney would have an excuse to kick it over in frustration when it didn't cook his hamburger? I guess we'll never know, however we are still waiting for Clooney, to atone for the bad name his film has given to solar cooking.

You may recall that in our last issue, we encouraged Clooney to make good on his March 2012, promise to make a public statement about the benefits of solar cooking. It hasn't happened yet. Perhaps it's time for a small letter writing campaign from the readers of the *Solar Cooker Review*.

George, we need your help!

-PM, Editor

Safe Water (cont. from p.1) women do not routinely boil water to make it safe to drink. However, once they have access to a CookKit and a WAPI and they understand the microbiology of contaminated water, they are able to provide their families with safe drinking water without burning any fuel.

Metcalf worked with Dr. Fred Barrett USDA and Dr. Dale Andreatta to develop the inexpensive, re-usable Water Pasteurization Indicator (WAPI), which verifies that pasteurization temperature has been achieved without using a thermometer. The WAPI is a clear plastic tube containing a wax, which melts at 65°C (149°F) while floating upright at the bottom of a pot of water when it is heated in a solar cooker.

In 2000, Metcalf, a microbiologist and professor emeritus at California State University Sacramento, developed a Portable Microbiology Lab (PML), which contains everything needed for the residents of rural villages to test



SURE team

Photo courtesy John Amayo

their local water sources without requiring access to laboratories or even electricity. All the materials needed for twenty-five water tests fit inside a single, one-gallon Ziploc bag. To create his revolutionary PML, Metcalf combined the best commercially available (but low-cost) testing

equipment used by the water and food industries to detect the presence of *E. coli*. Overnight results from these tests can with high accuracy place water sources into WHO disease-risk categories: low, moderate, high, or very high.

Prior to developing the PML and the WAPI, Metcalf worked with his students at CSUS to establish that heating water to 65°C (149°F) would pasteurize water and make it safe to drink. Last year, working with UN-Habitat, Metcalf co-authored an instructional booklet, *A Practical Method for Rapid Assessment of the Bacterial Quality of Water* (<http://tinyurl.com/bobmetcalf>) which is available for free online. Metcalf also developed a teaching package for communities to demystify microbiology and to help them understand the relationship between fecal contamination of water and disease.

In 2009 Metcalf met in Kenya with Dinah Chienjo, SCI's former manager of the Sunny Solutions project in Nyakach, near Lake Victoria. Chienjo had established a community-based organization, Friends of the Old (FOTO), in Lower Nyakach, with twelve locations. The top priority of FOTO is to eliminate water-borne disease in Lower Nyakach, where the main drinking water sources are heavily contaminated rivers, streams and ponds. In 2011 Metcalf worked with FOTO to develop the Safe Water Package (see photo on page 1). He conducted microbiology tests with the FOTO staff to show them that heating contaminated water in a CookKit or adding Water-Guard (diluted bleach) kills microbes and (cont. p.8)

What This Solar Cook Learned at ETHOS

By Julie Greene, *Executive Director, Solar Cookers International*

Earlier this year I attended the annual 2013 ETHOS Conference in Kirkland, Washington, where I was welcomed by members of the biomass cookstove community. This sector has gathered strength and purpose over the past decade thanks to projects, field tests and R&D funded by the Shell Foundation, USAID, EPA, the Department of Energy and the Global Alliance for Clean Cookstoves. That support has resulted in initiatives to develop a new generation of improved cookstoves that consume biomass fuels (charcoal, wood, crop residue and animal waste) more efficiently, and which produce much less smoke.

What I learned at ETHOS is that *stovers* and solar cooks have some differences but much in common. I learned that despite their access to generous funding over the past decade, the stovers community continues to grapple with the same issues facing the solar cooking sector. These include measuring test results accurately, since even the simple boiling of a pot of water has many variables to consider. Stovers are also grappling with the importance of offering great new technologies vs. gaining social acceptance from a target community; the accuracy of field vs. lab tests; long-term monitoring and evaluation of these items in a user's home; and quantifying verifiable data on improved health with better cooking devices. Yes, the biomass stove and solar cooking communities have much in common. (cont. p.9)

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NEWS YOU SEND

Solar Cookers International invites the 510 NGOs and 537 individual members of the Solar Cookers World Network to send in news and share success stories with our global community. Please note that SCI does not have the resources to research—nor can we be held liable for the accuracy of—these contributions.

BOLIVIA

CECAM (Centro de Capacitacion y Asesoramiento Multidisciplinario) has introduced a new project called Eco-Casa, which involves the installation of locally made solar box cookers and composting toilets in areas near Cochabamba. The solar cookers have been a success since most of the rural areas outside Cochabamba have no electricity and the population cooks over open fires.

CHAD

Los Angeles, California-based Jewish World Watch, which has supported solar cooker projects in three Darfur refugee camps in Eastern Chad for the past seven years, recently sent



Photo courtesy JWW

a delegation to meet with CORD, their newest partner in Chad. This UK-based NGO has provided CookKits made by SCI Kenya to several hundred women in Farshana Camp. The women in the original three camps have taken ownership of

their project and have made more than 50,000 CookKits and thousands of retained-heat cooking baskets, thus reducing the need for refugee women to leave the camps to search for firewood and risk attack by hostile forces. <http://tinyurl.com/jww-solar>

