

TX-SES



NEWS

A PUBLICATION OF THE TEXAS SOLAR ENERGY SOCIETY

MAR/APR-1980

VOL. 3-04

A CHAPTER OF THE AMERICAN SECTION OF ISES

1007 SO. CONGRESS, SUITE 359 AUSTIN, TEXAS 78704

BLOWIN' IN THE WIND

pp. 2-4



Buchanan's
Wind Museum
see Wind Lore
p. 3

WIND BLOWS ILL IN CORPUS

by Daryl Janes

People in Corpus are discovering the difference between wind and hot air. When, recently, several residents of this coastal city attempted to obtain the necessary permits to erect small wind energy conversion systems on residentially zoned properties within the city limits, they found themselves in a hall of mirrors of red tape. As one citizen put it, "the ghost of ordinance past, present and future".

The problem is the planning commission which has proposed an amendment that prohibits "windmills" or wind energy conversion systems or wind driven generators with horizontal axis" except those in the "Farm-Rural District".

continued on p.3

ACT Joins TX-SES
pp. 7-10

WIND ENERGY INFO DIRECTORY

Governmental and commercial info & data sources; organizations; periodicals; audio visuals; bibliography

SERI

1617 Cole Blvd.

Golden, CO 80401

CONSUMER'S GUIDE FOR WIND ENERGY IN TEXAS

History, performance & economics of various wind uses. Siting tips. Charts, illustration, & sources (inc. manufacturers & distributors). 36 pp.

WIND ASSIST IRRIGATION AND OFF-SEASON POWER GENERATION

EDT-022

By Earl Gilmore, Vaughn Nelson, Kenneth Starcher & Robert Barieau, Alternative Energy Institute, West Texas State. 39 pp.

TENRAC

411 W. 13th Street

Austin, TX 78701

SELECTED REFERENCES ON SMALL WIND ENERGY CONVERSION SYSTEMS

Characteristics, consumer info, data, programs, proceedings & periodicals. 10 pp.

Publications

Rocky Flats Plant

P.O. Box 464

Golden, CO 80401

Alternative Energy Institute

West Texas State University

Box 248

Canyon, TX 79016

806/656-3904

Texas Energy and Natural Resources

Advisory Council (TENRAC)

411 W. 13th

Austin, TX 78701

512/475-5588

American Wind Energy Association

1621 Connecticut Ave. NW

Washington, D.C. 20009

202/667-9137

National Center For Appropriate Technology

P. O. Box 3838

Butte, Montana 59701

406/494-4572

Rocky Flats Plant

Rockwell International

Wind Energy Program

P.O. Box 464

Golden, Colorado 80401

Publications - Darrell Dodge

303/441-1300

Technical Info - Terry Healy

303/441-1300

Sandia Laboratories

Wind Systems Program

Division 4715

Albuquerque, N.M. 87185

Technology Application Center (TAC)

University of New Mexico

Albuquerque, New Mexico 87131

505/277-3622

(Wind bibliography back to 1944)

Pacific Northwest Laboratory (PNL)

Wind Energy Program

Battelle Blvd., P. O. Box 999

Richland, Washington 99352

Publications - Pamela Partch

509/942-4410

Technical Info. - Larry Wendell

509/942-4626

U. S. Dept. of Agriculture (USDA)

Research Services

(Rural & Remote Applications of Wind Generated Energy)

Beltsville, Maryland 20705

Publications -

Info Desk, USDA

Room 100W

14th & Independence

Washington, D. C. 20250

Technical Info. - Louis Liljedahl

202/447-3504

Solar Energy Research Institute

1617 Cole Blvd.

Golden, Colorado 80401

Publications

303/231-1158

Technical Info. - Irwin Vas

303/231-1935

NASA Lewis Research Center

Large Wind Turbine Program

2100 Brook Park Road

Cleveland, Ohio 44135

Publications - Jerry Kennard

216/433-4000

Technical Info. - Ron Thomas

216/433-4000

PERIODICALS

Wind Engineering

Technical & current research
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Multi-Science Publ. Co., Ltd.

The Old Mill

Dorset Place

London, E15 10J

England

Wind Technology Journal

State of the art.

Quarterly. \$15/yr.

American Wind Energy Assn.

(AWEA) members \$20/yr.

Wind Technology Journal

State of the art.

Quarterly. \$15/yr. Amer. Wind

Energy Assn. (AWEA) members

\$20/yr. non-members

Wind Technology Journal

P. O. Box 7

Marston Mills, Mass. 02648

Windletter

Newsletter of AWEA

Monthly. Non-members \$10.

Wind Power Digest

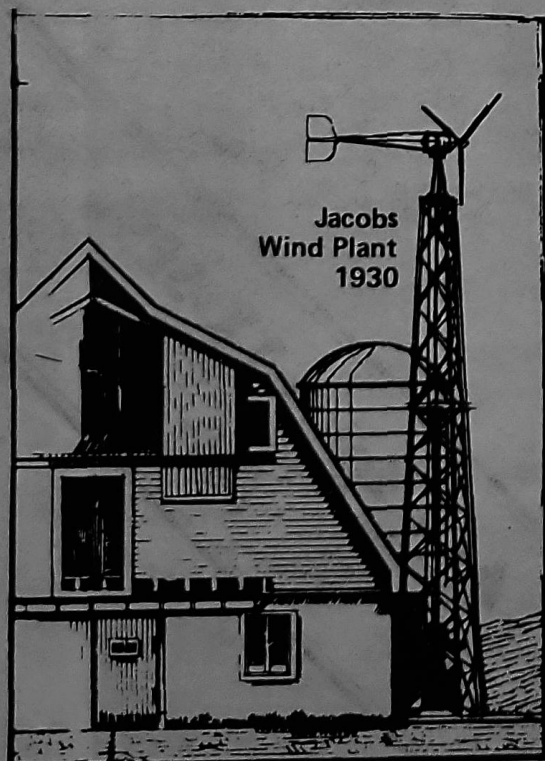
Developments from consumer & industry perspectives.

Quarterly. Non-members \$8.

American Wind Energy Assn.

1621 Conn. Ave. NW

Washington, D. C. 20009



WINDMILL LORE
Vaughn Nelson

As you drive along highway 207 between Stinnett and Spearman, Texas, you see an odd sight on the prairie. At first it seems as there are some funny shaped trees near another farm house, but as you get closer you see a veritable forest of windmills belonging to J. B. Buchanan.

J. B. has been a windmill buff for a long time and one of his earlier recollections is of spankings received for climbing on the windmill at the farm. Born in 1906, he grew up in the panhandle of Texas and saw the major role that the windmill played in the settlement of the prairie. There were a few fights over windmills on section lines as the ranch land was being divided up. Those who did not have a windmill usually did not last too long.

When he accompanied his parents in their Model T from Spearman to Amarillo (the trip took all day), they passed through 102 gates with a windmill by every gate and a drink of cold water. About the only break in the view of the flat prairie was the windmills.

About ten years ago J.B. realized the old windmills were rapidly disappearing and, with a working knowledge of the history, design, and operation of windmills, he decided to restore them as a hobby. Jonah Laubhan, of Follett, Texas has helped J. B. in his endeavors.

Buchanan has made over 100 trips around Texas, New Mexico, Colorado, Kansas, and Oklahoma looking for old windmills. Generally finding only the metal parts; and building the wooden parts in the winter. An Eclipse he found in a crate in an old general store near Santa Rosa, New Mexico, is now on display at the Smithsonian.

CORPUS continued from cover

The Coastal Bend Solar Energy Society has taken up the fight, and spokesman Gary Weed said "reasonable ordinance" is being developed. The populace had surfaced at an earlier public hearing. The City Council has maintained a non-committal attitude so far. And, according to one source, the only significant opposition is "three or four" members of the planning commission.

