THE LAND REPORT

Summer 1987

Number 30

Contents

Number 30

Photographs in this issue were taken by several different interns and staff persons who grabbed the camera and became photographers when they saw interesting activities to record.

On the Cover

The stormy clouds on the front cover were captured with the camera by Terry Evans. The photo seemed appropriate for this issue, as we frequently examined the sky this summer, quite conscious of potential wind and thunder storms.

Jess Ennis responded to the subtle beauty of a cloudy day in August by snapping the photograph on the back cover.

EDITOR'S NOTE

Although fall will not be here officially for another two weeks, the feel of fall was definitely in the air as we pasted down the last pages of our Summer 1987 **Land Report.**

This issue tells how nine agriculture interns, most of the thirteen staff members, and two seasonal employees spent the summer. In addition to keeping busy with the research work, the vegetable garden, and the Grain Exchange plots, we started two big projects: the construction of a large research greenhouse and the production of Nancy Paddock's play, "Planting in the Dust." We enjoyed several visiting teachers and took three field trips. Staff members made presentations at conferences and a scientific meeting. We experienced a frightening wind and rain storm and repaired the damages it caused.

The Land Report is not just a report of our activities, but also a report of some of our thinking and discussion, as the articles, "Concepts of Time" and "U.S. Winter Vegetables and Pesticide Poisoning" reveal. Four of the interns were interested in the special contribution women make to agriculture, and they initiated an ambitious project: interviewing four farm women, transcribing and editing the taped interviews, and jointly writing an article. The issue finally came together, four pages longer than usual. So here's our summer **Land Report** -late- but, we hope, still interesting.

The Land Report

is published three times a year by

THE LAND INSTITUTE

2440 E. WATER WELL ROAD
SALINA, KANSAS 67401

Editor.....Dana Jackson
Arts Associate.....Terry Evans
Circulation Mgr..Sharon Thelander
Printed by Arrow Printing Company

Contributing to #29: Perdita Butler, Patricia Boehner, Jess Ennis, Mary Handley, Dana Jackson, Bruce Kendall, Amy Kullenberg, Thom Leonard, Veronica Mecko-Ray, Nancy Paddock, Jon Piper, Terry Shistar, Donald Worster

SUBSCRIPTION RATE: $5.00 ($10,00 foreign)

THE LAND INSTITUTE IS A NON-PROFIT EDUCATIONAL-RESEARCH ORGANIZATION DEVOTED TO SUSTAINABLE AGRICULTURE AND STEWARDSHIP OF THE EARTH

At The Land

The Land Institute Presents

Planting in the Dust

"The land belongs to itself. If anything, we belong to it - as much as earth worms or corn plants. We rise up a while and sink back in - borrow our lives from it."

"Everything I used to think was forever is eroding. Foreclosures every week. Soon there won't be enough people out here to hold a square dance. Then who will take care of the land?"

Annie is a young farm woman deeply bothered by the farming practices which cause soil to be blown or washed away. She explains her concerns and expresses her hopes to her friend Allie (the audience) in **Planting in the Dust**, a 25 minute dramatic monologue by Nancy Paddock that is evocative, informative and entertaining.

The Land Institute, with partial funding from the Kansas Committee for the Humanities, will present **Planting in the Dust**, followed by a discussion, in each of ten Kansas communities this fall. There will be no admission charge.

The play has been performed well over two hundred times in the states of Minnesota, Iowa, Nebraska, South Dakota and Arkansas. Laura Clark of Minneapolis, Minnesota, who first developed the role, played Annie for our Prairie Festival audience in 1985. Illinois and Montana join Kansas with new productions this fall.

Nancy Paddock, author of the play, visited The Land Institute in mid August to work with our actress, Dona Freeman, from Wichita. Nancy made small changes in the script to convincingly set the play in Kansas. After only a few rehearsals that weekend, Dona presented an amazing "in progress" performance for staff, students, and a few Salina friends at The Land on Sunday evening. Nancy Paddock led a discussion about the play following the performance.

Three scholars will take turns leading discussions following the play in the ten communities: Dr. Tom Isern, Professor of History at Emporia State University; Joyce Thierer, graduate student in history at Kansas State University; and Dr. Janet Juhnke, Professor of English at Kansas Wesleyan. They attended our "in progress" performance and participated in the discussion.

In addition to the ten programs partly funded by the Kansas Committee for the Humanities, The Land Institute will present **Planting in the Dust** in other Kansas communities for a basic fee, plus plus travel expenses for the actress and discussion leader. Organizations interested in sponsoring a performance should contact Marlene Howell or Dana Jackson at The Land Institute.

Dona Freeman Chosen to Play Annie

Many fine actresses auditioned for the part of Annie in **Planting in the Dust** at the Salina Community Theatre on July 26-27. The casting committee of Marlene Howell, Dana Jackson and Linda Lea Borden selected Dona Freeman of Wichita, Kansas as the "Kansas Annie."

Dona has played many roles in the Wichita Community Theatre productions, ranging from Mother in **Cheaper by the Dozen** to Sister Mary in **Sister Mary Ignatius Explains it All**, for which she was given the Best Actress Award in 1986. Dona played Lizzy in **Philadelphia, Here I Come**, which won third place in the National Community Theatre Festival in June 1987. Dona has also done advertising parts on radio and television.

In her initial presentation at The Land, Dona performed with a warmth and naturalness that made Annie believable and endearing. Dona has become concerned about the natural resource problems and economic issues in agriculture and looks forward to making a contribution towards better land stewardship through this role.

Dona will travel throughout Kansas playing Annie. In the event that illness prevents her from making a performance, her understudy, Ruth Casper of Hays, Kansas, will do the part. Ruth has also played many roles and displays an impressive ability to communicate intense feeling to an audience. Ruth is finishing a master's degree in clinical psychology at Fort Hays State University.

Marlene Howell Hired to Organize Performances

In early June, Marlene Howell was hired to fill the halftime position of project coordinator for performances of **Planting in the Dust.**

Marlene directed the Women's Center and was an instructor in the Women's Studies Department at Washington State University in Pullman, Washington before she moved to Manhattan, Kansas in 1986. She is teaching a course in the Women's Studies Department at Kansas State University this fall.

Marlene has spent three days a week at The Land this summer scheduling performances, making arrangements for actress auditions, and organizing the weekend visit of playwright Nancy Paddock to train the actress. This fall she will be at The Land on Thursday afternoons and on Fridays. She will travel to each of the ten communities where performances have been funded by the Kansas Committee for the Humanities to help organize publicity and assist the local sponsoring group with arrangements. Marlene will also attend all performances as the representative of The Land Institute.

Performance Schedule

Sept. 7	3:15 pm	High School, Chapman
Sept. 11	7:30 pm	Community College, Dodge City
*Sept. 12	7:30 pm	Heartland Center, Great Bend
Sept. 20	2:00 pm	Frahm Theatre, Community Center in Colby
Sept. 26	7:30 pm	Community Center Theatre, Larned
Oct. 24	7:30 pm	KSU "Catskeller," Manhattan
***Oct. 25**	**2:00 pm**	**Community Theatre, Salina**
+Oct. 29	7:30 pm	Emporia
+Nov. 7	7:30 pm	Marysville
+Nov. 8	7:30 pm	Caldwell
+Nov. 20	7:30 pm	Concordia

*Extra performance. Not sponsored by the Kansas Committee for the Humanities.
+Performance sites in these towns have not been confirmed.
TO DISCUSS THE SCHEDULING OF PERFORMANCES, CALL MARLENE HOWELL OR DANA JACKSON AT (913) 823-5376.