CHILI

Delicias del Sol, a Chilean solar restaurant has become a popular tourist destination known for its excellent solar cooked food. It has been drawing crowds to the village of Villaseca, Chile since it opened in 2000 with an initial seating capacity of sixteen. The solar restaurant now seats one hundred twenty people. The dry central valley where Villaseca (*dry town*) is located has more than three hundred days of sunshine per year. As in other parts of the Chilean Altiplano, traditional fuel sources are becoming increasingly scarce and expensive—but free sunlight is never-ending. Learn more about solar restaurants, bakeries and street vendors in Lesotho, the Gambia, Morocco, Namibia, Switzerland, Mexico, Thailand and elsewhere at <http://solarcooking.wikia.com/Restaurants>

CUBA

The Applied Renewable Energies Group (GERA) is working with secondary school teachers to introduce solar cooking technology to seventh graders at schools in Santiago de Cuba. The purpose of this project is to expose the students to practical aspects of renewable energy. GERA sees solar cookers as an important addition to sustainable development in sunny Cuba. Each month students will be introduced to another



Photo courtesy GERA

aspect of renewable energy technology. They will also discuss how they can spread the word about solar cooking technology. For more information contact: bonzon04@yahoo.es or orlandoesc@yahoo.es



SIGN UP FOR AN SCI VISA CARD!

Through the Capital One® Card Lab Connect program, you can now sign up for a “Solar Cooking & Safe Water” Visa® Platinum credit card and support SCI every time you shop. 1-2% of each purchase directly supports our vital work. As an added bonus, SCI receives \$50 after your first transaction! Go to: <http://www.cardlabconnect.com/solarcooking safewater> The photo on this card, taken at Iridimi camp in 2007, celebrates SCI's contribution of CookKit technology to the success of solar cooker projects in Darfur refugee camps in eastern Chad.

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INDIA

Ajay Chandak's PRINCE-40 institutional parabolic solar cookers are part of a pilot project sanctioned by India's Ministry of New and Renewable Energy and sponsored by the Watershed Organization Trust (WOTR). Twenty-three solar cookers have been installed in Maharashtra. Schools have reported LPG saving of 15 to 25 kg per month. A video of the parabolic solar cookers being used with pressure cookers to prepare lunch at one of the schools can be seen on WOTR's YouTube channel. (cont. p.6)

INDIA (cont. from p. 5)

Chandak has also developed a variety of new, easy to assemble parabolic solar cookers for home and apartment use. For more information contact Chandak at: renewable.consultant@gmail.com or go to his website: www.princeindia.org

INDIA

In January 2013, 2,044 middle school students gathered on the grounds of JES College in Jalna, India to learn to make and use funnel solar panel cookers. After guidance from their 205 trainers, each member of this record-breaking group of students assembled his or her own solar cooker and inserted pots of prepared ingredients to be cooked with solar energy. Later the students were able to enjoy their lunches, which the sun had cooked while they were listening to the speakers.



Film still – STL video

Simplified Technology for Life sponsored this event. simplifiedtfl@gmail.com

Note: If the same number of students had tried to light 2,044 fires and cook their lunches with 2,044 fuel efficient stoves, hundreds of kilos of wood would have been required, some students would likely have suffered burns and the smoke generated by that many stoves would have been unhealthy and even dangerous (See Tom Sponheim's article on page 2). -PM Editor

The Solar Food Processing Network (SFPN) held a regional workshop in January 2013 at the Muni Seva Ashram in Goraj, Vadodara, Gujarat. This gathering was a follow-up to the 2009 SFPN conference held in Indore, India in 2010. Workshop participants heard from food, marketing and technology experts. Conference organizers, SCI Board member, Deepak Gadhia, and Rolf Behringeer held discussions on local and international marketing, village industries, packaging, policy interventions, R&D, and effective monitoring and evaluation of projects. Attendees discussed the formation of an international solar food standard and shared their own practical experiences using solar technology for food processing. Check out www.solarfood.org to see a musical video of the event and videos of solar food processing projects in Burkina Faso. <http://www.solarfood.de>



SFPN workshop January 2013

JORDAN

Engineer Mohammad N. Al-Ta'ani, manager of the Jordanian Renewable Energy Society (JRES) reports that JRES will soon be opening The Jordan Solar Restaurant for the Jordanian community and for visitors from around the world. The project will use all types of solar energy including solar box cookers and vacuum tube systems for hot drinks. The restaurant is training local women to cook kufta, chicken, fish, tomato (*Gllayeh*) and other traditional Jordanian dishes with solar cookers to demonstrate to visitors that typical local foods really can be cooked using only the light of the sun. JRES has also begun its Green Initiative, which teaches children at all grade levels about the importance of minimizing their carbon footprint. For more information contact: info@res-jo.com or www.res-jo.com



Photo courtesy Eng. Al-Ta'ani

KENYA

Dinah Chienjo, Project Director for Friends of the Old (FOTO) works in the Lower Nyakach region of western Kenya an area with a population of 69,000 where 60% live in severe poverty. Their main source of household energy is firewood, which is becoming scarcer every year. Over the past few months, Solar Cookers International has donated sixty-five safe water packages to FOTO, which has a special focus on helping economically disempowered senior citizens who take care of their orphaned grandchildren. (cont. p 7)

**Donating Stocks**

There are two tax advantages when you donate stocks to SCI. First, you receive a charitable tax deduction for the full market value of the stock at the time it is donated. Second, you will avoid paying capital gains tax on the increase in the value of the stock.

Contact Solar Cookers International for more information on donating stock to SCI (by telephone: +1 (916) 455-4499 or julie@solarcookers.org). Please download and submit the Donor Letter of Intention from the SCI website along with any gift of stock. Consult your financial adviser for additional information.

