

GROUND SWELL

A R C H I T E C T S

Groundswell Architects supports both our enduring use of the earth as an integral design element of all building projects and the ground swell of public interest in higher environmental and ecological thinking.

Our buildings are designed from the heart to touch and inspire the human spirit. We strive to make our projects structurally and thermally efficient. We use materials and methods consistent with good ecological practices and seek socially responsible attitudes in choices of contractors and subcontractors.

In our twenty years of business, we have designed and planned over 2,500,000 square feet of new and renovated building space at an estimated construction value of \$125 million.

Design innovations are our hallmark. Our office work has been featured on the Discovery Health Channel, the New England Cable News Network, in "Creating The Not So Big House Book", the New York Times, House Beautiful, Natural Home, Solar Age, Country Journal, and Yankee magazines.

We have been energy consultants for the American Institute of Architects Research Corporation in Washington, D.C., and for the Environmental Conservation Board #5, State of Vermont.

Currently, we are designing and marketing an innovative affordable housing scheme known as Green Ribbon Living. It raises the environmental and ecological bar for the mass housing market and we are optimistic that it will set a fresh trend in how shelter is conceived and constructed.

Groundswell Architects
477 Ten Stones Circle
Charlotte, Vermont 05445
802-425-7717 Office/Fax
www.groundswellarchitects.com
ted@groundswellarchitects.com



Community Health Center of Burlington, Vermont

Introduction

We believe that the earth is a fundamental design element. How a building meets the ground is key to the comfort and visual success of the design. Our research and understanding of Living Roofs contributes to our projects in energy savings and aesthetic direction.

We also believe in a current groundswell of public awareness of emerging environmental and ecological thinking. Education is part of our design process, both for ourselves and our clients. We understand that materials, techniques and building systems change constantly and that marked improvements in chemistry and resources are to be noted for inclusion in our work.

We ask tough questions of our clients and work hard to solve budget challenges, especially when looking for alternatives to “business-as-usual” solutions.

Programming

We believe that it is the unique desires, experiences, sites and budgets of our clients that allow us to design the most distinctive and fitting places for them to live and work.

We use a questionnaire to help record and translate the owner’s lifestyle, dreams, and eccentricities into useful information for design purposes. With this information, an accurate program of spaces and their respective characteristics is described. We welcome visual materials, photos, and paraphernalia as necessary to explain ideas.



We also conduct group workshops to explore the Goals, Activities and Places that are key to the successful programming of a residential or commercial facility.

When working with a large group of individuals to build an intentional community, workshops are focused on:

- overall economic, spiritual and architectural goals
- site layout and design
- spaces, equipment and relationships found in a Community Building.

The Family Creative Workshop

This is a specialized workshop for those families wishing to include all members in the design process.

• Programming/ Talking and writing

An activity involving the architect and family members. We brainstorm about Goals (what do we want from this house - nice place to come home to, warm and inviting to visitors, etc.), Activities (what do we need to accommodate - eating, sleeping, music playing, etc.) and Places (rooms and spaces for these activities). Other topics covered: materials and colors, appearance, and noteworthy places we have experienced that might influence the design.

• Modeling/ Drawing and constructing

Using information based on the programming event, this family gathering is used to draw and/or build model rooms, spaces and ideas. This activity is a very broad one useful for getting a feel for the style, shape and delights of the house and site. Cardboard, crayons, pencils and tracing paper are our tools.

• Virtual space tours

On a 7 foot wide screen projection of the virtual building, we maneuver through rooms and spaces in real time to review and evaluate what works and doesn't work in the design. Some changes to furnishings, texture, color and shape can be made on the spot.

Design Development

We believe that a significant conceptual direction emerges from programming and creative conversations. With this concept in hand, we begin the design, also using programming, site information, and budget constrains. Our tools are cardboard, tracing paper and virtual modeling. We explore structure, building materials, energy sources, heating, cooling and ventilation during this phase. A first look at a Probable Cost of Construction is determined, to be refined as the project moves along.

Construction Documents (Plans & Specifications)

When the design meets with approval, we complete the construction documents (plans and specifications). We are careful to maintain the conceptual direction during the time these documents are created from the design drawings.



As architects with extensive hands-on building experience, we understand the translation from a CAD document to reality. Our construction documents are known to be accurate, complete and based on practical experience of how things go together in the field.