THANK YOU!

The Land Institute thanks Louise Hanson at the Association of Kansas Theatres for helping advertise auditions, the Salina Community Theatre for use of the Gallery, Linda Lea Bordon for sharing her time and experience to do the auditions, and the fifteen women who took part in the auditions.

1988 Agriculture Intern Program

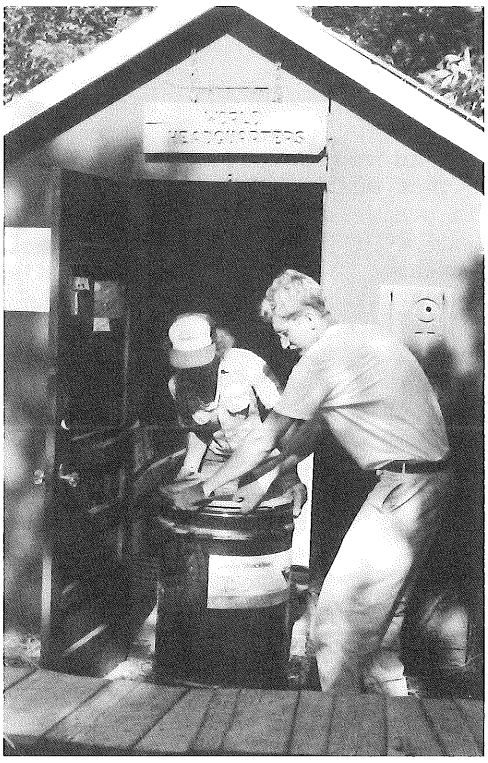
The Land Institute is now accepting applications for the 1988 agriculture intern program. The 43-week growing season term will begin on February 15, 1988 and end December 16, 1988. Applications must be postmarked no later than December 1, 1987. Interested persons should phone or write to request a brochure outlining application procedures.

The intern program is designed for graduates or upper-level undergraduates with some previous coursework experience in biology or agriculture. Interns have class sessions each morning in the spring and fall. Topics in plant ecology and genetics related to sustainable agriculture research make up two thirds of the curriculum. The other third, called "Considerations for a Sustainable Society," includes varied assignments from the social sciences and the humanities.

The afternoons in the spring and fall, and entire days during the summer, are spent doing physical work necessary for agricultural research. Interns also help with construction and maintenance of Land Institute buildings and grounds. Good health and stamina are necessary for participation in the program.

Student interns receive approximately $95 a week for living expenses. They find their own housing in Salina, prepare their own meals, and carpool or bicycle the five to eight miles from Salina to The Land.

The Land admits students of any race, color, national or ethnic origin.



Bruce Kendall & Doug Dittman install a new barrel in the compost toilet.

Greenhouse Construction Underway

Mary Handley

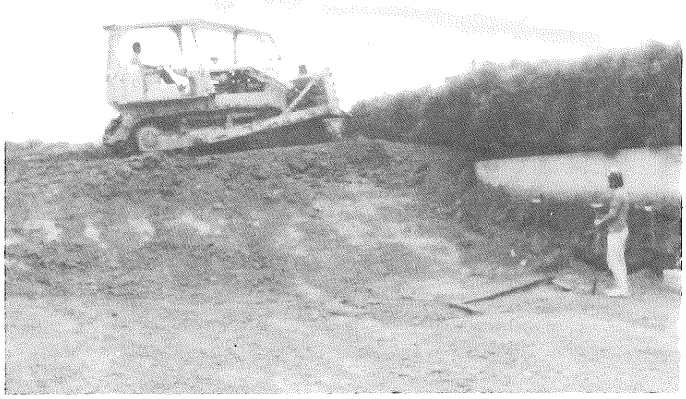
At last, after a winter of discussing and planning, construction has begun on the research greenhouse. Gene Ernst, our architect, met with the research staff several times this spring as we hammered out decisions on options ranging from wood versus natural gas heating, to what sort of solar gain (and loss) we could expect from different roof angles. Paul Rasch, former appropriate technology intern, is serving as the general contractor for the construction process, and was also the guiding force in bringing the design into alignment with our needs. The staff and interns have assisted Paul with construction, doing a lot of hands-on hard work through the hottest part of the summer.

The design includes four 24 x 36 foot greenhouse rooms, connected by a north aisleway, and a 36 x 38 foot headhouse which will serve as a soil mixing, plant potting, and data collection area. The control panels and the heater for the greenhouse will be in this room. If you stop by the Land this fall, you'll see Gene's design in the office building seminar room.

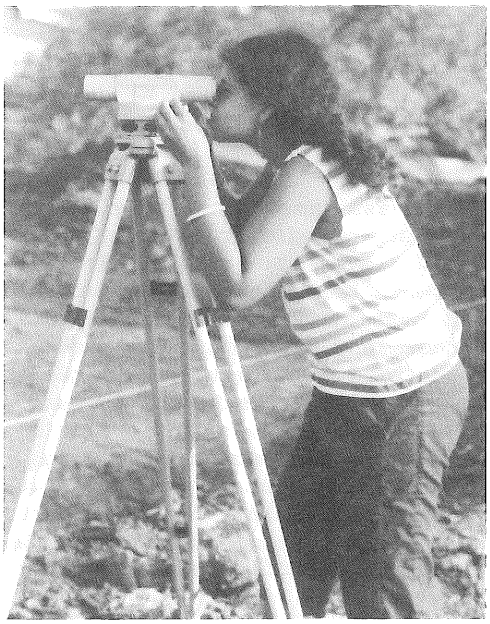
The research staff is cheering Paul on for his goal of having the greenhouse covered before cold weather sets in. The facility will expand the research season to include the winter months. Our plant breeder, Peter Kulakow, is especially excited about the opportunity to do controlled crosses without risk of contamination or weather destroying the outcome. We plan to use the greenhouse extensively in the early spring to germinate seeds and start transplants for our field experiments. Once the greenhouse is complete, more uses will become apparent.

The effort that has gone into developing the best possible greenhouse design and the tremendous work of students and staff, who helped dig footings and pour concrete this summer, show the extent of the Land's dedication to improving our research facilities.

Peter Kulakow Patti Boehner, and Jess Ennis dig the footings along the south wall.



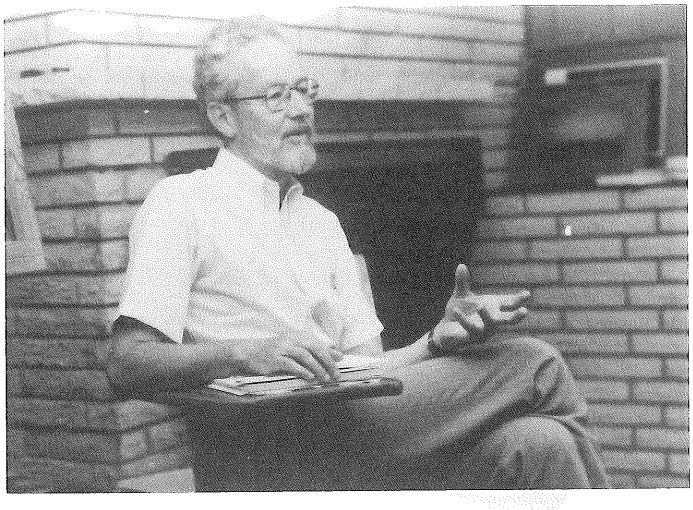
Paul Rasch watches Si Johnson shape the site.