KENYA (cont. from p. 6) A \$60 Safe Water Package includes a CooKit, a supply of heat-resistant plastic bags, a cooking pot, a clay pot for safe water storage, a fuel-efficient stove and a retained-heat cooking basket. FOTO wants to provide elderly community members with a way to have safe drinking water, while also reducing the burden of gathering firewood and the dangerous exposure of women and children to cooking smoke. FOTO monitors the progress of its projects through home visits and monthly and quarterly management meetings.



Photo courtesy of Dinah Chiengo

Former SCI Kenya staffer John Amayo runs Sustainable Utilization of Renewable Energy (SURE) in the Kadibo division of Kisumu County. SURE has been able to test local water sources with the help of Bob Metcalf's portable microbiology lab. With SCI's help, SURE distributes thirty-five Safe Water Packages per month to the vulnerable in the community. John hopes to increase distribution to 100 families per month in the near future. SURE also educates the community on hand washing, food safety, cleanliness around the home and solar pasteurizing or chemically treating all drinking water. SURE also plans to harness wind power for lighting and promote the use of bio-fuels like biogas for lighting and cooking. d_chienjo2001@yahoo.com, joamayo@yahoo.com



Hilida and Beatrice
Photo by John Amayo

HELPING THE NEXT GENERATION

You can continue to spread the benefits of solar cooking for the next generation by designating SCI as a beneficiary in your will, trust or life insurance policy.

This simple bequest in your will could ensure that families will be able to cook with the sun for generations to come: *"I, [name], of [city, state, ZIP], give, devise and bequeath to Solar Cookers International [written amount or percentage of the estate or description of property] to further the spread of solar cooking."* Bequest gifts help create continuity in the way we provide service and to those in fuel-starved, sun-rich regions of the world. Contact your attorney or financial planner for additional information on planned gifts.



Touloum refugee camp, 2009 photo by P. McArdle

NEPAL

The Government of Nepal's Alternative Energy Promotion Center (AEPC) is supporting the introduction of 600 solar cookers mostly SK-14 parabolics in Nepal by providing government incentives. The Centre for Rural Technology in collaboration with its sister concern the manufacturing company Gramin Urha Tatha Prabidhi Sewa Kendra (RETSC) has taken a leading role in this project along with further plans for upscaling. Similarly, AEPC's National Rural and Renewable Energy Program (NRREP) with support from local stakeholders is planning to disseminate a number of solar cookers via the newly formed NRREP over the next five years through workshops, seminars and demonstrations. For more information contact: the Center for Rural Technology, Nepal (CRT/N) info@crtnepal.org

PARAGUAY

Dr. Martin Almada writes from Paraguay that the foundation "Celestina Perez de Almada" has been working since 1990 to promote food security and generate employment for rural youth by promoting clean solar energy. Thanks to help from Switzerland and the Netherlands, CPA continues to manufacture solar cookers, solar food dryers and solar water heaters. CPA is also using solar energy to dry herbs for pharmaceutical use and tropical fruits for snacks. almada@rieder.net.py



Paraguayan solar cooker postage stamp.

TANZANIA

The NGO Solar Circle has learned that people will work hard to earn a solar cooker. This group has created a bartering system where the community chooses a service project and the beneficiaries organize and oversee the effort. Participants earn a solar oven for their involvement. So far, the program has distributed more than 3,000 solar ovens, and built forty houses for people who are sick, elderly, widowed, or disabled. Surrounding villages have heard of the cookers and the program, so spreading the word has been easy. Solar Circle cannot keep up with demand. Solar Circle values these efforts, and is raising whatever money it can from friends to expand the program. This project is included among Featured Solar Cooking Projects on the Solar Cookers World Network Wiki. info@solar-circle.org



Photo courtesy of Solar Circle

SOUTH AFRICA

The non-profit Sunstove has more than 15,000 solar cookers in use throughout southern Africa. With a new mold, they are already getting orders from Mozambique and Mauritius. A group of Canadians is working to bring SunStoves to Lesotho. This group works "Granny to Granny" allowing the local community to identify the most needy elderly ladies, most of whom are looking after their orphaned grandchildren. <http://www.sunstove.com>

ZAMBIA

The Solar Health and Education Project (SHEP) has initiated a project at a community-based nursery school in Livingstone, Zambia for illiterate mothers who previously earned money making illegal charcoal.

The women learned how to make and use CookKits as an income generating activity. SHEP's next step was to create a registered group called Solar Ventures (SV). They have been holding SHEP-funded workshops at clinics, schools, and at an agricultural show (where they won 1st place for the most interesting booth in 2011). SHEP was invited to Lusaka to host a three-day workshop for a UK based nonprofit organization. avcurtis@bluewin.ch



Photo courtesy of SHEP

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Safe Water (cont. from p. 4)

makes water safe to drink. He also used his PML water testing kit to demonstrate that six hours of sunshine using the widely practiced SODIS (solar water disinfection) method does not necessarily kill all microbes.

These initial efforts led to FOTO's two-pronged approach to treating contaminated water in Nyakach. For use during the rainy season, FOTO provides families with bottles of WaterGuard. A 150 ml bottle of WaterGuard, which costs twenty-five cents can treat 1,000 liters of water and will last a family two months. On sunny days, the CookKit and WAPI can be used to pasteurize contaminated water.

In November 2012, SCI began supporting FOTO and SURE (Sustainable Utilization of Renewable Energy) a new project in the Kadibo division of Kisumu County managed by John Amayo, another former SCI staffer. For more information on these projects, go to the "News You Send" section of this issue.