Although members of the commission were unavailable for comment prior to press time, it is widely reported that their opposition is based on objections to noise; appliance interference; appearance; and the possibility that the wind might blow these wind plants over.

But wind generators have been built within city limits in other cities with none of these consequences; or the opposition they have generated in Corpus.

Coy Harris, of Wind Engineering Corp. in Lubbock, said a wind machine larger than anything proposed in Corpus is currently operating in Lubbock, with none of those complaints. He also said there was no problem getting clearance from the

city, though a "back yard" system might have more scrutiny. Harris said an even larger demonstration system in downtown Plainview was installed with the same community and municipal cooperation.

Outside of some Paul Bunyan sized projects, there has seldom been any problem with noise; and except for aluminum blades there has apparently not been significant interference with radio, T.V. or similar appliances.

Earl Gilmore, a wind authority with the Alternate Energy Institute, at West Texas State University at Canyon, said "I don't know how hard the wind blows at Corpus Christi, guess they're worried about hurricanes, but most of those towers will take a 120 mph wind." And he added, "Unsurely, that kinda depends on your perspective. I wonder if it would be unsightly if it was an oil well."

Weed said a hearing is scheduled for May the 6th. There has been preliminary indication it may be closed which some interpret as a violation of the Texas open meetings act. At the moment everyone is waiting to see which way the wind blows.

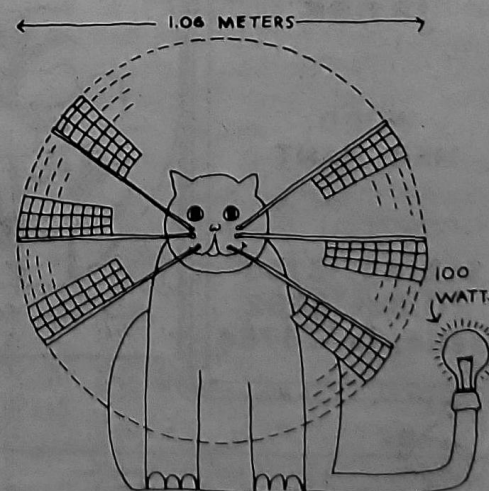
WIND SYSTEMS

Cats usually do not like wind because it messes up their fur and makes it difficult for them to hear birds and approaching dogs. However, they do agree that the wind carries a great deal of energy and would surely harness it if their electrical needs were greater.

People have developed many ways to apply wind energy to their own needs. Windmills were a common part of the American landscape before the massive rural electrification program of the 1930s. Wind systems are again being revived by people who are experimenting with many new types.

Some people are even attempting to incorporate cats in new and exotic wind machines. It is hoped that by using cats, efficiencies can be increased. It is doubtful, however, that more than 60% of the wind's energy can be extracted by any wind machine, with or without cats.

From the Solar Cat Book, by Jim Augustyn, 10 Speed Press, Berkeley



A 60 per cent efficient wind electric catmill as seen by 15 mph wind, illustrating how much power can be extracted from the wind by a cat (or wind) mill of familiar size.

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4

System Type: Domestic Hot Water

Location: 9544 Highland View Dr. Dallas TX

Latitude: 32 degrees

Owner: Jack Braulik

Building Type: Townhouse

System Sized For: 65%

System Designed By: Michael Bell

System Installed By: Michael Bell/The Energy Store

Solar System Manufacturer: Grumman Sunstream

System Description: Closed-Loop
15 similar installations in
Dallas area



TX-SES CASE STUDY NUMBER 7

Auxiliary/Back-up System: 52 gallon electric

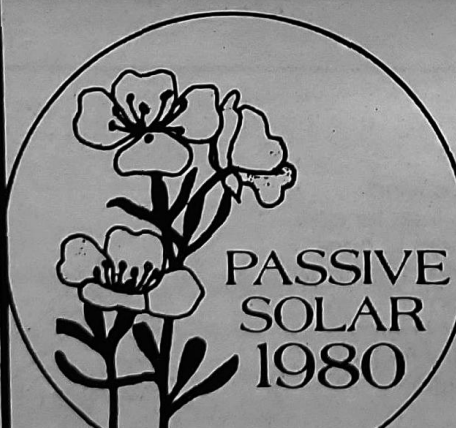
System Cost: \$1800 installed

Funding Source: private

Installation Available for Prearranged Tour?: yes

Best Person/Persons for Operating Experience Detail:

Jack Braulik (214) 349-0387



Daryl Janes

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*DEADLINE FOR MANUSCRIPTS IS AUGUST 15.
DEADLINE FOR RECEIPT OF ABSTRACTS IS MAY 15, 1980.

October 19 - 26, 1980 University of Massachusetts at Amherst

WIND

AMERICAN WIND ENERGY ASSOCIATION Proceedings, National Conference

MARCH, 1978 - Amarillo, 183 pp.
25 articles including Rocky Flats
test activities; Tower analysis for
small machines, and description of
wind turbines (Univ. of Okla.; North
Wind, Pinson; United Technologies;
DOE-NASA at Clayton, New Mexico;
Univ. of Mass; Grumman). \$9.00

FALL 1978 - Cape Cod, 191 pp.
Overview of Fed. Program; wind po-
tential in Northeast; U. S. Navy
testing; stacked Darrieus; and South
ern California included in the 28
articles. \$10.00

SPRING 1979 - San Francisco, 284 pp.
33 articles. Small systems reports
from North Wind Power Co., Windwords
Inc., Kaman Aerospace, and United
Technologies Research Center; large

systems by Westinghouse, Boeing,
General Electric, and Alcoa; appli-
cations of wind energy systems; role
of utilities. \$20.00

AVAILABLE FROM:

American Wind Energy Association
1609 Connecticut Ave. NW
Washington D.C. 20009
(202) 667-9137

NEWS

DALLAS - Texas Solar Inc. of Dallas has contracted with Cecil B. Days Companies Inc. to install solar hot water heating systems on three Days Inns in the metro-plex area.

Two of the Inns will have 30 panels each from Solar Energy Products of Florida. The Systems (with 1000 gallon storage tanks) are intended to furnish 60% of the year round hot water requirements according to the designer, Independent Living, Inc. of Atlanta.

The third (1000 sq.ft. with 1000 gallon tank), designed by Travis - Braun and Associates of Dallas using solar panels from Daystar and Exxon, is also intended to provide 60% of the yearly hot water load.

HOUSTON - The design for an "Interactive Passive Solar Demonstration Home" meets or exceeds all criteria set by the Southern Solar Energy Center, according to the builder and architects for the project.

Those criteria - supply 50% or more of the space heating needs; reduce air conditioning needs by more than half; be competitively priced while using relatively standard construction techniques within the capability of most builders; and provide substantial savings in energy bills for heating and cooling even if the home owner chooses not to use the passive features; are particularly challenging for the Houston climate.

The preliminary cost estimates and energy performance calculations provided by Doyle Stuckey Homes and Environment Associates, Architects/Consultants are encouraging indicators for Houston's first passive solar demonstration home.

DOE SHUFFLE

Washington - Assistant Secretary Thomas Stelson has named four deputy assistant secretaries in a realignment of solar interests at the Department of Energy.

Named are:

Robert San Martin, field operations and international program;
Bennett Miller, Solar Energy;
Maxine Savitz, state and local assistance program and conservation.
Fred Morris, director for the Office of Solar Applications (active and passive heating and cooling, and photovoltaics);

Paul Maycock is division director for photovoltaics.