Perry Butler checks level of footings.

Paul Rasch (rear), Randa Kempa (wet T-shirt on his head), Wes Jackson, Amy Kullenberg, Roger Lebovitz (front), and Peter Kulakow (far right) spread the cement for the footings.

Visiting Teachers Enhance Summer Schedule



Robert Rodale

Harry Mason

Reading assignments and regular classes are dropped during the summer in order to focus on field work related to agricultural research. To provide breaks from the routine of physical work, The Land Institute invited Angus Wright, Robert Rodale and Harry Mason to spend a few days at The Land and preside at special class sessions as visiting teachers. In addition to the invited teachers, we enjoyed a brief session with Hazel Henderson, and an afternoon with Nancy Paddock, poet and playwright associated with the Land Stewardship Project of Stillwater, Minnesota, and a morning session with Dean Freudenberger of the Claremont School of Theology.

Angus Wright, who came from Sacramento, California to help us highlight the 25th anniversary of the publication of **Silent Spring** by Rachel Carson at the Prairie Festival, stayed three days longer and continued discussing his investigation of pesticide abuse in Mexican agriculture. In an article on page 21, Jess Ennis describes the major issues which Angus covered in his presentations.

Robert Rodale was a visiting teacher on July 22 and 23. In addition to morning sessions at The Land, he also presented a public lecture on the evening of the 22 and met with a group of Salina citizens on the 23rd. Mr. Rodale is chairman of both the Rodale Press, which publishes magazines such as **Organic Gardening, Prevention, The New Farm, Runner's World, and Bicycling**, and of the Rodale Institute, a research organization devoted to improvements in agriculture and community life.

Mr. Rodale has been involved in a program to develop what he calls "regenerative communities." The Rodale Institute has a mission to motivate individuals and communities to apply "regenerative principles," in all aspects of life.

A quarterly newsletter called **Regeneration**, edited by Jeff Bercuvitz, contains stories about individuals and communities applying these principles and can be ordered from Rodale Press, Inc., 33 E. Minor St., Emmaus, Pennsylvania 18049.

Harry Mason is a retired Professor of Psychology at Kansas Wesleyan, who now lives in Port Orford, Oregon. When The Land Institute started in 1976, Harry was living in Salina. He frequently helped with construction and repairs of equipment at The Land and photographed many of our activities for **The Land Report**. During two class periods in July, Harry engaged students in provocative, often amusing, discussions about science education and the role of the teacher.

Nancy Paddock came to The Land August 14 to work with Dona Freeman, who plays Annie in the Kansas version of Nancy's play, "Planting in the

Mary Handley, Bruce Kendall, Roger Lebovitz & Jess Ennis attend class in the research library.

Dust." Nancy spent part of Friday afternoon with students and staff talking about oral histories. Several of her poems included in this issue reflect her experience in talking to elderly people and taping their stories.

Dean and Elsie Freudenberger stopped to visit in mid August. Dean told about working in agricultural development in Africa and how he came to realize that the U.S. models for agriculture in tropical countries were wrong. He now teaches the importance of ecologically-based models for livestock production and crops. His background in agronomy and theology are synthesized in the books he writes and in the many speeches he gives about the importance of a land ethic and good land stewardship.

Armageddon: Cancelled or Already Over?

Marlene Howell

"The focus of my particular concerns has been the interface between ecological systems and the environmental sciences on the one hand, and the assumptions and functioning of our industrial economies and their traditional economics on the other."[1]

In a short visit to the Land Institute on June 25, well-known futurist, author, and economic analyst Hazel Henderson shared her worldview and latest focus in an intriguing and stimulating lunch time discussion. She spoke of her primary goal as that of a "sustainable future for life on this planet." Citing the Chernobyl nuclear disaster and the third world debt crisis as truly predictable within the present world economic structure, she discussed ways of learning from global economic events.

One area that is truly a global "learning experience" is the "recycling" of surplus capital worldwide. At the time of the Arab oil embargo, we saw the OPEC nations put their profits into western banks, creating a "surplus" of capital. This surplus was used for loans to third world countries, who saw the loans as a means for increased development. The availability of capital made such loans enticing, and many countries plunged themselves into what we now know as the Third World debt crisis. In the last ten years, while the United States and the Soviet Union have "duked it out" in the arena of military superiority, Japan has built an economy based on civilian goods and in the process became the "world bank," while the U.S. has emerged as the world's largest debtor nation.

This has created a situation in which the world must now "recycle" yen, for it has become the surplus capital with which to be reckoned.

Using the example of the OPEC nations and the US as what not to do, Henderson and other futurist economists recently gathered to explore methods of yen recycling. The Japanese favor a "Marshall Plan" approach to redistribute wealth worldwide. Given the success of the post World War II Marshall plan in Europe, and present world needs, this indeed may be the most prudent use of the surplus yen. (Simply creating more debt in the name of development is, as we have learned, not the answer.)

The recent conference Henderson organized cited two ways in which recycled yen in a Marshall plan could be used: the greening of the desert, and worldwide reforestation. The product of an accelerated global economy (surplus yen in this case) would "seed" a sustainable future. This could be viewed as turning crisis into opportunity, something Henderson sees evolving more and more.

> "What we see emerging today in all the industrial societies are basic value and behavior shifts, new perceptions, and a paradigm that faces up to an awareness of planetary realities... These new world views are already generating better policy tools and models outside of economics..."[2]

Even in her brief visit, Henderson left us all with some ideas to ponder. For instance, an exchange between her and Was Jackson left this writer with some fun, yet poignant, food for thought. Henderson: "Armageddon has been cancelled." Jackson: "or-- it's already happened."

When is the last time you had some Armadgeddon and yen sprinkled on your organic bean sprout salad during lunch?

REFERENCES AND NOTES

1. Hazel Henderson, **Conserver Society Notes**, Summer 1978, Canada.
2. Hazel Henderson, "Riding the Tiger of Change," **Inquiry Magazine**, December, 1986.
3. Books by Hazel Henderson: **Creating Alternative Futures**, 1978. Berkeley Publishing Corporation. **The Politics of the Solar Age**, 1981. Anchor Press/Doubleday.

Hazel Henderson talks to Patty B. and Amy K.

Prairie Field Trip

Dwight Platt (left) shows the sand prairie to Peter Kulakow, Jon Piper, Jess Ennis, Randy Kempa, unidentifiable persons, and Roger Lebovitz.

The Nature Conservancy purchased an eighty acre sand prairie site a few miles west of Newton, Kansas in 1965 and gave Bethel College the responsibility of managing it. Bethel biology professor Dwight Platt showed us the prairie on July 7. It was once part of a much larger sand prairie called the Hutchinson Dune Tract. The sand had been blown up out of the Arkansas River valley and in places was as much as twenty feet deep on top of the existing soil.

There isn't as much of a sod as on The Land's prairie, but only on the sides of dunes are there patches of exposed sand. The ecosystem is actually quite stable, even in drought years. Only when put in pasture and overgrazed is this land subject to blowouts. Disturbed areas are slow to recover though, as can be seen in an area dug up for a pipeline in 1960. Vegetation there is sparse and dominated by sand lovegrass, an early colonizer of disturbed areas.