Another solar water pasteurizing device that Metcalf endorses is the AquaPak, manufactured by Frank Husson of the San Diego-based non-profit Solar Solutions (<http://solarcleanwatersolution.com>) The AquaPak holds 1.5 gallons (5.7 liters) of water. The bottom layer is food-grade black plastic, and the top is a layer of UV-resistant, insulating bubble-wrap. After water is added to the AquaPak, it is placed on the ground or on a table to allow sunlight to pass through the bubble wrap, heating the black plastic and the water to 65°C (149°F). A built-in WAPI is visible through the bubble wrap. When the wax in the WAPI melts, the water is pasteurized. A small AquaPak manufacturing facility like the one in San Diego could be established in developing countries to produce AquaPaks at about \$2 each. SCI's has sold AquaPaks in its Marketplace for many years.

PM-Editor

Employer Matching Donations



SOLAR COOKERS
INTERNATIONAL (IEA)

Many employers will match charitable gifts, greatly increasing the value of a contribution. Please consider participating in a matching gift program if it is available to you. And remember: **gift memberships** make thoughtful, alternative gifts for a friend or loved one. Solar Cookers International will send a personalized card announcing your memorial or tribute gift.

The Solar Cooker Review (SCR) is published by Solar Cookers International (SCI) to disseminate information on solar and other clean cooking technologies. It is also available online at: http://solarcooking.wikia.com/wiki/Solar_Cooker_Review

SCI is a 501c(3) non-profit organization working to harness the sun to benefit people and the environment.

SCI welcomes submissions, all of which are subject to editing.

Send written submissions to:

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Sacramento, CA 95811-6827

Email to: webmaster@solarcooking.org

IN MEMORIUM

The global solar cooking community bids farewell to another friend and supporter, Roland Baumann of Ziefen, Switzerland, who with his wife Monica promoted and manufactured box cookers and held local workshops with partner NGOs in Switzerland, Madagascar, Democratic Republic of the Congo, Mali, Burkina Faso, and Peru.

China-Solar Cooking (cont. from p. 1) by rural families in its western provinces, China leads the world in the use and promotion of solar cooking technology. It offers a stunning example of a technology, which has clearly reached “scale”. A 2012 YouTube video *Solar Cookers in Tibetan Areas of China*, provides a powerful illustration of how important solar cookers are in these rural areas. Factories in five provinces including Beijing mass-produce lighter, more expensive metal versions.



Photo by Allart Ligtenberg

China currently has ten individual ten-year UN certified solar cooking projects, with 1,223,200 people in 305,800 coal-dependent households. They are located in northwestern China, a region more than thirty degrees north of the equator with brutally cold winters, little rainfall but abundant sunshine.

Washington, D.C.-based Solar Household Energy (SHE) which has been tracking the Chinese government's introduction of solar parabolic cookers in western China, notes that funding with carbon credit trading is encouraging investors to become involved. These cookers are locally manufactured with the least expensive models costing around \$44 (U.S.) and requiring no externally sourced parts.

For those who perceive solar cooking as happening only on a small scale at the village level, SHE's report confirms that solar cooking is a valuable resource that can significantly reduce global carbon emissions. This project is included in the Featured Solar Cooking Projects page of the Solar Cookers World Network Wiki.

–PM, Editor

ETHOS (cont. from p.4)

On the other hand, few members of the biomass stove sector have rallied behind the Integrated Cooking Method, a concept developed by the late Wilfred Pimentel which promotes the use of solar cookers when the sun is shining, fuel-efficient stoves when it's not and retained-heat containers to increase the efficiency of both cooking devices. (See articles on this topic by Pat McArdle in the November 2012 SCR, by Patty Roberts in the October 2011 SCR, and read about Wilfred Pimentel's work at http://solarcooking.wikia.com/Wilfred_Pimentel)

The biomass stove sector still promotes combustion stoves as the stand-alone solution to deforestation and indoor air pollution. By contrast, the members of the global solar cooking community who have embraced this concept accept fuel-efficient stoves as a key component of the Integrated Cooking Method.

Many different devices are already in use around the world to cook food. The choice of which device to use is dependent on culture, fuel availability and economics. Some common choices are a fuel-efficient biomass stove, an electric or gas stove, a three-stone fire, a barbecue, a microwave, a rice cooker, or an electric frying pan. Adding solar cooking and/or retained-heat cooking to this mix can cut fuel use by 30-50%.

I also learned thanks to Victor Berrueta, a stove tester for GIRA in Mexico, that people might resist replacing a three-stone fire with a well made, fuel-efficient stove (just as they would resist replacing it with a solar cooker) because a three-stone fire performs several important non-cooking tasks. It provides light and heat for the household. Its smoke provides pest control and the tar-laden emissions of an open fire apparently preserve and waterproof the interior surface of thatched roofs, extending their life from one to as much as fifteen years. The open fire also serves as a gathering point for the family and for religious activities. It suspends belief to imagine a family gathered around a solar cooker or a fuel-efficient stove for religious activities. Even as solar cooker and biomass cook stove technologies improve, families may continue to turn to three-stone fires for some of these non-cooking tasks.