ARLINGTON - Two Dallas firms, S-Systems Inc. and Sol-Era energy Systems Inc., have been awarded a joint contract to install a solar heating system in the Presidents Health Club currently under construction in Arlington. The system will use 1470 square feet of panels and a 2000 gallon storage tank to furnish 85% of the year round domestic hot water, pool and whirlpool requirements.



SLICKERED AGAIN

Santa Barbara - Through their copper investments, oil companies can directly control the development of solar technologies. That's the conclusion of a study by researchers at the University of California at Santa Barbara. The study, released by SUNRAE, a California solar lobby, indicated that one-third of the copper market is controlled by oil corporations. The study also shows that Exxon, ARCO, Standard of California and others are entering the copper field in greater numbers and strength since the 1973 oil embargo. Study coordinator Jeff Bowling says, "The conflict is obvious."



NAHB
DFWSEA Newsletter

Solar energy was a "big hit" at the convention of the National Association of Home Builders held in Las Vegas in January. A total of 43 companies either entirely solar oriented or with solar divisions, provided interesting and informative exhibits. Robert Peterson, principal development engineer for Honeywell, felt that, "home builders were turning to solar in an effort to respond to consumer demand for alternative energy sources that were more than just gimmicks and that can be marketable." Rick Bores of Solarcon was, "surprised at the lack knowledge about solar systems and how they function. It is crucial that the solar industry provide home builders with guidance on how to proceed with their first solar project."

NAHB is interested in obtaining more information on both active and passive designs and systems. Forward information to Mr. John Stowell, VP Public Affairs, NAHB, 15th and M St. N.W., Washington D.C. 20005.

Modular Solar Homes

Knoxville, Tenn.- TVA has selected five manufacturers to design and produce energy-efficient prototype solar homes for less than \$30,000 under TVA's Modular Solar Homes Project.

The selection clears the way for each manufacturer to complete design details for the homes that will combine proven solar techniques with inexpensive mass construction by units. Once the designs are finalized, 130 prototype homes, using 20 various designs, will be located on sites throughout the Valley and sold to the public beginning in August.

Once the first of the 130 modular solar homes are produced, the manufacturers will sell them to individuals throughout TVA's seven-state region. A \$1,000 incentive payment will be given by TVA to the purchasers of the prototype homes located on sites approved by TVA.

TVA will monitor some of the prototype homes to determine energy savings, which are estimated to be 50 percent of conventional heating and cooling bills.

These modular solar homes will be eligible for financing from Farmers Home Administration, Veterans Administration, Federal Housing Authority and the Tennessee Housing Development Agency.

Solar Progs for New Calc

Solarcon, Inc. has announced the availability of their complete line of programs in the field of solar energy calculations for the recently introduced new calculator from Hewlett-Packard, Model HP 41C. Over 34 programs which are being offered world wide in the form of magnetic cards, programs descriptions, sample calculations and printout sheets for the TI 59 from Texas Instruments can now be ordered for the HP 41C. A free catalog is available from:

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SOLARCON, Inc.
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Ann Arbor, MI 48104
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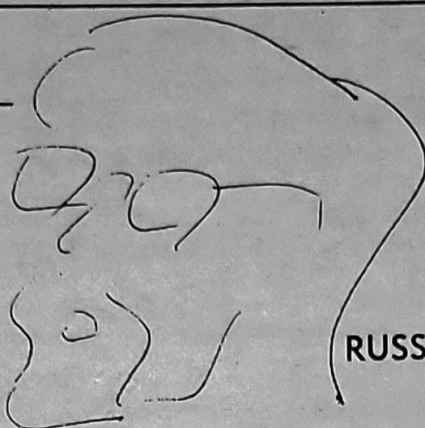
DIRECTIONS

The citizens of Texas can ill afford short sighted decision makers who fail to see the wisdom in an all out effort to develop this states abundant renewable resources. Contrary to the image fostered by some of these individuals who deem the movement toward renewables the realm only of "squirrels and nuts", most "solar people" I know recognize that solar energy is not the answer. They are quite concious of the need for a diversified energy base. It is their hope to stretch our valuable fossil fuels, as part of this mix, to the long term benefit of the states economy. Theirs is the truly conservative approach, striving for the supplanting of fossil fuels as much as possible through age old, time tested and proven means of solar utilization (with modern improvements in many cases), and heavy research and development of promising new solar technologies which can be phased in to further relieve pressure as we make them practical.

Those who "pooh-pooh" such wisdom and logic, dismissing "the whole solar thing" as mere rhetoric by seekers of a panacea for all our energy woes are turned around. They would, instead, pull the stops on fossil fuels and produce us out of our situation. They stand ready to gamble our long term energy supplies against short term gain while counting on "Yankee Ingenuity" to provide "the magic solution" (nuclear fusion breakthroughs in nuclear fission, synthetic fuels, etc.).

The existence of the Texas Solar Energy Society over these last three years has contributed a great deal toward the education of public officials in the area of solar technologies. Some in government have come to see a great advantage for our people and economy in tapping these resources. Some, but far from all, have committed themselves to helping make solar happen in Texas. We in TX-SES have pushed long and hard for a proper hearing on the economic and social benefits of the solar technologies. Now we have been challenged to "put up or shut up".

A Solar Advisory Committee to the Texas Energy and Natural Resources Advisory Council has been established on the same level as the Coal, Nuclear and Agriculturally Derived Fuels Committees. Appointed by the Governor and the Lt. Governor its membership reflects the suggestions



RUSSEL E. SMITH

of the TX-SES staff and Board of Directors as well as input from TENRAC and other sources. Several long-time TX-SES members and recent conscripts are serving. A mandate exists for the Committee which offers a clear opportunity for us to fall flat on our faces. It is impossible, for example, to expect a group which is geographically dispersed, sporadically met, professionally otherwise committed and sparsely staffed to, in a matter of weeks, "assess Texas' solar needs over the next 25 years." Committee Chairman Mack Wallace is the first to admit that. It must be clear to all from the outset that no definitive evaluation, statement or plan, nor extensive, fresh research can result from this committee's work. This is not to say the Committee Report to TENRAC will have no value.

The Solar Advisory Committee's most important task will be to recommend solar related legislation to TENRAC for the '81 legislative session. We are all familiar with the fate of the Omnibus Solar Bill during the previous session. Chairman Wallace has stated clearly that it is not his intent to spend his time, the Committee's time, and the taxpayers money developing such legislation and supportive evidence, only to see it meet the same fate. Given the membership of the Committee, the stated intent of its Chairman, and the support of the TENRAC staff I feel certain this most important task can be met and the foundation for an aggressive policy of renewable resource development laid.

Much of the benefit to be gained from the Committee Report will be in the "getting there." A great deal of publicity will surround the Committee's activities, including several hearings across the State. While many very knowledgeable individuals will have the opportunity to testify, time will simply not allow for the presentation of all the valuable ideas and supportive evidence needed. As members of TX-SES, we cannot allow this Committee to wait for credible evidence. We dare not stand aloof from the process and thus con-

tribute to a high profile failure.

Your written thoughts and supportive data are therefore solicited. The central question to be addressed is, "what can state government best do to rapidly increase the utilization of solar energy and other renewable resources in Texas?" Such response will not preclude your testimony at any of the scheduled hearings. Your comments will be presented to the appropriate Sub-Committee (Resource Needs/Assesment or Institutional) by Chairman Wallace.

Letters

Dear TX-SES News,

You might be interested to know, that I have found it possible to circulate water through a solar collector, without the use of electrical or mechanical power, for small systems.

It takes me ten or fifteen minutes once each day to hand pump forty or fifty gallon of water into a booster barrel, to operate my 130 sq. ft. solar collector, by the use of a siphon system.