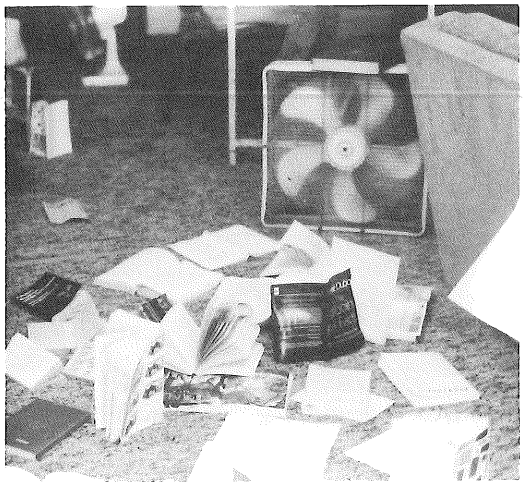
Windstorm Creates Work

The tranquility of summer was rudely interrupted at 3:45 A.M. on July 12 when winds of up to 98 miles an hour stripped the rotors off the Windcraft electric generating machine and tore off about half the roof of the classroom building. The roof landed in chunks in the garden, knocking over tomato supports and crushing plants. Pieces of insulation were left hanging in trees and jammed in the pasture fence. The rain soaked the desk and floor in the northwest corner of the office, but enough roof was left to spare the computer on the east side and keep it dry. One strip of roofing along the north side ripped off to the middle of the building, and water drenched books and magazines in the library.

Interns and staff dodged the downed trees and power poles along the streets and found their way to The Land to help clean up. By noon, the worst had been picked up and Wes had purchased materials to cover the hole in the roof. With rain threatening all afternoon, Rob Fischer, Paul Rasch, Thom Leonard, Doug Dittman, Jess Ennis and Wes Jackson replaced the two by fours and insulation and nailed down plywood and felt. It began to rain lightly just as they finished at 7:00 P.M.

The next week we ran fans on wet carpet and books to dry them and began to estimate our damage. A crew finished the roof and installed new chimneys. Books were put back on shelves. The routine work of summer resumed, although the storm damage was still visible.

It didn't rain for a month. When it did, we discovered wet books again. The roof patch had held up well, but a soft, old part of the roof opened up cracks for rainwater. Some books were totally ruined; others can be used now, but their useful lives are shortened. We're going to test that roof for several more rains before we shelve books again! This fall we plan to cover it completely with new metal roofing.



Talk about the Weather

Mary Handley

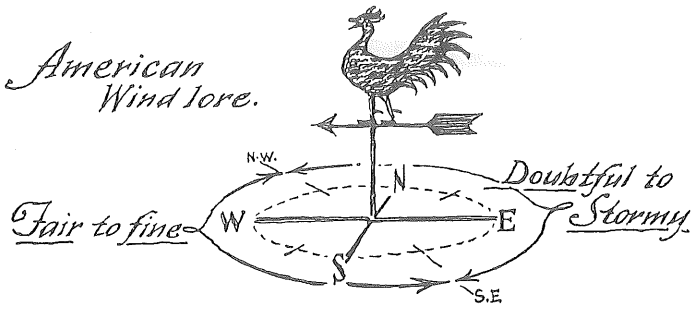
The classic weather joke you hear when you arrive in Kansas (and probably a lot of other places) is, "If you don't like the weather here in Kansas, wait a minute." That is usually followed by riveting tales of blizzards, droughts, floods, hail, tornadoes, lightning strikes, heat waves, cold snaps, torrential rains, and other horrors. Curiously, these same people will often say, "Oh, this is very unusual for this time of year." My question is, what is "usual" for Kansas?

It seems to me that folks here, myself included, spend a lot of time discussing the weather. "Hi, nice day we're having isn't it?" "What do you think of this snow/heat/rain/etc.?" "That storm last night sure was terrible. I got up when it started blowing and I couldn't sleep the rest of the night." "You still enjoying the snow?" (This from our neighbor after each snowfall.)

I'd lived in the Northeast, Southeast, and California before moving to Kansas a little over a year ago, and until now I rarely mentioned weather. Now I find myself thinking and talking about it a lot. This was especially obvious last month when I experienced sort of a moral dilemma over weather. The wheat was ready to cut, and farmers needed hot dry weather to get the harvest done quickly. I, on the other hand, six months pregnant, wanted nothing more than to get some relief from the heat and the job of watering the garden. When it rained one night, dropping the temperature to 64, I felt guilty over my exuberance about the wet, cool weather.

Conversations about weather rarely mention the ordinary, and so are not good indicators of the "usual." According to several sources, the Great Plains does have more dramatic weather than any other region of the country, perhaps even the world.[1] The middle of the continent, the Plains, are the battleground of three major air masses: polar, Pacific, and tropical. The polar air mass is cool and dry, flowing south from Canada unimpeded by any mountain ranges. The tropical air mass is usually warm and moist, flowing north to northwest from the Gulf of Mexico. The Pacific air mass may be either warm or cool, moist or dry, and flows east or southeast over the Rockies. The fronts where these air masses meet are where storms develop. The stormiest weather results from the meeting of polar and tropical air. Since the tropical air carries most of the moisture, and rainfall is greater closest to the source of moisture, there is a sharp moisture gradient across Kansas (and all of the Plains), with the highest rainfall in the southeast portion of the state.[2]

In every season, sudden, violent storms are the most dramatic events in Plains weather.

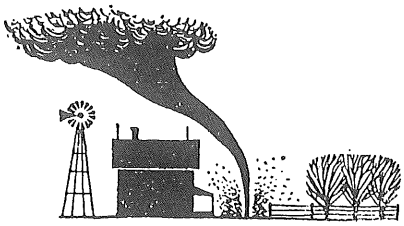


Inhabitants must reckon with blizzards, tornadoes, thunderstorms, and hailstorms. Because the American continent's mountain systems run north-south rather than east-west, the Plains have no defense against incursions of polar or tropical air. "In other words, the grain of the country is such that it facilitates the flow of heat and cold."[3] All of these violent storms result from this unimpeded flow of air masses up and down the Plains. The open, flat, treeless land also allows wind to be persistently present and to create much of the folklore of the Plains.

"Between Texas and the North Pole there's nothing but a barbed wire fence, and that's blown down most of the time."[4]

There is a lot of weather folklore, including many sayings which helped to forecast the weather before the National Weather Service took over. "The higher the clouds, the better the weather." "Flies bite more before a rain." "When human hair becomes limp, rain is near." (There is actually an American Indian saying that "when locks turn damp in the scalp house, it will rain on the morrow.") "Sun or moon halos indicate a coming rain." "Crickets are accurate thermometers; they chirp faster when it is warm. Count the chirps for fourteen seconds and add forty, and you have the temperature of wherever the cricket is." "When the buffalo band together, the storm god is herding them."[5]

Forecasting, by whatever means, also doesn't answer my question: what is "usual" for Kansas? The weather statistics for this region show that extremes are normal. In winter, the lows can dip below zero, with windchill making it feel much lower than that. A heavy ice storm strikes at least every third year. Snow blankets the ground an average of forty days each year, and blizzards are common especially in western Kansas. The last frost in the spring can fall anywhere between April 10 and May 10, and the last frost-free date is around October 15. In summer, the highs climb above 100, with a range of 40-80 days above 90. Thunderstorms can occur in any month, but are most common between May and August, with the peak in June. We average fifty thunderstorm days each year. Although other regions have more thunderstorms, those on the Plains are the most violent in the country. Hail often accompanies thunderstorms, pounding the land an average of four days per year in central Kansas, to a maximum of nine days per year in southeastern Wyoming. Because most Kansas hailstorms happen during the growing



season of its major crop, wheat, hail insurance costs more here than anywhere else in the country, and the dollar losses from hail are higher in Kansas than any other state. Tornadoes are probably the most discussed and most feared of the Plains storms. Eastern and Central Kansas are within the area experiencing the most frequent tornadoes in the U.S., with over fifteen tornadoes per fifty square miles over a thirty year reporting period. They are commonest between April and June, although a tornado can occur in any season. Kansas had 587 tornadoes reported during the 34 years before 1949, and there were probably a lot more than that since much of the state is relatively unpopulated.