We enjoy working with contractors and local craftspeople and believe in a team approach to building. The construction can be the most enjoyable part of the work when expectations of the owner, architect and builder are all met.

Services Offered

- Architectural design
- Construction documents & specifications
- Construction project administration
- Pre-design feasibility studies
- Site analysis & land planning
- Facilities programming & review
- Interior design & space planning
- Passive solar engineering
- Energy conservation analysis
- Educational presentations
- Promotional materials preparation
- Desktop publications & graphics

Energy

We believe in using the sun and wind to power our buildings. The future is here and we are still dependent on oil.

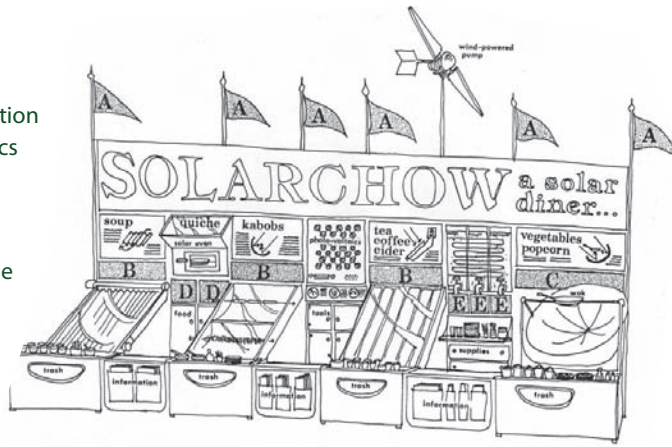
We feel that children (and adults) can benefit from being included in the designing of a home. Understanding how the sun and wind powers their home might be fodder for a science project that monitors and records how well these systems are performing.

Our projects are thermally optimized by careful detailing of the building envelope, incorporating energy conservation techniques and by passive solar engineering.

We encourage commercial clients to enroll in the LEED program for certification of a project as a high level environmental commitment. We encourage residential customers to enroll in the Vermont Built Green Program for certification and to have an energy audit performed by Efficiency Vermont, to assess overall building performance and rating.

Environment & Materials

Our buildings can sit lightly with the earth, surrounded by nature and natural materials and perhaps carbon neutral - meaning that the structure does not add to the global CO₂ problem, exhausts air cleaner than it intakes and produces no long term toxins.



While it is both easy and timely to be "green", our office takes a critical look beneath product claims and company profiles that we do business with. We generally discourage the use of products containing PVC, petroleum and other known chemicals which are either dangerous to life, difficult or impossible to safely dispose off, or do not recycle easily.

We review new "green" products carefully before recommending them for use. Materials and methods consistent with good ecological practices are used while seeking socially responsible contractors, subcontractors and craftspeople to perform work. We understand that affordable, durable alternatives to certain materials are still being developed and benign solutions may not always be affordable or available. We encourage the use of regional, easily

Costs of Construction

To assure a goal of budget responsibility, we generate an Estimate of Probable Cost of Construction once an initial design is complete. This estimate is refined two or three times before construction begins. Keeping costs in line is a constant challenge during the design process and we believe in responsible vigilance.

Contractors

The two most popular approaches to construction of most buildings are by using either a General Contractor or a Construction Manager. We are comfortable with either a bidding or direct selection process.

The General Contractor takes most of the risk, generally billing the owner for all work on the project. The GC then pays the sub contractors and suppliers.

The Construction Manager works directly for the owner. The owner takes most of the risk, paying sub contractors and suppliers directly.

A direct selection process at the beginning of the project greatly simplifies and benefits the cost control. Whereas a bidding process may result in lower pricing, it will require more extensive information to produce equitable results. We are happy to discuss at length the differences in these approaches.

Fees

Each job and client differs in time and scope of work desired. We review the tasks and break down our contract time in a spreadsheet for review by the client.

© 2007 GroundSwell Architects

Today's buildings should be flagships of responsible reduction of water, power and fuel consumption.

We enthusiastically specify the following types of systems:

- **Active solar hot water heating** using flat panels to heat domestic and commercial hot water.
- **Passive solar heating** using building design & window layout to provide supplemental space heating.
- **Photo Voltaic electrical generation** using panels and regulation equipment to provide electricity.