This makes it possible to have a low cost efficient solar system with out power. There is no freeze problem and no need for a heat exchange or anti-freeze, etc. I think I have all the bugs worked out of it, but will test it for awhile to get better facts and figures. This would be good for stand by use on larger systems and of course be used with any kind of power. It could save or eliminate most of the energy requirements, even where standard power is used.

It is a very simple system yet everything has to be just right, but not exact.

Paul Robinson
Box 101
Langtry, TX
78871

STATE SOLAR ADVISED

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on Advisory Committee



Dr. Alvin Hildebrandt
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ACT

APPROPRIATE COMMUNITY TECHNOLOGY

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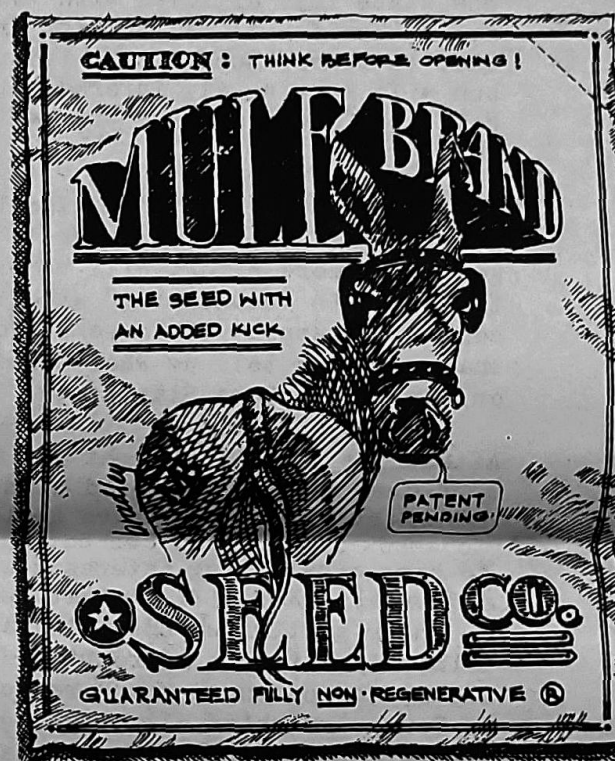
networking across the great state of Texas

Illegal vegetables

The following comes primarily from an article in February's Acres, U.S.A., a periodical devoted to eco-agriculture. It offers important reading for organic gardeners and those concerned with trends in the agricultural scene from an AT perspective. Subscriptions are \$8 a year from P.O. Box 9547, Raytown, Missouri, 64133.

The U.S. Congress has been discussing an amendment, HR999, which alters the "Plant Variety Protection Act" to allow patents on six major vegetables, similar to existing European laws. Such a law would create the concept of "illegal vegetables" and would result in a reduced catalog of varieties. Such a law would create genetic islands around the patented varieties to reduce the confusion of ownership challenge in the courts.

Cary Fowler, member of a share cropper's fund center, pretty well sums up the potential menace of such a law in his testimony before a congressional committee, "Nearly all of our food crops are of ancient origin," he told the committee. "Thousands of years ago our Stone Age ancestors began domesticating plants, saving the best seed for replanting the next year. Human efforts and natural selection processes resulted in different varieties of food crops becoming adapted to different niches in the ecosystem." The result was thousands of varieties of wheat, rice, corn, and other crops as genetically distinct as beagles and Great Danes. In diversity there was strength. As pests and diseases changed or mounted more powerful attacks, plants evolved different or better defenses. These defenses were represented in the genetically diverse varieties of each crop. Modern agriculture is changing this natural system.



²mulet *v.* 1 : to punish by a fine ²a : to defraud esp. of money
: SWINDLE *b* : to obtain by fraud, duress, or theft
✓ ¹mule *\m'yū-lē\ n.* [ME, fr. OF *mul*, fr. L *mulus*] 1 a : a hybrid
between a horse and an ass; esp : the offspring of a male ass and a
mare *b* : a self-sterile plant whether hybrid or not *c* : a usu. sterile
hybrid ² : a very stubborn person ³ : a machine for simulta-
neously drawing and twisting fiber into yarn or thread and winding
it into cops
²mule *n.* [MF, a kind of slipper, fr. L *mulleus* shoe worn by magis-
trates] : a slipper without quarter and usu. without counter
mule-foot *\-fūt\ or mule-foot-ed \-fūt-əd\ adj* : having a solid
rather than a cleft hoof
mule skinner *n.* : MULETEER

"With the breeding and marketing of new "improved" varieties, traditional varieties are being replaced. Farmers and gardeners stop growing them. Field after field is planted with one variety. Where thousands of varieties of wheat once grew, only a few can now be seen. When these traditional plant varieties are lost, their genetic material is lost forever. Herein lies the danger. Each variety of wheat, for example, is genetically unique. It contains genetic "material" not found in other varieties. If, because of genetic limitations which result from inbreeding, new varieties are no longer resistant to certain insects or diseases never

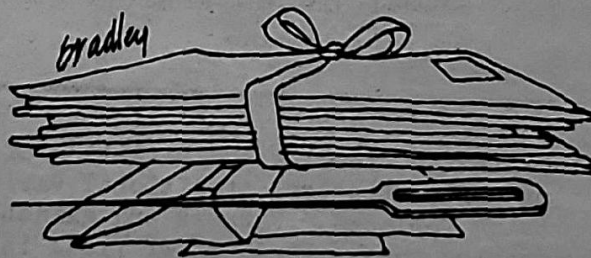
continued on p.10

It's been about a year since the ACT newsletter sprouted from a statewide gathering of folks at the Maximum Potential Building Center in Austin, Texas. Our intent has been to survey the very diverse happenings in the Appropriate Technology field and select items that appear useful for Texans. Given the broad and varied nature of Texas and Texans, we had a lot of ground to cover.

In past issues we have, and will continue, to feature info that is regional in character. Acknowledging that no man is an island (and that only one state is), articles with vast national impact will be included from time to time. Hopefully this approach will keep us all informed of both the forest and the proverbial shade trees.

In addition to info we're also into people, places and happenings - a good deal more effort will be spent this year in "networking" with the continued support of those of you that write to tell us what's going on across the Lone Star State.

After some serious thought and a good deal of joking around with the TX-SES staff we (ACT) have decided to throw-in with em. We both seem to have overlapping interests and audiences. ACT will be featured as a center section which will deal primarily with the appropriate use and re-use of sources and resources in Texas - wishing all of you southern exposures, fertile soils, and better than average wind speeds. Oh yeah - and rain if you need it!

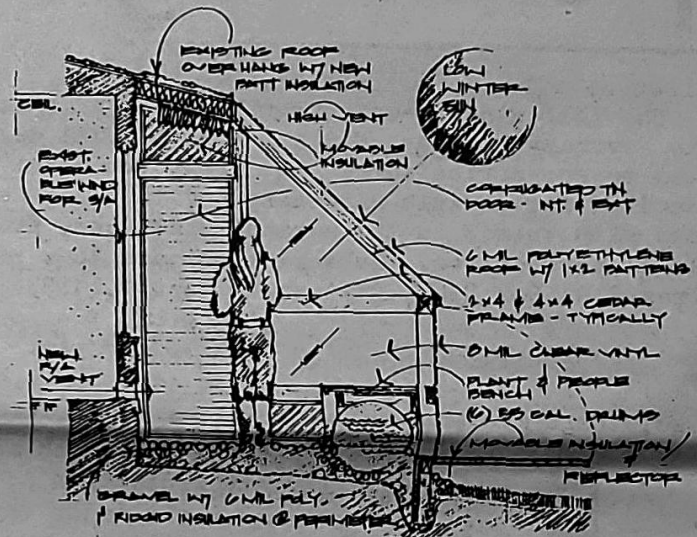


P.S.