Kansas does have a more positive side to its weather. We have more hours of annual sunshine than Dallas, Denver, or Miami (69% of total possible sunshine) and more dry days each year than Houston or Honolulu (278 days with less than .01 inches of rain.)[6] The many bright, clear, sunshiny days make winter quite tolerable in Kansas.

With all this variation in weather, how do people in Kansas adapt? Like people all over the country, many Kansans seem to react to temperature and humidity with the ostrich approach--hiding in heated or air conditioned houses, cars, and offices, seldom experiencing the extremes. Here at the Land though, we haven't found a way to climate control the research plots, so interns and staff have to adjust to the temperature. At this time of year, the main adjustments come in the form of earlier starting hours: some people arrive for work as early as six A.M. We try to get field work done in the mornings whenever possible, and increase our consumption of liquids, watermelon, and ice cream. I doubt that there has ever been an ag intern who didn't appreciate ice cream and ice cold watermelon during a Kansas summer!

People react very differently to the storms on the Great Plains. Two experiences of interns from recent years demonstrate the extremes. Melissa and Ted heard the radio broadcaster announce a severe storm warning: "This storm may have high winds, dangerous lightning, and heavy rainfall. There is a tornado watch on." They knew the old saying, "Near the surface, quick to bite, Catch your fish when rain's in sight."[7] As everyone else took cover, they drove their car out to a favorite fishing hole. The rain was so hard and the wind so strong that the car nearly blew off the road, and they had to pull over and jump out. They spent the rest of that storm lying flat on their bellies in the ditch on the side of the road, with paper and branches blowing over them, hoping that there wouldn't be a tornado. Veronica, Don and Roger, on the other hand, in a recent Salina storm, woke at 2 A.M. as the wind began blowing fiercely, turned on the radio and heard about the same thing from the broadcaster (except no mention of tornadoes.) Terrified in their second floor apartment, they quickly dressed and scrambled across the street to a 24 hour convenience store to take shelter. The store was locked, and they now found themselves out in the storm, rapidly getting soaked. There was nothing to do but run home, right through the "high winds, heavy rain, and dangerous lightning" which had frightened them out of their apartment.

When Peter and I moved to Salina, friends and family on the coasts had plenty of advice. "Don't live in a trailer." "Make sure your house has a basement." "Make sure you unplug everything when it storms." Our new neighbors had plenty of advice too: "The weather scanner says there's a big storm coming, and you'd better stay close to home." "If the sirens blow, you go down to the basement and stay near the southeast wall, because tornadoes move from southwest to northeast." "You'd better clean those gutters out or you're going to have a flood here next time it storms." That first summer I woke up every time the wind changed directions, and wouldn't leave the house without closing all the windows. I nearly died the first time the sirens blew for their monthly test--I turned on the radio to find out why there was a tornado warning on a clear, calm day. And a single threatening cloud was enough to get me thinking that I'd have to run for cover soon. I've changed a lot in a year. Now I only wake up when the wind blows me out of bed. And during the biggest storm in the past 25 years (according to the newspaper), the one that blew the roof off the classroom building here at the Land, I got up to close our windows and went back to bed--and actually slept the rest of the night!

REFERENCES

1. B. R. Anderson, 1975. **Weather in the West** (American West, Palo Alto, CA), p. 153.
2. Anderson, pp. 154-155.
3. G. H. T. Kimble, 1955. **Our American Weather** (McGraw-Hill, NY), p. viii.
4. Anderson, p. 157.
5. E. Sloane, 1963. **Folklore of American Weather** (Duell, Sloan, and Pearce, NY), pp. 34,37,39,40,42,53.
6. E. Powers and J. Witt, 1972. **Traveling Weatherwise in the USA** (Dodd, Mead, and Co., NY), pp. 152-163. (Also Kimble, pp. 75-163 and 219-220.)
7. Sloane, p. 37.

The 1987 Prairie Festival

"Citizenship and the Land Ethic"

Another Prairie Festival - the 9th - took place on the beautiful last two days of May, 1987 at The Land Institute.

Campers from far and near began arriving Friday afternoon. The tent village was spread around the hilltop and down into the orchard by dusk, when the traditional Friday evening bonfire gathering began.

Friends and relatives of Jim Peterson, cofounder with Terry Evans of the Prairie Festival in 1979, attended a memorial service for Jim in the classroom Friday evening. With flute music and poetry, they remembered Jim and celebrated his life, then spread his ashes in the Eastern gamagrass and on the Wauhob Prairie.

We again underestimated the interest participants would have in outdoor natural history programs, so two very large groups strode out for the Saturday morning Prairie Plant Walk and Prairie Wildlife Walk. We changed the location of Nina Leopold Bradley's prairie restoration talk at 11:00 A.M. to the large barn to accomodate all the interested people.

Donald Worster gave the opening talk to introduce the festival theme, "Citizenship and the Land Ethic," on Saturday afternoon. His speech, "Americans and the Land," has been printed in this issue, starting on page 13. For the rest of the afternoon, participants were forced to choose among programs on architecture, agriculture and literature, farm legislation and conservation, farm ownership by insurance companies, field size murals called crop art, and an explanation of The Land's research program.

Ann Zimmerman, 1984 intern with two years of law school at Harvard completed, delighted the Prairie Festival audience for the third year with her singing. The favorites were clearly "Home Grown Tomatoes" and the "Bad Attitude Blues." Fiddler Pat Sweeney was the only musician lined up for the Saturday night barn dance, but magically two guitarists and a banjo player appeared and all played the Virginia Reel until their fingers nearly dropped off (and the dancers just plain dropped), then entertained with country and bluegrass until late became early.

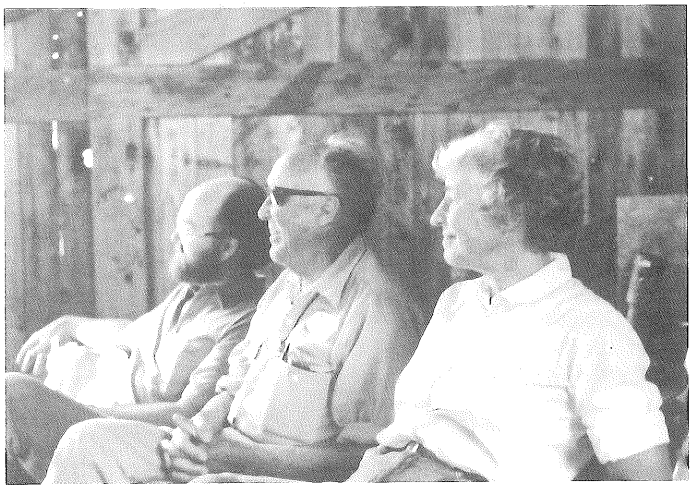
We commemorated the 100th anniversary of the birth of Aldo Leopold in the Saturday evening program. Rober Leibovitz gave several poetic prose readings from **Sand County Almanac.** Nina and Charles Bradley talked about Aldo Leopold as a father and a teacher.