- **Wind electrical generation** using a turbine and regulation equipment to provide electricity. Sizing the equipment to the available wind source is key to economic viability.
- **Ground Water Source Heat Pumps** harvest available energy in water for space heating. Current design & engineering in the NE region has proved cost effective for some applications.
- **Air-to-air Heat Pumps** harvest available energy in ambient air for space heating. Current popular models from Nyle claim to be efficient down to 0° F.



Artgate Competition, Fall 2005

It seemed like a great challenge - a design competition for individual architects to create an artists' center on a strategic site where the City of Burlington was already planning for a six hundred car parking garage. The site is a peculiar blend of natural wooded land to the south and very unsightly parking, railroad tracks and streets on the other sides. It is next to the old Lakeside neighborhood.

We designers were asked to keep the six hundred cars on site while adding some sixty-seven thousand additional square feet of program space for a theoretical artist's center. These two activities cast as intimate neighbors seemed a bit daunting at first thought. What exactly do automobiles and

creative souls have in common? I suppose there is some sort of symbiotic relationship - artists need to get places and cars need to be restyled on a regular basis - sort of a fashion statement thing. Would I use the car as an icon, a symbol of the technological times? Maybe my personal favorite, the '63 Pontiac Grand Prix, could be installed over the entrance.

Being enamored with anything green on a roof, I started seeing a solution taking shape as a gentle hillside extension of the wooded land adjacent and south of the site. A living building has all kinds of interesting things it can do that should help secure our species' future on this planet. It can be a planting bed for grasses, sedums, herbs, vegetables, flowers, small shrubs and lichens that produce oxygen necessary for

all life and a home for the very small critters that live in soil. There are bacteria, insects and worms that biologists are discovering are very necessary for the health of the big ecological picture.

The rooftops of the studios and gallery are used to treat wastewater generated by the human activity. Each roof is an engineered wetland, with iris and cattails growing in a carefully blended gravel media. Rather than sending everything to the city sewers, this simple system uses the gray water to provide nutrients for growing plants and lets evaporation play a part in disposal. Roughly one half of the annual rainfall in our Vermont climate can be absorbed by a mere 4" thick soil before it needs additional drainage. This is the kind of news that public works officials love to hear on a Monday morning. Other benefits are fire protection, cooler interior temperatures in the summer, and much longer life for the roofing membranes.

The hilltop is the organizing element for the building. Once that concept was established, the artists studios, restaurant, galleries, and workshops all spill out in several levels from the innards of the sloping earth shape, becoming a village in and of the hill. Exterior colors are pastel and earth tones, and over time mosses add to the patina. Exterior stairways connect the sidewalks to the outdoor gallery above and allow access to the interior circulation at several points. I did not want to have the automobile separating the southern wooded area from this garden I was creating, so I planned for a drive under emergency access to the Lakeside



neighborhood. This way, the sidewalk was safer and more like a walk through a park.

While the autos were hibernating below, out of sight and out of mind, I covered them with a living building that cleans the air; produces at least as much energy as it uses, and celebrates the look and feel of technology. Planted hardwoods and photovoltaic grasses share the available solar exposures on the hillside. These techno grasses absorb photons to make electricity as they swing and sway, working their crystalline magic. They also support a gossamer canopy over patrons at the commuter rail station on the west side of the project. As a commuter returns home at night, he or she will be illuminated by the daytime electrical production of the grasses. An educational component with digital readouts of current and daily performance will be part of the schedule board.

A row of wind turbines bordering the northern boundary catch the Lake Champlain breezes. They quietly and efficiently use the natural on-site wind energy that otherwise would be lost. The turbines and grasses provide the majority of the power needs for the artists' center. Claims for alternate energy production always look great on paper, but I believe that wind and photovoltaic technologies are now mature enough so that annual performance figures can be trusted.

The future Southern Connector bypass will create noisy, animated activity along the east elevation. To ease the building's appearance, the entire east and north

four storey undulating walls are equipped with hundreds of hanging pockets of soil that provide a growing medium for air cleaning vines. On the roof and coupled to the parking garage are two biological air filters. These greenhouses are planted and equipped with selected biology for the expressed purpose of cleaning the garage air. This idea was part of a competition I entered several years ago for a new Burlington Public Works building, just a hundred yards away. I conferred with my friend and biologist John Todd, who is a master at using plants to clean up our air and water.