Those of you that followed ACT in past issues may notice the absence of the "Good Books", "Capitol Notes", and "Activities" sections. These have been incorporated into existing TX-SES listings and noted ACT where fitting.

LETTERS

Just a brief note- in our NOV/DEC 79 issue we referred to Leonard Bachman as project architect on the Woodland's solar home. As Leonard later pointed out he was responsible for the architectural design of this project, however technically he is not a registered architect. In any event, we were impressed with the solution given the constraints of budget, site, and material usage. Continued success Leonard!



We were unable to run the article on an owner-built solar greenhouse in San Antonio, Texas this time due to lack of space. We anticipate an expanded format for next issue which will include this and other projects as received.

STAFF
Steve Wilson
Bob Bradley
Bill Garfield
Joan Wolff



No fueling around D

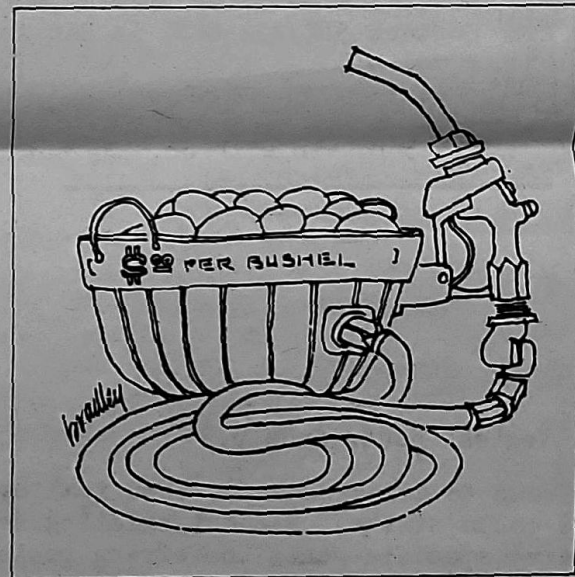
President Carter has set a goal for the nation of producing 500 million gallons of fuel alcohol by the end of 1980. People in industry and government who have their heads wedged in "high-tech" world protest that this goal is unattainable because the production capacity cannot be put on-line in this time frame. There is one approach which is fiscally and logistically capable of meeting this goal however. Consideration of this approach provides a graphic illustration of how decentralized application of technology exhibits an economy of scale all its own. First of all, let's look at why the centralized "high-tech" approach is unable to meet President Carter's goal. For example, say that 100 stills each producing 50 million gallons per year (about 140,000 gallons a day) are proposed to meet the goal. Obviously, each of these facilities is a major undertaking, and it would take a great deal of time to get one on-line. First, there is the problem of capital formation. Then, a long lead time is required for design, construction and putting into production of such a large facility. Also, there are monumental problems to be overcome in the logistics of marshalling feedstocks for the plant. Finally, the technology for "economic" production at this scale is not solidly developed. Various approaches are still being researched which may make currently "commercial" processes obsolete. All these factors retard large investments in fuel alcohol production. Lacking large scale production, a market for fuel alcohol does not rapidly develop, creating further caution toward investing large sums in a mega-gallon fuel alcohol plant. This caution in turn further delays deployment of fuel alcohol. A classic vicious cycle.

Now consider a small scale, decentralized approach to fuel alcohol production. There is no inherent need to centralize production, then redistribute the final product. A local market structure would support fuel alcohol on a small scale just as well - or perhaps better - than a national market structure could support it on a large scale. A small scale approach would not have the problems of capital formation or long lead times during which the capital committed is not producing a return. Logistic and bureaucratic problems would be brought down to far more manageable levels.

What would it take for the decentralized approach to meet President Carter's goal? The current U.S. population is around 250 million. If, for example, one-tenth of one percent of the nation's population - one person in a thousand - set up a still which produced just 25 gallons of alcohol per day, let's see what sort of overall production would result:

$0.001 \times 250 \text{ million persons} = 250,000 \text{ stills}$
 $250,000 \times 25 \text{ gal per day} = 6.25 \text{ million gpd}$
 $6.25 \text{ gpd} \times 365 = 2.3 \text{ billion gallons per year}$
 This is almost 5 times President Carter's goal.
 Under the decentralized approach, only 55,000 low production rate stills would be needed to meet that goal.

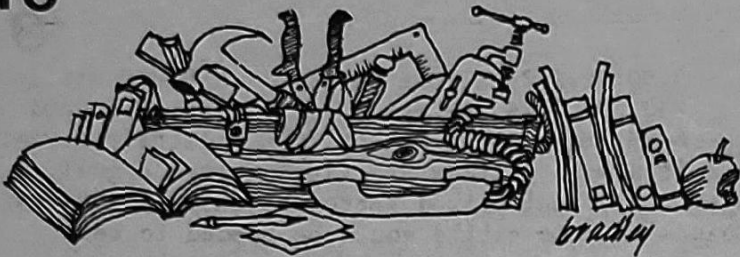
But how realistic is all this? As the price of gasolining continues to rise, the economic attractiveness to individuals of making their own fuel becomes ever greater. With the average price of gasoline predicted to be over \$1.50 per gallon (some predictions approach \$2) it is not at all unlikely that 55,000 enterprising individuals will set up small stills in the near future. It merely remains for an entrepreneur with marketing skills to set up local markets and marshall these potential sources of supply. While this is certainly not a simple task, it is definitely accomplishable. And once these markets are in place, it would be very hard to displace them without price fixing to force the small producers out when the "high tech" approach finally got rolling. There is no apparent reason why small scale "fuel farming" cannot become and remain a viable economic activity.



So it is apparent that decentralized application of technology on a small scale can offer economy of scale when viewed holistically. The amelioration of capital formation, lead time and logistic problems makes such applications amenable to faster implementation. Government and industry are not interested in this approach because it does not readily lend itself to aggregation of large sums of money by a single producer. It remains for "the people" to pick up the ball. After all, which is preferable - running your own still for fuel and/or profit, or working for wages in a large alcohol plant and paying industry-controlled prices for the product?

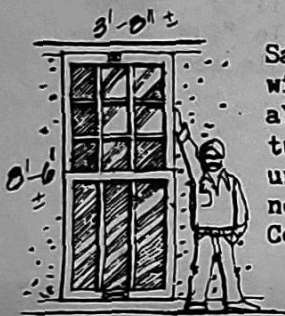
FACT

DAVID VENHUIZEN



SOURCES & RESOURCES

If you've materials or tools for sale or trade which seem particularly appropriate in terms of use or re-use send it along to TX-SES, 1007 South Congress, Suite 359, Austin, Texas, 78704 Atten. "ACT".



Salvaged, REDWOOD, double hung window sashes for sale. Suitable for solar greenhouses, hot tub areas, atriums etc. (Typical unit shown approx. \$30 "as is" - new price would be \$120 or more). Contact 512/222-8881 in San Antonio.