On Sunday morning, there were eight program choices. Angus Wright gave a special general session program on chemical pesticides in third world agriculture as part of our recognition of the 25th anniversary of the publication of **Silent Spring.** Jess Ennis reports on Angus's presentations on page 21 of this issue.

All the major speakers joined together Sunday afternoon to discuss the topic, "A Land Ethic and Civic Responsibility." Questions and comments from the audience made it a lively event.

This year's successful Prairie Festival, like the previous eight, was the result of the hard work of staff and students and the cooperation and enthusiasm of participants.

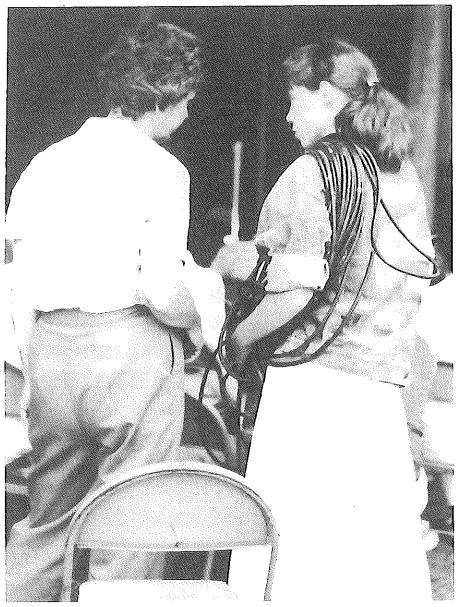
Sunday afternoon panel: Angus Wright, Charles Bradley, Nina Bradley, Donald Worster and Dana Jackson



Angus Wright, Charles Bradley, Nina Bradley.

Stan Herd answers questions.

Ann Zimmerman entertains.



Dana Jackson discusses sound system with Amy Kullenberg.

Julie Fischer led the children's discovery walk.

Jeanne Green, Christopher Isaiah Peterson Green, and Marlea Gruver.

Americans and the Land

Donald Worster

I sat down the other night to do something I had not done in a long time: read the American constitution. Though a short document, only some twelve or thirteen double-columned pages in most printings, it was writing I had not looked at for over a decade. Yet I am an historian of this country. My excuse is that there is not enough time to read most things once, and twice is generally out of the question. It is a poor excuse; some things we simply ought to read more than once in a lifetime, ought to read every year, like Aldo Leopold's essay on the land ethic or Henry Thoreau's book about that pond in Massachusetts. The Constitution is a piece of writing I would recommend reading no more than once a decade. It hasn't got much of a plot. Its language is clear and easy, but lacks eloquence. Its great attraction is its plain sensibleness; over the past two hundred years it has appealed to the common sense of a wide variety of Americans, from Yankee farmers plowing their uplands with a pair of oxen to Korean taxicab drivers cruising the shopping malls of Los Angeles. We like to think we are a levelheaded people and that this document is the epitome of our levelheadedness. In a world that often seems to have gone plumb crazy, at home and abroad, the Constitution reasssures us; we can look back to it with relief that our way of life was framed by wise, sensible people; and unsure today whether we could improve on their good sense, we usually leave it alone. Now and then we take the document out and actually read it.

There is, however, one great and glaring omission in the Constitution, and it is so immense that I believe we ought to try to repair it. Nowhere in all the sections, articles, and amendments is there any mention of the American land and our rights and responsibilities pertaining thereto. I find the word "land" appearing only once, and then it refers to rules governing the capture of prisoners "on land and water." Otherwise, the subject is never mentioned: no reference to any role the government has in acquiring, holding or regulating the use of land; to any rights of the people to land and a safe environment; to any obligations the land lays on us as citizens. The consequences of that omission have been greater than we can describe.

Of course, there are lots of things that never got mentioned in the Constitution. It says nothing about television or pizza parlors or convertibles. Such things did not exist at the time the document was written in 1787, and its authors and signers could not have imagined them. But the land did exist in that year and was a vital part of the people's daily experience: over 90% of Americans at the time were farmers and planters or their servants and slaves, and the rest owed their livelihood to the land in some way too. Europeans had been confronting and dealing with the North American land for two centuries before the Constitution was drawn up. They had chopped down forests, cleared fields, gone fishing for cod and whales, navigated the rivers, explored the wilderness, trapped beaver, watched ice form on their lakes, and noted the birds migrating through the seasons. In the two hundred years following the drafting of the Constitution, they would acquire a vast land stretching all the way to the Pacific and Arctic Oceans, would move west to settle it, would build an industrial society with the resources it provided. One would have thought that this was a subject worthy of some attention from the men gathered in Philadelphia, thinking about the future of this country, its principles and requirements. But they did not think about it. They thought about elections, roads, taxes, armies, free speech, separation of powers, bail and bribery; and their successors who added the constitution's amendments thought about race, gender, elections again, and booze, but never about the land as part of the fundamental law of the nation. Why was that?

Part of the answer is suggested by a line in one of Robert Frost's poems: "The land was ours before we were the land's." Through war and independence, we came to possess a territory that for a long time had belonged to the English Crown (and before that to the aboriginal inhabitants). We now possessed it, but it did not yet possess us--it had not quite entered the circle of our affections. That was certainly true of land lying beyond the Appalachian Mountains, but it was also the case in New York and Virginia, where there had been a century of two of occupation but by successive waves of immigrants, each wave coming in and taking a while to get its bearings, each not quite sure whether they wanted to stay. Many people in those places did not have a sense of belonging, and many never would.

Another part of the answer is that the framers of the Constitution did not believe that the land was a proper subject for the federal government. It was strictly a private and local matter. Like marriage or religion, land was supposed to lie outside the purview of the state, which is to say, the central government. Its management ought to be left entirely in the hands of ordinary individuals, acting informally among themselves. The power of those individuals to affect the land, so it was assumed, was severely limited. Species of plants and animals could never be made extinct; everything in nature went on and on, as decreed by God, and all that man could do was temporarily rearrange things here and there. In such a seeming

stable, enduring world, there was no need for the government to bother with issues of land and land-use; it had quite enough to do raising armies to defend against foreign aggressors, finding money to pay for those armies, and making sure the mail got from one part of the country to the other.

I have said that, in traditional English culture, the land belonged, however vaguely, to the Crown. No individual could assert absolute, total authority over any part of it as long as it was ultimately the king's, who was supposed to hold it as representative of all the people living through all time. Long before 1787 that power of the sovereign had been whittled down severely, until it was only the smallest fragment of what it had once been back in the Middle Ages. Then, the land had been dealt with in a complex system of reciprocal obligations that extended from the sovereign through various lords and ladies all the way down to the lowliest peasant. To be granted access to the land was to incur duties that had to be met, work that had to be done, crops that had to be yielded up, taxes that had to be paid to the sovereign. Such a grant, on the other hand, also brought rights to the plain folk, rights to collect the fruits of the land (or "usufruct rights"), rights that had been hallowed by ages and ages of tradition. No one, not even the king, could interfere with those rights. Throughout the Middle Ages and even into the early modern period in Europe, the fruits of the land were harvested collectively: farmers went out together into common fields and plowed and gleaned in concert, townspeople went into nearby common forests to gather fuel.