There will always be a need to cook food, but while biomass fuel grows scarcer and energy becomes more expensive, the sun will continue to shine. I predict that solar cookers will become more, not less, relevant with the passage of time. Let's focus our efforts on perfecting these powerful tools, their use, their adaptations to different cultures, their financing, and their distribution chains to meet the increasing need for this simple, zero-emissions technology. *-Julie Greene is SCI's Executive Director*

SOLAR TECH TALK

PV Cells on Solar Box Cookers

The Electro Solar Cooker is being produced by the Association pour le Développement de l'Energie Solaire (ADES), a Swiss nonprofit that promotes solar cooking in Madagascar. ADES recognized another solar energy opportunity that would work well with their solar cooking promotion. As long as the solar cooker is used for a few hours each day for cooking, why not build in strips of photovoltaic cells to create some electricity? The power is stored in batteries attached under the cooker. Fully charged, the unit can power 12-volt lights or a radio for several days and recharge cell phones. These additional functions will encourage the use of this solar appliance.

For Solar Cooks: Measuring Solar Insolation

For general information on solar insolation rates by country or major cities go to: <http://www.weather-and-climate.com>
For more precise information go to NASA's easy-to-use web application <http://eosweb.larc.nasa.gov/sse> which provides a search engine with precise solar insolation rates by latitude and longitude. Once on the site, click on "Meteorology and Solar Energy" then click on "Data Tables for a Particular Location". Users will be asked to log on using their email address and create a password. They are then directed to a page, which asks for the specific latitude and longitude of the site being considered for a solar cooking project. Once the data is entered, users are taken to another page with the option, "Parameters for Solar Cooking." Under this option, users will have four search choices: average insolation, midday insolation, clear sky insolation or clear sky days.

\$\$\$\$\$\$\$\$

Attention solar cooker designers and investors! Forbes Magazine reported in January that the new Oakland, Calif., company Mosaic has launched an online platform to let individuals invest as little as \$25 in small-scale solar projects while earning a respectable return (4.5%) on their money. According to Billy Parish, Mosaic's co-founder, "Our mission is to create abundant clean energy for and by the people. For too long investing in energy has been a bank-only game." *As with all investments, investigate for yourself and proceed with caution.*

Check out Nicole Lee's Desert Garden blog (<http://desertgarden1.wordpress.com/tag/solar/>) to learn how to make a solar box cooker with an "esky"—that's Australian for an insulated cooler or ice chest. Very cool!

A Cautionary Tale from a Solar Cooker Designer

A solar cooker designer and entrepreneur, who wishes to remain anonymous, asked the SCR to share with our readers a recent and unfortunate encounter he had with a group of apparently well-funded, seemingly honest individuals who wanted to invest in and help market his product.

He admits, "I was duped. I entered into a non-disclosure agreement before seeing the final contract." He provided these potential investors with the names of his suppliers and details on the construction of his product. The contract indicating his percentage of the deal, which they ultimately presented for his signature was in his words, "a joke".

He cautions designers, inventors and entrepreneurs never to count on a pre-contract "non-disclosure agreement" to protect their intellectual property rights.

New Designs

Arlus Walters is seeking comments on his patent-pending project to develop a solar cooker that transfers heat directly to the cooking pot. Send comments to alwalters@windstream.net or go to <http://tinyurl.com/walters-patent>

You can see the first version of **Bill Bradley's** Hypar Cooker on his website <http://earthboundtech.com> on the page: EB Hypar Cooker. He has also developed a method for evaluating solar cookers with photographic analysis.

Brahmananda Chari has developed a prototype four burner steam solar cooker, which allows indoor cooking. A rooftop solar reflector automatically tracks the sun from 9 am until 3 pm. For more information and to get access to his video, contact: rbcosolar@yahoo.com

Martin Nix's "Solar Smelter", recently approved by the patent office, is a half parabolic dish with a planar reflector, which focuses the sun into a hole in the ground. He can be reached at martin_nix@yahoo.com or <http://www.solarsmeltersinternational.org/>

For information on **Joel Goodman's** fixed focus, compound parabolic concentrator solar cooker kitchens please go to his webpage on the Solar Cookers World Network Wiki.

**SOLAR COOKERS INTERNATIONAL
ANNUAL REPORT
FY July 1, 2011-June 30, 2012
Looking Back, Looking Forward**

GLOBAL EVENTS

*Check the solar cooking wiki for events
announced after our publication date*

2012 was a noteworthy fiscal year for Solar Cookers International. After 25 years, SCI perseveres as a somewhat smaller, but more sustainable organization. In April 2012, a cumulative shortfall in donations forced us to lay off all paid staff members in our offices in Kenya and Sacramento. Luckily, volunteers came forward to downsize our Sacramento office, fulfill online store orders, keep our books, maintain our websites, and continue our outreach work to hundreds of NGOs and individuals throughout the world. We even found the energy to put on the Shine On gathering here in Sacramento during July.

As we worked to bring SCI back to life, it became apparent to us that it was no longer feasible for us to support administrative offices in Kenya as well as Sacramento. While volunteers kept the SCI headquarters humming, our board worked long and hard to permanently close the doors of the Nairobi, Kenya office. While the legal services on the United States end were donated, the legal fees required in Kenya were high. Again we were fortunate and some generous supporters stepped forward to help us complete this unfortunate but necessary action. SCI donated its remaining physical assets in Kenya to local, community-based partner organizations that will continue to partner with SCI in the distribution of solar cookers in the Kisumu District.

Since the close of the 2011-2012 fiscal year, we are again busily executing SCI's mission. We are improving our educational resources and outreach so that we can more effectively help align the efforts of the hundreds of other NGOs and individuals in many regions of the world who are bringing solar cooking to those most in need of this simple technology. And we continue to support field projects in fuel-starved, sun-rich regions of the world.