"Illegal Vegies" cont. from p.9

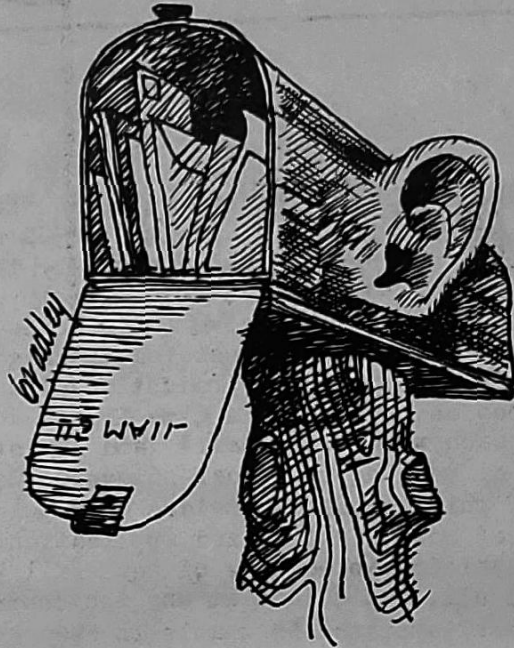
before known to attack wheat), then real catastrophe could strike. Without existing seeds which carry specific genes conferring resistance, it may not be possible to breed resistance back into wheat, corn, tomatoes, or any other crop."

The winners in such a genetic control game would be large multinational corporations which have recently been buying small seed producing firms. (e.g. ITT now owns Burpee Seeds.) Remaining small companies will find themselves at a serious disadvantage.

According to the National Academy of Science, "Genetic diversity as the foundation of agriculture must be preserved if we are to preserve agriculture itself. Given the alarming loss of diversity in recent years, it is in the best interest of human society to see that the diversity of natural ecosystems does not appreciably diminish."

ACT

LET US HEAR FROM YOU



We are starting to compile a grocery sack full of AT related projects, people, places, & things. We plan on putting together an AT map showing the various elements with an accompanying directory. If you know of good AT stuff, or send it along and we'll plug it into the network!

ATTN: AT GROUP!
TX-SES 1007 S. CONGRESS
SUITE 359 AUSTIN
TEXAS 78704

Chuck Packard
EPSEA Newsletter

EL PASO - The calculation of simple solar system payback periods without regard to the high level of subsidization received by competing conventional fuels invariably leads to pessimistic conclusions.

Instead of assuming a solar domestic water heater is a consumer product, such as a television set, hair dryer, or toothbrush, it is viewed more realistically as an energy conversion machine, i.e. a power plant. This analysis then proceeds by comparing both the capital and operating cost of a solar domestic water heater to the capital and operating costs of several types of electrical generating plants.

(It is important to note that no claim is made that a pail of hot water is the energy equivalent of a 110 volt electrical outlet, but that a kilowatt saved by using a solar water heater is indeed as useful as a newly installed kilowatt.)

Using weather and solar system test data for El Paso, the capital cost for a solar domestic water heating system is found to be \$536 per kilowatt of installed capacity. The electrical power generation capital costs were given by Jim Brown of the El Paso Electric Co. to be \$952 per installed kilowatt for a coal burning plant and \$1156 per installed kilowatt for a nuclear power plant.

But private homeowners may not take advantage of the normal investment credits, depreciation, and methods of long term financing available to the centralized power industry; and currently no mechanism exists to encourage investment in a decentralized generating system.

GRUMBLINGS KRUK BRUMBELOW

People criticize solar devices because they aren't 100 percent effective; and don't catch all the sunlight. If they were 100 percent, they'd suck up all the daylight. And we wouldn't be able to see.

TX-SES SIGNS TWICE W/TENRAC

GREENHOUSE/TOWN HALL

The development and implementation of two TENRAC contracts as administered by the Texas Solar Energy Society under the direction of Russel E. Smith.

GREENHOUSE



The objective of this program is to train and provide field experience for 15 three person solar attached greenhouse workshop teams from several regions of the state.

The teams will build 20 demonstration greenhouses and enable 15 sponsoring groups (govt. agencies, non-profit orgs. & public insts.) to develop the ability to offer future workshop programs in their own community.

New Mexico's Solar Sustenance Team will conduct the 5-day training program in Austin, May 28 thru June 1. The four most qualified teams will then hold workshops in their respective areas, followed by further workshops in 15 localities.

An Attached Solar Greenhouse Design Handbook, addressing the climatological variations in Texas, is also being developed.

Gary Beyer is the project manager and is available at the TX-SES office. (512/443-2528)

TOWN HALL

This project will offer concise, consumer oriented public forums in thirty-one municipalities around the state. These meetings, scheduled for week-day evenings, will be supplemented by a Consumers Solar Handbook which is being developed.

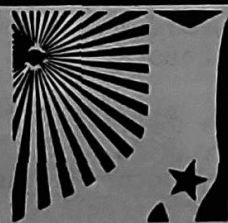
The purpose is to provide accurate information, designed for the non-technician, on the performance and economics of passive and active solar applications.

Presentations, made by knowledgeable and experienced speakers, will be followed by a question and answer session. The entire event is intended to last less than three hours.

The handbook will include local, state and federal sources of people, products, information, and education programs from both the private and public sectors. The Appendix will contain tax and legislative information; solar design data; and a glossary of solar terminology. Wind, biomass and gasahol sources will also be included.

The assistance of local solar organizations and individuals (especially from TX-SES and affiliates) will be necessary for the coordination of the meetings and publicity; and the development of the regionally specific data and source lists that will be inserted in the handbook. Several presentation teams - at least one from each area of the state - will be selected in the next several weeks.

Further details on this project are available from TX-SES project manager, Daryl Janes, at the TX-SES office. (512/443-3221)



202 293 2981

SOLAR ENERGY INDUSTRIES ASSOCIATION

Suite 800 1001 Connecticut Avenue, NW Washington, DC 20036

SOLAR SYSTEMS CONFERENCE and PRODUCTS EXHIBIT

May 10-13, 1980 Houston, Texas

Business Management, Marketing and Engineering Progress will be the focus of the 1980 Solar Systems Conference and Product Exhibit to be held May 10-13 at the Shamrock Hilton Hotel in Houston, Texas.

"How-to" sessions concentrating on every solar-related business as well as an entire spectrum of today's solar market from buyer's attitudes to a comprehensive examination of legislative incentives will be held to inform the delegates of where the solar industry is and will be going.

In addition, delegates will listen to key speakers such as Dr. Tom Stelson, Assistant Secretary for Conservation and Solar in the Department of Energy and Denis Hayes, Director of the Solar Energy Research Institute (SERI), informing them of how the federal government plans to achieve the President's goal of 20% solar by the year 2000. Other invited speakers include Senator Bob Packwood (R-OR), Senator Gary Hart (D-CO), Robert San Martin, U.S. Department of Energy and Senator John Durkin (D-NH).

Scrounging for Solar

Gary Weed
CBSEA

One of the most frequently asked questions by do-it-yourself solar enthusiasts and experimentors is, "where can I find the solar equipment and supplies I need?...and find them at a reasonable price." There is a solution, however, and in fact, depending on the collector design, the costs can be as low as a drive to your local junk dealer.

The solar water tank can be one of the most difficult and expensive items to obtain. Although nothing more than an adapted water heater, these tanks can sell for as much as double the price. An excellent source for tanks is your local plumbing wholesaler. You don't have to be a plumbing dealer and you don't have to buy a new tank. Where do you think an old hot water tank goes when a plumber replaces the one in your house? Although they eventually end up at the dump, they usually make an intermediate stop at the plumbing wholesaler where the new one was bought. The wholesaler will wait for 8 or 10 of these tanks to collect and then he will haul them to the local dump. Usually, he will be more than glad to allow some crazy solar enthusiast to have all he wants.

When you investigate these tanks you will usually find they are replaced because the heating elements were beyond repair. Since you are going to use solar heat, you don't need the heating elements and these tanks look great to you. Look them over and select those that appear to have no leaks. Look for rust around the bottom of the tank, this should not cause any major problems for use as a solar tank. Take a couple of

extra tanks just in case one does develop problems, you can't beat the price.