Today we call this system of hierarchical and communal land use *feudalism*, and we think it dangerously radical. It does not allow enough freedom of enterprise, we say. It leads to tragedy or repression or laziness or low economic return. So we think, and so thought the men who wrote our Constitution. Though some of those feudal notions were brought over to the New World and set up here, in the first towns and rural villages of Puritan New England, for example, they were soon abandoned. By the time the Constitution appeared, the old feudal ideas had fallen into disrepute and modern liberal ones had taken their place. What we regard as the good sense of the founding fathers was in fact a rather newfangled approach to land and people, an approach that had not been the good sense of <u>their</u> ancestors. In sum, land had once belonged to the entire community, though ownership was symbolically located in the single person of their sovereign. Now in the rising, independent nation of the United States, the feudal past was escaped, the king repudiated, and henceforth the citizenry took on itself the power of parcelling out the land to individuals. They did not want to see any new figure of authority emerge to reassert control over them. They did not want any state to stand between them and their land. Reflecting that changed way of thinking, the men in Philadelphia carefully avoided any mention of the word land in the Constitution. They dared not suggest that the federal government might be designated the new ultimate owner of the farms and forests of this country. Nor did they insist that citizens, in possessing and using the land, owed any duties of stewardship or care.

I am obviously talking about the origins of private property and its appeal. It is an institution that more or less appeared and grew up when America did, and we Americans have believed in it more than any other people of the earth. In fact it is our chief and most cherished institution. The Constitution does not mention land, but it does mention private property in the 6th Amendment, which reads that no citizen shall be deprived of property "without due process of law, nor shall private property be taken for public use, without just compensation." Note in those words that there is still something recognized as "public use," a use defined by and for a public, not reducible to private interest. But the amendment was deliberately added to the Constitution to make as explicit as possible that the land belongs first and foremost to individuals, not the state, and that their rights to possession are not easily to be set aside.

Five years before the Constitutional Convention there appeared a book that compellingly expressed the American passion for privatizing the land. It was written by a French immigrant, Hector St. John de Crevecoeur, and was given the title, <u>Letters from an American Farmer</u>. Crevecoeur had acquired a large estate north of New York City. From that vantage he writes these moving words:

> The instant I enter on my own land, the bright idea of property, of exclusive right, of independence exalt my mind. Precious soil I say to myself; by what singular custom of law is it that thou wast made to constitute the riches of the freeholder? What should we American farmers be without the distinct possession of that soil? It feeds, it clothes us, from it we draw even a great exuberancy, our best meat, our richest drink, the very honey of our bees comes from this privileged spot. No wonder we should thus cherish its possession, no wonder that so many Europeans who have never been able to say that such portion of land was theirs, cross the Atlantic to realize that happiness. This formerly rude

DONALD WORSTER is Professor of American Studies at Brandeis University. He is also the author of **Nature's Economy**, and **Dust Bowl**, winner of the 1980 Bancroft Prize. His most recent book is **Rivers of Empire: Water, Aridity and the Growth of the American West.**

> soil has been converted by my father into a pleasant farm, and in return it has established all our rights; on it is founded our rank, our freedom, our power as citizens, our importance as inhabitants of such a district.

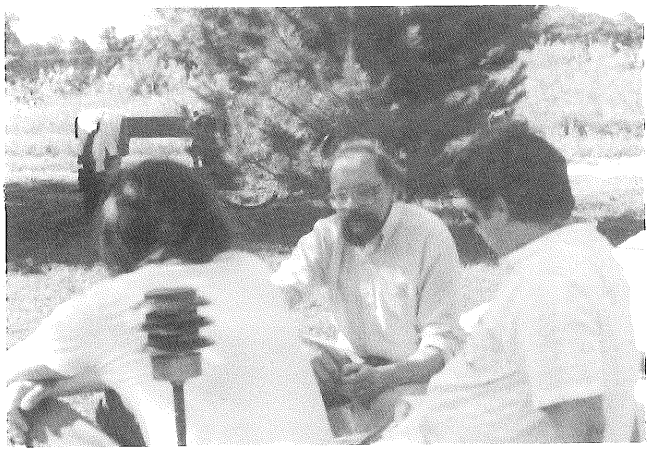
I quote this passage because I want you to see why Americans became so determined to make the land over into private property. Owning some of it in fee simple gave them, as it still gives many today, a feeling of utter independence and freedom from powerful, arbitrary forces. It gave its owner some pride of rank that formerly was denied to the vast majority of people. Those were seductive benefits and no government, even one democratically elected, was to be permitted to intrude on them.

In Crevecoeur's book we find two distinct ideas about the land emerging, and both were part of the cultural milieu of the Constitution makers. Both are still part of our thinking these days. Taken together, they explain our deep devotion to the notion of private property.

First, to keep America a virtuous nation it was felt that the land ought to be owned by as many individuals as possible. Second, to make the nation grow in riches and power, the land and its products should be treated as a commodity for sale to the highest bidder in the marketplace.

Much of our country's history deals with the unfolding of those two ideas, their shaping of a governmental land policy, and their increasing conflict to the point that one had to give way to the other. If we examine this story in more detail, we can appreciate better the situation we are in at present.

The founding fathers were, with a few exceptions, motivated by an intense fear of strong centralized power. Most would have agreed completely with the axiom Lord Acton later declared: Power corrupts, and absolute power corrupts absolutely. A society with too much power gathered at the center is a society that will weaken and degenerate, and the rot will spread outward from the center into the peripheries of the body politic. That, they were sure, was precisely what had happened in England: too much money and power placed in too few hands, leading to idleness, debauchery, vice, and tyranny. A noble citizenship had given way to a base self-interest. Americans had had to take up arms to free themselves from that corruption, and now, following the success of their campaign, they were faced with the challenge of building a virtuous society that would not fall back into decadent English ways. The surest means of doing that, it was widely believed, was to put the bulk of the population on their own farms where they would raise their own food and other necessities. Thus the masses would be free of dependence on the few and would not be corrupted by them. In other words, just as America had declared its independence from



Donald Worster talks informally during Festival.

England, the great harlot festering with corruption, now each American citizen must declare his independence from everyone else, so that the corruption, if it did spread across the Atlantic, would not have much of a chance to spread here. They thought of power as a social disease and then looked for ways to prevent its communication through quarantine, dispersal and isolation. Cities are the prime source of infection, moral as well as physical; above all, stay away from them. Stay away from people in general if you can. A place in the country, with only a few clean neighbors around you, is the ideal place to be. It may seem like a hard, negative strategy, but it made sense to people who feared that there was a lot of contamination around waiting to infect them and that there was little immunity to it.