Solar Cookers International's work is more relevant than ever in these days of global economic distress and environmental degradation. We want you to participate with us in this exciting work through your continued involvement and generosity. We look forward to sharing the best stories of SCI's reemergence with you in future issues of Solar Cooker Review and in the 2012-2013 Annual Report.

Shine on!

**Julie Greene, Executive Director
Solar Cookers International**

(Annual Report cont. p. 12)

March 18-22: (Cambodia) The Global Alliance for Clean Cookstoves is sponsoring the Clean Cooking Forum 2013. This will be an important event for solar cooking promoters to share information, and show unity in a common mission. Julie Greene of SCI will be a representative for global solar cooker efforts at this Forum. julie@solarcookers.org

March 23: (Sweden) Register now for Swedish NGO ADES' solar cooking workshop. In groups of eight you will make your own solar cookers at the Zurich Zoo. For more information: ades@adesolaire.org

April 20-21: (Germany) EG Solar celebrates its 20th anniversary and the 20th anniversary of the Solar Cookers International Conference at the Altötting Vocational School, Neuöttinger Street 64c, Germany 84503. In addition to reports from partner countries, an exhibition in the foyer of the vocational school building will demonstrate the enormous potential of solar energy. eg-solar@t-online.de

July 26-28: (Oregon-USA) SolWest 2013 Fair at the Grant County Fairgrounds in John Day, Oregon. info@solwest.org

Classes throughout the year (Ecuador) The Ecuadorian Research and Training Institute (IECAIM), under the direction of Fabiola Cuvi, will hold six workshops in Quito on solar cooking in 2013--one every two months. They are open to participants of all ages. Contact Fabiola Cuvi: fabi-cuvi@hotmail.com

**HELP PROVIDE SOLAR COOKERS
TO FUTURE GENERATIONS**

As earth's forests continue to vanish, the need for solar cookers in decades to come will only increase. Help future generations enjoy the benefits of this technology by designating SCI as a beneficiary in your will, trust or life insurance policy. This simple bequest in your will could ensure that families will be able to cook with the sun for generations to come: "I, [name], of [city, state, ZIP], give, devise and bequeath to Solar Cookers International [written amount or percentage of the estate or description of property] to further the spread of solar cooking."

Bequest gifts help create continuity in the way we provide service and to those in fuel-starved, sun-rich regions of the world.

Contact your attorney or financial planner for additional information on planned gifts.



Annual Report (cont. from p. 11)

Accomplishments

Your generosity initiated SCI projects in high-density areas in the Kibos Sugar Mill and the Obunga Slum near Kisumu, Kenya. Additionally, SCI supervised a research and development project, working toward an improved solar cooker design. And your gift supported the online resource and networking platform for the global solar cooker community, the Solar Cookers World Network. This unique resource is a valuable, global platform for collaboration for community-based organizations, researchers, designers, international advocates, and solar cooks.

Careful Stewardship of Your Donations

In 2011-2012 SCI spent 68.3% of costs on programs and 31.7% on administration and fundraising.

Finances

Revenue	\$604,447
Program Expenses	\$395,608
Administrative & Fundraising Expenses	\$184,099
Total Expenses:	\$579,707
Net Assets, End of Year:	\$99,315

2011/2012 Board Members

- Bev Blum
- Sharon Cousins
- Jeff Dorso
- Deepak Gadhia
- Jason Gray
- Bill Hudson
- Gary Hursh
- AJ Lederman
- Debra Lilly
- Patricia McArdle
- James Moose
- Michael Mora
- Patty Roberts
- Rajinder Sahota
- Honey Walters



Mother and child with SCI CookKit
Kibos Sugar Mill Labor Camp,
Photo by Jim Moose, 2011

Life Steward Foundations/Corporations (\$5,000+)

- o A Better World Fund
- o Aid For Africa Federation
- o Agua Fund
- o Community Foundation Greater Memphis
- o Fischer Family Fund
- o Frank Flaman Foundation
- o Helen and Thomas Merrigan Charitable Trust
- o Jewish Community Federation Endowment Fund
- o Louise Arnold Maddux Environmental Foundation
- o McGraw-Hill Companies
- o Microsoft Matching Gift Campaign
- o RCG Fund
- o Remy, Moose and Manley, LLP
- o Rotary Club of Manassas
- o Silicon Valley Community Foundation
- o St. Mary's Academy, Amnesty International Chapter
- o The Hein and Beverly Rusen Foundation Inc.
- o The Joseph and Catherine Johnson Family
- o The Machiah Foundation
- o The Paul Bechtner Foundation
- o The Rosenlund Family Foundation
- o The U.S. Charitable Gift Fund
- o The TOSA Foundation

Life Steward Individuals (\$5,000+)

- o Neca Allgood Genevieve
- o Brennan Nauman William Brown Jr.
- o Peggy and Glenn Calkins
- o Sean Callan
- o Donald Coan and Barbara Jodry
- o Sydney Coatsworth
- o Don and Nancy Crosby
- o Ruth Dettlinger
- o Timothy Devine
- o Paul Farnham
- o Karol Foss
- o Jason Gray
- o Agnes Gund
- o Lila Harman
- o Dr. Joseph Heller
- o Jane Hiatt
- o Nicholas Hodges
- o Debra and Bill Hudson
- o Sonja Jones
- o Leslie Kleinfeld
- o Marianne and Ray Kluever
- o Arline Lederman and Edward Friedman
- o Dr. Barbara Leighton
- o Eric Lustig
- o Eunice Mahler
- o Patricia McArdle
- o Dave Menicucci
- o Burnett and Mimi Miller
- o James Moose and Kirstie Wilson
- o Jim and Virginia Moose
- o Joan Myers
- o John and Janet Parker
- o Chris and Jeanette Phelps
- o Patricia Roberts and Alfred Hislop
- o Jonathon and Susan Rose
- o Marc Rosenbaum
- o Janet and Martin Sheen
- o Frances W. Stevenson
- o John Trathen
- o Wendy vanden Heuvel
- o Honey Walters
- o John Wilkes
- o Margaret Wilson