I developed a photovoltaic totem-firepit-sundial concoction for another project and decided to use it on the hilltop, since it could add a bit of community activity outdoors. Sitting on top of the hill, this hybrid folly provides 250 watts of power, a place for banners and flags, and a fire pit with seating for dozens. On a sunny day, the totem casts a shadow on the sundial seating ring with the correct astrological time. This as a very kid friendly delight that demonstrates the importance of our sun by generating solar electricity, showing the correct time, and providing a meeting place around a most ancient ritual, a simple fire. It can also be a lesson in structure and mechanical design by raising and lowering the pole to the most solar efficient angle for the photovoltaic cells.

While this idea was incubating, I was also revisiting my procrastination skills. The deadline had been extended by two weeks. Three days before the entry was due, I sat down and asked myself how much fun

I thought I could have without setting my trusty mouse on fire. Well, fun I had. In sixteen hours I had bashed together what appeared to be a building ready for rendering on my Mac. I decided that I would submit perspective pictures of the finished building and little else. I knew there was a floor plan in there somewhere, but time and my interest were of the essence and I put my energy into establishing the best sun position and camera settings for the radiosity engine in my software instead of producing floors and elevations. I did manage to cut a section thru the virtual building to clarify some of the innards.

Murphy's law ruled as the deadline approached and my wide bed printer decided to choke partway through the printing queue, refusing to produce the last high resolution drawing. Typical. I used an earlier draft version of the aerial view, knowing that I would be the only one to notice the difference. I was out of nice clean foamcore, so I chopped up some old scraps and taped them together to fabricate a pair of the required two by three foot boards for submission. I made it to the Firehouse Gallery with five minutes to spare.

I certainly feel our society needs architectural and ecological visions based on sound design and engineering. I think the next generation, particularly our children in primary schools, should have regular exposure to responsible ecological solutions, especially at a time when our natural resources are increasingly tapped and stressed. I hope this solution represents one of the possibilities.

> ••• Ted Montgomery RA, February 6, 2006



A walk in the garden of a living building that cleans the air and water using an undulating green garden roof and green wall. Photovoltaic grasses catch the sun. Earth integrated studios, galleries, workshops, and performance spaces are the village in the hill.

Ted Montgomery

Born: Richmond, Indiana, 1947
 Owner: GroundSwell Architects
 Education: Graduated from University of Cincinnati 1972
 Architectural Registration: State of Vermont 1976

Recent Experience

Indiana Architecture & Design, 1985-2002
Owner, project architect
 Local Star, Ltd., Northfield, VT, 1981-1985 *Owner, project architect*
 Circus Studios, Ltd., Waitsfield, VT, 1976-1981
Founding partner, project architect

Positions Held

Housing Supply Goals Task Force, *Chittenden County Regional Planning Commission, 2003*
 Board Member, Shelburne Historic Preservation & Review Commission, *Shelburne, VT, 1989-1991*
 Squad Member (EMT Cert.), Shelburne Rescue, *Shelburne, VT, 1989-2001*
 Board Member, Moretown Elementary School, *Moretown, VT 1982-83, 1985*
 Member, Mayor's Task Force on the Waterfront, *Burlington, VT 1981*
 Member, Load Management Committee, Dept. of Public Service, *State of Vermont 1981-82*
 Partner, SOLARCHOW Education Project, *Waitsfield, VT 1978-83*

Professional Activities

Co-winner, Artgate design competition, AIA VT, Fall 2005
 Instructor, ArchiCAD software, University of Vermont, Winter/Spring 2004 & 2006
 Instructor, Design & Construction, Yestermorrow Building School, Warren, VT, Summer 2003
 Home & Office Openhouse/Montgomery Home, National Tour of Solar Homes, sponsored by NESEA (Northeast Sustainable Energy Association) and ASES (American Solar Energy Society, October 1997 and October 1998.
 Guest Speaker, "Career Day", Champlain Valley Union High School, Hinesburg, Vermont, February 1999.
 Guest Speaker, "Ten Stones Community Experience", Unitarian Church (Rev. Gary Kalwolsky), Burlington, VT, April 1998
 Guest Speaker, "Ten Stones Community Design", Living/Learning Center (Tom Hudspeth, Professor), University of Vermont, Burlington, VT, April 1998