If the plumbing wholesaler has just made a run to the dump, or if you want your solar system to have the "best" there is another supply of tanks which bears investigation. As was stated earlier, what you need is a tank, not high class heating elements. Check the local discount houses and do-it-yourself hardware stores. These stores usually carry a low cost line of hot water heaters, just the thing for solar system storage tanks.

The Best bet for all the plumbing fixtures, pumps and piping you will need is back at the plumbing wholesaler. He has a complete line of supplies and at prices much below those of any retail store in town. You don't need a plumbing license to buy from a wholesaler, and you don't have to buy a truck-load of supplies either. Most wholesalers will be more than pleased to help you with finding whatever you need.

If you are really on a tight budget, a trip to the local salvage company might pay off. These firms are in the business of demolishing old buildings and selling the salvaged materials. Often you can find hot water tanks, pipe and even fixtures, and usually all they need is a little cleaning to restore them to working condition. While at the salvage yard, don't forget the lumber yard for your collector frame and support beams. Keep your eyes open for old window panes as well, they will make excellent covers or glazings.

Now that your garage is completely filled with solar supplies, and your neighbors think you have started a junk yard, its time to begin construction. If, however, you still have not found that one piece of solar equipment that you must have, don't give up hope, there is always your local solar dealer. Solar dealers often stock extra parts and will be more than glad to assist any innovative solar genius.



AND MEANS



Solar Technical Training Directory
Prepared by the Solar Energy Research programs and curricula.
Superintendent of Documents,
U.S. Govt. Printing Office,
Washington, D.C., 20402.
stock no. 061-000-0210-3.

Windows-For Energy Efficient Buildings

Prepared by the Lawrence Berkeley Laboratory for the D. O. C. Free.
Energy Efficient Windows Program,
Stephen Selkowitz, Bldg:90 Rm: 3111,
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"Utility Industry Involvement in Clean Energy Development"
22-page report by David Behler and Annette Wolson. People and Energy states that the report "examines the effect of renewable energy systems on utility economics, the risk of abuse inherent in utility involvement in renewables, utility rate reform as it relates to renewables,

the National Energy Conservation Policy Act, and more."
Environmental Action Foundation
724 Dupont Circle Bldg.
Washington, D. C. 20036

The President's Clearinghouse for Community Energy Efficiency

Information exchange for community officials. The Clearinghouse has requested information on local energy programs, as well as lists of "the top three energy needs for your community as you perceive them".

Suite 185
400 N. Capitol St. NW
Washington, DC 20001
800/424-9040

From SERI:

*Biomass: Solar Energy From Farms and Forests
SERI/SP-69-242

*Solar Technologies: An Overview

*Putting the sun to work in Industry
SERI/SP-34-175R
SERI
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Golden, CO 80401

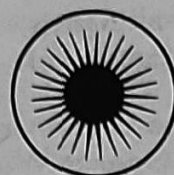
*Publications of interest to the professional. Listed by solar technology and topic.
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SUNDIAL



May 3

FRANKPORT, IN. 3rd Annual Energy Workshop. Contact: Bill Caddell, Frankport Library, 208 W. Clinton St. Frankport, IN 46041.

May 6

NASHVILLE, TN. Solar Workshop for the Financial Community. Sponsored by U.S. Dept. of Energy, Conservation and Solar Energy. Contact: Solar Workshops, Conference Dept., 1030 15th St., NW, Suite 720, Washington, D.C. 20005. or call The National Solar Information Center free 800/462-4983.

May 10-11

WICHITA, KS. 4th Annual Energy Fair. Contact: Joe Perez, The Energy Place, 1602 S. McLean Blvd. Wichita, KS 6213, 316/265-4193.

May 15

Deadline for technical papers on passive buildings or projects in conjunction with Passive '80, the 5th Passive National Conference sponsored by AS/ISES. Mail abstracts to AS/ISES Publication Office, 205B McDowell Hall, Univ. of Delaware, Newark, DE 19711. ATTN: Passive '80

June 19-21

PRINCETON, NJ. First Solar Retrofit Conference. Sponsored by the Mid-Atlantic Solar Energy Assn. in conjunction with The Center for Energy and Environmental Studies at Princeton. Contact: MASEA, 2233 Gray's Ferry Ave., Philadelphia, PA 19146, 215/963-0880.

April 25-27

Mid-South Energy Expo, at Mississippi County Community College in Arkansas. Sponsored by Mid-South Energy Project. Contact: Ms. Jean Stewart, Expo Coordinator, P. O. Box 1109, Blytheville, AR 72315, 501/763-2106.

April 21-24

ATLANTA, GA. Bio-Energy '80 World Congress & Exposition. Contact: David Lindsay, Expo Coordinator, P.O. Box 17413, Washington, D. C. 20041, 703/471-5761.

April 22-25

LINCOLN, NE. Satellite Power Systems (SPS) Program Review and Symposium. Lincoln, NE.

April 22

Earth Day '80. Sponsored by the Citizens Committee for the Environmental Decade. Contact: Earth Day '80, 1001 Conn. Ave. NW, Washington, D. C. 20036, 202/293-2550.

April 24-26

TYLER, TX. Texas Institute of Building Design 1980 Convention. To be held at the Sheraton Inn. Contact: Texas Institute of Building Design, 2724 East Bee Caves Rd., Austin, TX 78746.

April 24

IRVING, TX. Solar Workshop: Financial incentives. Sponsored by

the Solar Energy Industries Assn. Contact: Solar Workshops, 1522 K St. NW, Suite 600, Washington, D. C., 20005, 202/223-9137.

April 25-26

ROCHESTER, MN. Wind Power: Energy Potential for the Upper Midwest. Contact: Alternative Sources of Energy, Milaca, MN 56353, 612/983-6892 or Rochester Energy Info. Ctr., 1926 2nd St. SE, Rochester, MN 55901, 507/285-8498.

April 26-27

STARKVILLE, MS. 1980 Mississippi Solar Congress. Contact: P. Okhuy-sen, MISSEA, 225 W. Lampkin Rd., Starkville, MS 39759.

May 2-3

BERKELEY, CA. Berkeley Solar Energy for Houses and Large Buildings Fee: \$150. Contact: Continuing Education in Engineering, Univ. of California Extension, 2223 Fulton St. Berkeley, CA 94720.

May 19-21

SAN BERNARDINO, CA. National Workshop for Minorities on Renewables and Solar. Sponsored by Minorities Organized for Renewable Energy. Contact: Kay Cooper, MORE, 1001 Conn. Ave. NW, Suite 510, Washington, D.C. 20036, 202/466-6880; James Lopez, 2239 E. Colfax Ave., Denver, CO, 80206, 303/355-3555 or Jim Parker, DCA/CFD, 1424 9th Ave., Helena, MT. 59601, 406/449-3420.

June 8-11

PITTSBURGH, PA. American Wind Energy Assn. Conference. Contact AWEA, 1609 Conn. Ave. NW, Washington, D.C. 20009, 202/667-9137.

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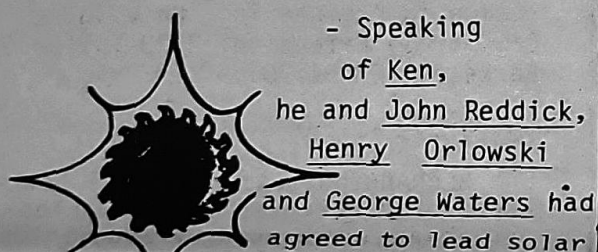
Texas Solar Energy Society
1007 S. Congress, Suite 359
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SUN

ANGLES

continued from back

and while Earth Day may be up in the air in some places, its on firm ground in Tyler. The NETSEA have a whole park for the day, with the mayor speaking, a TV special, and possibly some trees planted in NETSEA's name... The brain drain (and I don't mean that large group with holes in their heads) has become serious. Because of the of the foundations (among others) he helped lay we could perhaps forgive Bob King for luring folks away to TVA... but now California may snare Gary Ashford from Austin, and the DFW's Ken Anderson has already made his way Sun West ... now if we could only find someone in the market for a well oiled governor.