2011/2012 Volunteers

- | | |
|----------------------------------|-------------------------------|
| Paul Barth | Bob and Mary Beth Metcalf |
| Tal Blackburn | Virginie and John Mitchem |
| Teresa Cheung | Virginia Moose |
| Marcus Christian and Rene Hamlin | Claudia Norton-Tolbert |
| Donald Coan | Rick Palkovic and Jamie Knapp |
| Richard Epstein | Liz Richards |
| Cary Hart | Stephen Richards |
| Linda Hayward | Sue Schoneman |
| Greta Hendrickson | Dale Schuck |
| Paul Hedrick | Doran Smout |
| Debra Hudson | Tom Sponheim |
| Gary Hursh | Kirstie Wilson |
| Tomiko Ibser | Josh Yeidel |
| Patricia McArdle | |

TRIBUTE GIFTS HAVE BEEN GIVEN TO SOLAR COOKERS INTERNATIONAL BY:

Valerie Carter	In Honor of Karen Gates
Jacqueline Ensign	In Honor of Susan Ensign
Carol Gerlitz	In Honor of Neil Fishmann and Thomas Bohlinger
Carol Gerlitz	In Honor of Mark P. Johnson and Mary-Russell Roberson
Chris Scammon	In Honor of Nancy Bancroft
Anne Teller	In Honor of the Birthday of Charles P. Tilt
Hardee Tzman	In Honor of Barbara Behrens
Judith Edelstein	In Honor of Lederman/Friedman 50th Wedding Anniversary
Elinor Fine	In Honor of Lederman/Friedman 50th Wedding Anniversary
Raymond Guenter	In Honor of Lederman/Friedman 50th Wedding Anniversary
Janet Steig	In Honor of Lederman/Friedman 50th Wedding Anniversary
Heike Eubanks	In Memory of Wallace B. Eubanks
Charles Hosking	In Memory of Mary Ann Fiske
Stephanie Smith	In Memory of Derek E. Smith
William & Lorette Wambach	In Memory of Wilfred Pimentel
Lawrence Gong & Jeanne Yuen Gong	Happy New Year to Jan Webb

DISCOUNT COUPON**Northern Hemisphere Solar Cooking Season Heats Up!**

To start your solar cooking season, SCI is pleased to offer our donors a 10% discount, good for one purchase in March at the SCI online store. <http://shop.solarcookers.org>

Store profits in the month of March will help us supply CookKits, WAPIs, and other solar cooking devices to the people of the Lower Nyakach, Kenya.

Thank you for supporting SCI's important work with your purchase.

Use Coupon Code "March13". This discount expires 3/31/2012.

***Offer applies to online store orders only.**

Minimum order is \$10.00, 10% off of retail price.

Wholesale and nonprofit organization orders are not eligible.

This discount cannot be combined with any other offer.

OTHER WAYS TO SUPPORT THE WORK OF SOLAR COOKERS INTERNATIONAL

Your generous donations help support our overseas projects and allow us to produce this and future issues of the *Solar Cooker Review* to educate governments, foundations, NGOs, schools, communities and individual users about the potential of solar cookers to provide a clean, cost effective way to cook food and heat water with sunshine. Your donations also help us maintain SCI's popular SCWNet Wiki, which has helped millions of users in hundreds of countries to discover, make and use solar cookers.

Give a Tribute Gift

Consider making a gift to Solar Cookers International in someone else's name as their gift from you. SCI's executive director will send a personal note to notify your favorite person that you've honored him or her in this unique way. Simply include a note in your donation envelope or email us at info@solarcookers.org.

Send Solar Gifts

Don't forget about the catalog at the back of this *Solar Cooker Review*. Our solar cookers and cookbooks make wonderful gifts for holidays, birthdays, weddings, and anniversaries. The next time you need a gift, think of us!

DONATE A VEHICLE

--Moving or not--

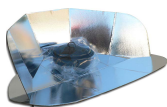
Car, Truck, or Boat

Benefits SCI

Call (877) 227-7487 X 2403

Catalog of Solar Cooker Products

Note: We invite you to save money on your purchase by calculating the actual shipping costs at our online store. shop.solarcookers.org If you have questions, please call the SCI Office at +1 (916) 455-4499.