Instructor, "Advanced CAD Presentation Graphics", ECA Florida Architectural Licensing Seminars, Los Vegas, New York, Columbus, Killington, West Palm Beach, 1996-97

Community Workshop, "Straw Bale Tool Shed", Ten Stones Community, 1997

Guest Speaker, "Community Design", George Aiken Center University of Vermont, Burlington, VT, 1995

Guest Juror, "Senior Challenge Projects", Champlain Valley Union High School, Hinesburg, VT, May 1995

Guest Panelist, "Earth Matters", Channel 17 Local Access, Burlington, Vermont, March 1995

Guest Instructor, "Ten Stones Community Design", Living/Learning Center, University of Vermont, Burlington, VT, February 1995

Guest Instructor, "The Ten Stones Story", Ten Stones Community, Charlotte, VT, April 1994

Video Presentation, "Walk-thru's of the Lake Champlain Basin Science Center", Burlington Boat House, Burlington, VT, November 1994



Interview, "The Wave", Channel 5 WPTZ Evening News, 1991

Guest Panelist, "Profit With Good Design", The Governor's Conference on Design and the Built Environment, Montpelier, VT, 1989

Visiting Instructor, The Governor's Institute, Castleton State College, 1989

Exhibition of Work, "Riverside Avenue", The Metropolitan Gallery, City Hall, Burlington, VT, 1988

Exhibition of Work, "Main Street Study", The Community Planning Fair, Church Street, Burlington, VT, 1988

Visiting Instructor, Design & Planning, University of Vermont, 1988

Exhibition of Work, "The Webb Residence", ArtSource, Burlington, VT, 1988

Guest Speaker, "Architectural Hearthrobs", Yestermorrow Lecture Series, Warren, Vermont, 1988

Guest Speaker, "Recent Solar Work", Yestermorrow Building School, Warren, VT, 1987

Guest Speaker, "Recent Projects", The Architecture Club, University of Vermont, Burlington, VT, 1987

Instructor, Design & Construction, Yestermorrow Building School, Warren, VT, Summers of 1983 thru 1985

Visiting Lecturer & Instructor, Yestermorrow Building School, Warren, VT, 1984

Guest Speaker, "A Solar Home We Could Build on Mars & Other Projects", Yestermorrow Lecture Series, Waitsfield, VT, 1983

Exhibition of Work, "Shelter: Models of Native Ingenuity", The Katonah Gallery, Katonah, NY, 1982

Guest Speaker, "Lunchline" program, Ball State University, Muncie, IN, 1982

Exhibition of Work, "Architectural Constructions" (A five-man show), The Gallery of the Living & Learning Center, Univ. of Vermont, Burlington, VT, 1982

Visiting Lecturer & Design Critic, Cambridge University, Cambridge, England, 1982

Video Presentation of Frost Residence, "Crossroads Show", Channel 33-ETV, Burlington, VT, 1981

Guest Speaker, "Energy Efficiency & the Second Home Market", State of Vermont Environmental Board, District #5, Montpelier, VT, 1981

Guest Speaker, "The Super-Insulated Frost Residence", Solar Association of Vermont, Conference in Burlington, VT, 1981

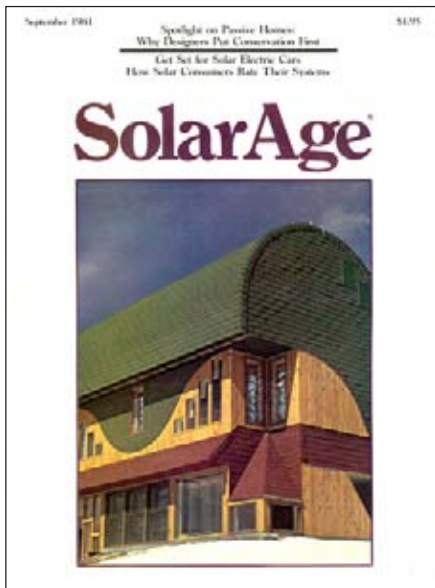
Visiting Lecturer & Instructor, *University of Vermont, 1981*

Discovery Health Channel "The Healthy Home Show" featuring the Montgomery House and an interview with Ted Montgomery, Episode #166, aired during January and February 2001, produced by Omni Film Productions

HGTV "Dream Builders" show featuring the Frost House, Episode 1008

New England Cable News "Dream Home" show, March 23rd & October 26th, 2003

WCAX Channel 3 "Home Sweet Home" show June 7, 2001



Frost Residence by GroundSwell Architects

P U B L I C A T I O N S

CREATING THE NOT SO BIG HOUSE BOOK, 2000, by Sarah Susanka, Taunton Press, "Playfully Sustainable", pp. 132-141

CELEBRATING THE AMERICAN HOME 50 Great Houses from 50 American Architects, 2005, by Joanne Bouknight, "Easy on the Earth, Easy on the Eyes", pp. 48-51.