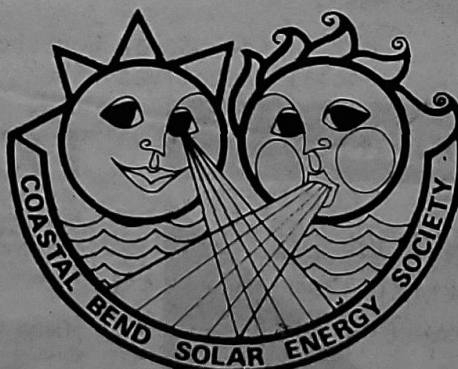
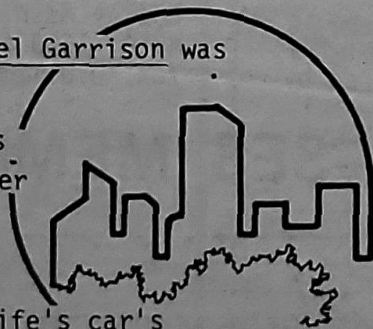


- Speaking of Ken, he and John Reddick, Henry Orłowski and George Waters had agreed to lead solar

tours for school children in the Ft. Worth-Dallas area ... now that's planning for the future...both Damon Hooten, from the Houston Solar Energy Society (HSES - pronounced like a sneeze on Buffalo Bayou) and Jeff Basehore of NETSEA agreed that the two-day "Passive Solar Energy Conservation" seminar presented at U.T. Austin by

David Smith and Michael Garrison was a class production...

former from West Texas reported getting better mileage and performance from his pick-up and even cleaned up his wife's car's ignition system by running alcohol through the engine. He makes his own from sorghum, turnips and garbage at the rate of 25 gallons per hr with pipe equipment salvaged from a cotton gin. Claiming that getting a state license is difficult (not exactly his words) he encouraged farmers to just do-it-themselves... the Center for Maximum Potential Building Systems (Max's Pot) in Austin, holds "open house" the first Saturday of every month... they also hold a beer bust once a month, but that's a secret



...Gary Weed says the Coastal Bend Solar Energy Society (CBSEA) draws in the neighborhood of 100 people for their weekly meetings... in El Paso, Carol Myre of the El Paso Solar Energy Association reports that city's first solar spec house was recently completed and put up for sale. She says the builder "used a dark asphalt shingled roof as a collector and rock storage underneath the slab" and that it "ducts the heated or cooled air thru 2x6 super insulated walls"

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... in February and March Dr. C. E. Teske, prez of the West Texas Solar Energy Society (WTSEA), was the instructor at a workshop (Solar system design and life cycle costing) by WTSEA and Texas Tech; he also informs as a hands-on solar workshop is scheduled for April 26 ... John Carlson the TENRAC solar czar who was such a help (and a joy - usually) on last year's Solar Realities '79 road show has been appointed by the present governor to be Texas rep at the Southern Solar Energy Center (which could use a little energy itself). He replaces a lawyer from a firm that has strong ties with the oil industry (you know the oil industry. They're the one's running out ... the back door with their pockets saturated.)



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TX-SES REPRINTS



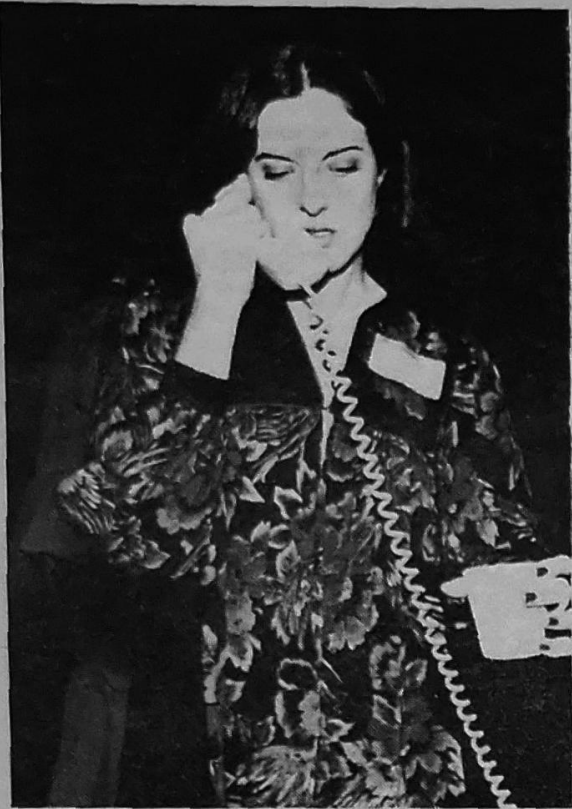
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102	<u>RULES OF THUMB FOR SIZING ACTIVE SYSTEMS</u> Air heating. Hydronic heating/cooling. Domestic hot water. Swimming pool. 1 p.	.25	.15	602.3 - Vol. 1, #3 *Properties of glazing materials for use in Solar -Wm. B. Davis *The Microclimatic System -M. Garrison, D. Bentley *Salt Gradient Stabilized Solar Pond -F. Zangrando *Solar Walls -M. Hourmanesh -Dr. D. B. Elmer
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404	<u>SOLAR ORDINANCE - San Diego</u> Mandates solar hot water in all new construction "not served by pipeline natural gas." 9 pp.	.50	.28	
501	<u>SOLAR LENDING IN TEXAS</u> Compiled by Anna Faye Friedlander & Dr. Robert Perry. Survey & case studies. 22 pp.	1.60	.41	
502	<u>TWO SAMPLE LOAN POLICY STATEMENTS</u> * "Solar Heated Residential" Midland Savings & Loan (1976) Arvada, Colorado * "Energy Saver" San Diego Fed. Savings & Loan (1978) San Diego, California 15 pp.	1.10	.41	



Judi Basehore

Contents

- *Wind pp. 2-4
- *State Solar Advisory Committee, p.6
- *Appropriate Community Technology, pp.7-10
- *TENRAC contract p.11

Don't know whether TX-SES members have been taking Charles Atlas' course, or what, but we sure seem to be getting a little muscle - in and out of the Lone-Star-Big-Sun state ... besides landing ten societites on The State Solar Advisory Committee to TENRAC, and besides Judi Basehore, prez of the Northeast Texas Solar Energy Association (NETSEA) being elected to the Bd. of Directors of the Solar Lobby in D.C., Merve Croston, with the Dallas-Ft. Worth Solar Energy Assn. (DFWSEA) is chairing the energy committee for the Texas Society of Architects which will be responsible for developing a solar handbook for Texas architects ...

SUN

ANGLES

Merve says it should be a "basic guide for architects, engineers, and the people in the drafting room"...Judi has also been selected to chair the legislative committee for TX-SES - a job she is well suited for and one that nobody with full mental capabilities could envy her for...

continued on p. 14

QUOTABLES

"Coal and oil are going up and are strictly limited in quantity ... We are spend thrifts in the matter of fuel and are using our capital for our running expenses... the world's annual consumption has become so enormous that we are now actually within measurable distance of the end of the supply."
Alexander Graham Bell
February 1, 1917

THE TEXAS SOLAR ENERGY SOCIETY

TX-SES



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