Are you new to solar cooking? The CookKit is an inexpensive, easy way to get started. A lightweight, panel-style solar cooker made of cardboard and foil that folds into a 13"x13"x2" square for convenient storage. Great for home, camping and emergency use. It comes with two reusable, high-temperature cooking bags, which are required for cooking. The CookKit reaches temperatures in the mid-200°F. use with a lightweight, black, lidded pot (not included). **\$29**

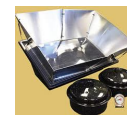
High-Temperature Cooking Bags (sold in package of 5) Replacement cooking bags for the CookKit and similar panel-style solar cookers. They trap heat and decrease cooking time. These heat-resistant polypropylene bags are 19x24 inches and reusable. **\$2.50**

Three-lb round-lidded roaster absorbs the sun's energy and converts it to heat energy. Liquid capacity is 3 liters. Made of steel with a porcelain coating, it fits in all the solar ovens that we sell except the Tulsi hybrid. Measures 9.75" w x 5.75" h. **\$14**



The Tulsi hybrid is a high-performance solar box cooker with an electrical backup. Cook using only the power of the sun, using electrical power, or a combination of solar and electrical. Reaches temperatures up to 400°F. Four black metal pots are included. shipping included (continental U.S. only). **\$307**

The SOS Sport is a compact, durable two-pot solar box cooker made from recycled soda bottles. Reaches temperatures of 200 - 250°F, higher with reflectors. Comes with two black pots, reflectors, and a Water Pasteurization Indicator (WAPI). shipping included (continental U.S. only). **\$197**



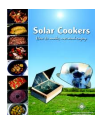
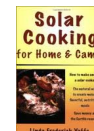
If you want to cook year-round (even in the snow!), try the Global Sun Oven. It's a durable, high-performance solar box cooker made of durable molded fiberglass and kiln-dried hardwood. Anodized aluminum reflectors come with 15-year warranty against rust. Reaches temperatures of 350 - 400°F. Includes oven thermometer. Use with a black, covered pot (not included). shipping included (continental U.S. only). **\$280**

The Lasagna Pan is a convenient way to cook lasagnas or cakes in a panel or SOS Sport solar cooker. Measurements: 14" x 9" x 2". Size not compatible with the Global Sun Oven. **\$15**



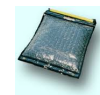
Cooking with Sunshine by Lorraine Anderson and Rick Palkovic. Everything you need to know to use the power of the sun for cooking! There's a chapter on building your own cooker and a resource section for those who want more information. With over 100 recipes plus menu ideas, you won't be wondering what to cook in your solar oven! 202 pages. **\$17.95**

Solar Cooking for Home & Camp by Linda Frederick Yaffe. Try some solar-cooked Cashew Curry! Or maybe a crab dip or carrot soup. Clear, easy-to-follow recipes can be quickly prepared at home or in camp. Includes plans for building a box-type and a panel-style solar cooker and tips on solar camping. 120 pages. **\$12.95**



How to Make, Use and Enjoy Solar Cookers, 10th edition. Contains instructions for making solar cookers from cardboard and foil, directions for use and recipes. 52 pages. **\$7**

The AquaPak solar pasteurizes four to five liters of water at a time, up to 15 liters per day. Simply fill with water and lay it on a flat surface in the sun. A built-in WAPI indicates when water is pasteurized, in as little as 2 hours. Weighs 6 ounces when empty. **\$22.50**



The WAPI (Water Pasteurization Indicator) is a reusable device containing a wax that melts when water reaches 65°C (149°F). Water heated to this temperature for a short period of time is free from microbes, including E. coli, Rotaviruses, Giardia and the hepatitis A virus. It comes with a heat-resistant stainless steel cable and brass end caps that won't melt when used over an open flame. **\$7**

Note: We invite you to save money on your purchase by calculating the actual shipping costs at our online store. <http://shop.solarcookers.org> If you have questions, please call the SCI Office at +1 (916) 455-4499.

√ Add our **Preparedness Kit** to your emergency preparedness supplies. Be prepared to handle all your solar cooking and water pasteurization needs during a disaster. Contains CookIt, 3 lb round roaster and WAPI. **\$47**

√ The **solar Chef's Kit** is perfect for beginners and experts and makes a great gift! Comes with a CookIt, 3 lb round roaster and *Solar Cooking for Home & Camp* cookbook. **\$52.00**

√ Our **Camper's Kit** is a convenient way to go solar on your next camping trip! You'll get a CookIt, 3 lb round roaster, AquaPak, and *Solar Cooking for Home & Camp* cookbook. **\$75.00**

√ Our **Teacher's Kit** is useful for teaching about solar cooking. It includes a CookIt, 3 lb round roaster, a

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--SCI offers quantity discounts for municipalities, NGOs, schools, and ministries. Required: documentation of nonprofit or municipal status. Please contact: sales@solarcookers.org for more information.

--International Shipping Costs range from 100-230% of retail cost. Please contact sales@solarcookers.org for more information.

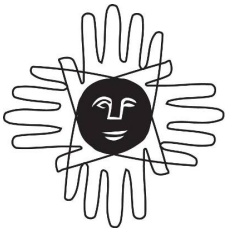
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PLEASE be sure you have included sales tax (CA only) and the proper shipping/handling charge. Incorrectly totaled order forms will be returned.

Prices are subject to change.

For most current pricing or to place an on-line order, visit the Solar Cookers International Marketplace: www.solarcookers.org/catalog



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Become a **Solar Cooking Field Partner!**

Monthly donations provide uninterrupted support for the mission you love.

As a **Field Partner**, your support enables us to plan for the longer term with certainty and security about what we can achieve.

Your monthly gift helps Solar Cookers International tackle critical global solar cooking issues and help solar cooks who need this technology most.

Visit:

<http://www.solarcookers.org/support/donations.html>
to make your online donation or call the Solar Cookers International Office for assistance:
+1 (916) 455-4499.

We thank you.



Photo of children with CooKits taken Nov 2009, Touloum Refugee Camp, Eastern Chad by P. McArdle

THANK YOU!
AND PASS IT ON

Give this issue of the Solar Cooker Review to a friend. Leave it at a doctor's or a dentist's office or in an airport lounge so that even more people can learn about the benefits of solar cooking.