Smart HomeOwner Magazine, March/April 2006, "It Takes an Eco-Village", pp.50-55.

VERMONT MAGAZINE, May/June 2004, "Living in Art", pp. 93-96.

Inside ART DECO, 2005, by Lucy Rosenfeld, Schiffer Publishing, pp. 222-225.

GARAGE Reinventing the Place We Park, 2001, by Kira Obolensky, Taunton Press, pp. 97-98

FAMILY HOME IDEA BOOK, 2003, by Julie Stillman & Jane Gitlin, Taunton Press, pp. 27, 95 & 146.

DECK & PATIO IDEA BOOK, 2003, by Julie Stillman, Taunton Press, p. 131

INSPIRED HOUSE, December 2004, "Reclaimed Wood", Taunton Press, p. 52

Structural Engineering & Testing
SERVIDIO ENGINEERING
Dick Servidio, Owner
135 College Street, Burlington VT
802-860-0400

CIVIL ENGINEERING ASSOCIATES
Steve Vock, Partner
Falls Road, Shelburne VT
802-985-2323

Mechanical & Electrical Engineering
SALEM ENGINEERING
Tom Reilly, Owner
Jelly Mill Common, Shelburne VT
802-985-8722

Civil Engineering & Surveying
KREBS & LANSING
Mike Burke, Owner
10 Main Street, Colchester VT
802-878-0375

Planning & Landscape Architecture
LANDWORKS
David Raphael, Owner
211 Maple St., Middlebury VT
802-388-3011



Wells Residence by GroundSwell Architects

NATURAL HOME, July/August 1999, "A Sun-seeking Design", pp. 38-46

AMERICAN WAY (American Airlines), November 15, 2000, "Trading in the Castle", pp. 108-112

THE BATHROOM IDEA BOOK, 1999, by Andrew Wormer, "Lighting, Heating and Ventilation", p. 150

THE NEW FLOORING IDEA BOOK/Creating Style from the Ground Up, 2001, "The Green House", pp.116-121

GROUND SWELL

Mark Redmond, Executive Director
SPECTRUM YOUTH & FAMILY SERVICES
31 Elmwood Ave., Burlington VT 05401
802-864-7423

Joe Arioli, Executive Director
COMMUNITY HEALTH CENTER
617 Riverside Ave, Burlington VT 05401
860-4318

Ron Miller, Owner
RESOURCE CENTER FOR REDESIGNING
EDUCATION
158 McNeil Cove Road, Charlotte, VT 05445
802-425-5153

Alan Newman, President
MAGIC HAT BREWERY
180 Flynn Ave, Burlington, VT 05401
802-658-2739



CHARLOTTE NEWS, (Charlotte, VT), January 15, 2003, "Ten Stones Founder's Home in Harmony With Surroundings", pp 16-17.

BURLINGTON FREE PRESS, (Burlington, VT), October 17, 1998, "Architectural Integrity - Couple's home reflects a commitment to their beliefs", Home Section, pp 1D-2D.

BURLINGTON FREE PRESS, (Burlington, VT), January 23, 1999, "Solar panels to sprout from Vt. rooftops", Frontpage.

NEW YORK TIMES/THE HOME SECTION, Thursday, October 15, 1981, "Assessing Solar House Architecture: The Good, the Bad, and the Indifferent" by Paul Goldberger, pp. C1 & C5

HOME OWNER, March 1991, "Home Work" *Take care of business with a well-designed home office*, pp.42-49

HOME IMPROVEMENTS Woman's Day Home Ideas, Vol. II No. 3, "HomeWork", pp. 56-57

HOUSE BEAUTIFUL, January 1982, "A Roof That Throws A Curve" (Solar with Style), pp.54-55

SOLAR AGE, May 1986, "Offbeat House Fits In", pp.24-25