The man we most commonly associate with this idea of securing our health and virtue through a policy of promoting a localized, decentralized rural life is, of course, Thomas Jefferson. His most famous words on the subject are these:

> Those who labor in the earth are the chosen people of God, if ever he had a chosen people, whose breast he has made his peculiar deposit for substantial and genuine virtue. It is the focus in which he keeps alive that sacred fire, which otherwise might escape from the earth. Corruption of morals in the mass of cultivators is a phenomenon of which no age nor nation has furnished an example. It is the mark set upon those, who not looking up to heaven, to their own soil and industry, as does the husbandman, for their subsistence, depend on it for casualties and caprice of customers. Dependence begets subservience and venality, suffocates the germ of virtue, and prepares fit tools for the design of ambition.

Put more simply, Jefferson is saying that

From the very beginning of settlement, the dominant view was that land is a form of capital that ought to be made to turn a profit.

nonetheless rejected most of the Jeffersonian ideal of living apart and self-contained on the land. In fact, they rejected it even before he uttered it, rejected it because most of them had come to this continent not only to find virtue, but to find wealth. They had a strong yearning for private property, not so much because it would save them from corruption and dependence, but because it could make money for them. They soon understood that one cannot gain wealth when living in isolation; it requires other people, lots of them, people living in cities and trading with one another, people who can suppress their fear of contamination in the interest of a buck.

From the very beginning of settlement, the dominant view was that land is a form of capital that ought be be made to turn a profit. It was at times Jefferson's own view. After all, he owned several hundred acres of Virginia farm land, worked them with some two hundred black slaves, and sold tobacco raised by their labor in the ports of Europe. He was a sincere man but, like the rest of the nation, he had confused and conflicting ideas about what the land should be expected to do. It was his hope that it could both free people from their vulnerability to vice and augment their bank accounts. But the land cannot serve both ends. It can only do one or the other. This is a very hard fact to face. The country has not fully done so yet. From our present President on down, millions of us are searching for some ranch or farm located well away from the corruption of our fellow man, where we can be clean and pure again, but all the while we are searching just as earnestly for a way to get in on the corruption. Since the land was seen as the means to both ends, a choice had to be made. Jefferson made it when he went into tobacco production and slaveholding. The rest of the country chose likewise. And as a consequence Americans began to look exactly like the people they had fought to free themselves from.

The federal government might have exercised its influence in another direction, had it outlawed the sale of land, had it distributed land freely and widely to all citizens, white, red, and black, and had it put strict controls on all agricultural commerce. It did none of those things. On the contrary, it became far and away the most active agency around in treating the land as a commodity, as an item to be bought and sold for a profit. It did so despite the fact that it had no express legal authority under the Constitution to buy a single acre. From the 1780's to the 1850's the federal government acquired, through State cessions and Indian treaties, 787 million acres at a cost of $96 million, most of that money going to the Indians at something like twenty cents an acre. In addition, the government brought North American land from foreign states. The largest single such purchase occurred in 1803, when Thomas Jefferson was President. Unsure of whether he had the power to carry out such a transaction, but, unwilling to pass up a sweet deal, Jefferson paid the French $23 million for the whole Louisiana Purchase, an area of over 500 million acres, extending from New Orleans through Kansas to the Dakotas. He paid four cents an acre, not a bad price for so much potential virtue. His successors in office went on buying and buying, though still with no clear constitutional authorization to do so. Often they conquered first and paid later, on their own terms. With the acquisition of Alaska in 1867, they finished putting together a national territory of over two billion acres. For the whole of it they had spent a mere $175 million, about what today's Pentagon spends in six months. This price averaged out to 13 cents an acre. Here was commodification of nature on a grand scale, far grander than any private citizen or corporation would ever be capable of doing. The U. S. government was one of our first and most successful capitalists, and its business was real estate.

All the while it was purchasing land, the government was selling it off at a profit to raise funds for its operation. In the century and a half that followed the drafting of the Constitution, officials sold or otherwise disposed of approximately one billion acres. A large part went to those who had the cash to buy it, and usually it went in enormous chunks. Those who bought it were mainly speculators who then went out to drum up customers among farmers, miners, and timber companies. With so much land to move on the market, it made sense to move it wholesale. In 1836, to take one of the more active years, approximately twenty million acres of land were sold at an average price of $1.25 per acre. Undoubtedly it could have fetched more, but given what had been paid for it, that was a staggering profit. Over ninety million acres (an area the size of California) was given free to the railroads, as a kind of public investment in the future wealth of the country. Jefferson's small-scale family farmers got, under the terms of the Homestead Act, 287 million acres, but then many of them sold out, taking the gain to go shopping elsewhere. Buying and selling the continent has been the great American way to wealth; it is what we have all done, big man and little alike. Moreover, it has furnished one of our principal criteria for evaluating citizenship. Those who have accumulated land have been hailed as the best citizens around, while those who have preferred to let it alone have been dismissed as

The U.S. government was one of our first and most successful capitalists, and its business was real estate.

Cover illustration on Prairie Festival invitation by Steve Britt.

the worthless ones. And all along the government has not only made it possible to treat the land in this way; it has, through its own acquisitiveness, set the pace.

After the land had been disposed of to private owners, with deeds signed and fences erected around it, it was put to work producing something to sell. In two centuries we have made it produce a sum of wealth that is little short of incredible. Even the deserts of Nevada have been made to produce casinos, nuclear weapons, and endless flocks of sheep. Economists have been telling us for a long time that if we want to see as much money come out of the land as possible, then we had better give its owners a wide margin of freedom -- freedom to produce, freedom to market, freedom to keep the profit. The economists are probably right about the most efficient method for harvesting money; they have all the expertise on that matter. What they have not realized is that maximizing wealth in this way may lead, indeed must lead in the end, to endangering our democracy and ravaging our land. That is surely what has happened in the two centuries of our national existence. Our democracy, which started off with such bright hopes, has given way to a class-divided society in which a tiny elite control most of the land, take most of the profit from it, and largely run the government to suit themselves. And the land, what has become of it? Few of those 2.3 billion acres acquired from the Indians and other is today free of toxic substances, soil erosion, and ecological degradation.

You may want to argue that all the wealth was worth getting and therefore, despite the costs, the land has been put to good use. But you cannot, nor can I, maintain in all honesty that we have left the environment in as good a shape as we found it. Privatizing the land and putting a For Sale sign on it has nearly worked its ruin. And by many measures, it has nearly worked ours too.

For a long while now these costs have been growing more and more obvious, and more and more serious. They have prompted many citizens to begin looking for some alternative to a strictly individualistic, private property relation to the land. Such an alternative has, by fits and starts, emerged. We have come to call it "conservation." Though there is little agreement on all that is implied in that term, this much is clear: conservation is a set of land policies that grew out of a discontent with the workings of the privatized economy. It is an effort to define and assert some broader community interest in the environment than traditional American thinking allowed.

Beginning about a hundred years ago, the conservation movement commenced to take form. In the early phase it focused on establishing a community interest in our forested lands. Under

private exploitation, abetted by federal land disposal policies, they were disappearing at a rapid rate, threatening the longterm security of the nation. Similarly, wildlife were being virtually exterminated by market hunters and landowners; they were considered the private property of whoever killed them, and they too drew the attention of early conservationists. In 1872 Congress was persuaded to set aside Yellowstone National Park as a permanent public space, affording sanctuary to the last remnants of the great buffalo herds. In 1891 it withdrew an additional thirteen million acres from the public domain and set them aside as the first forest reserves, forbidding any private citizen from entering them. More national forests, wildlife, preserves, parks and grasslands would be added to those initiatives, and many states would follow suit. Today, an astonishing forty percent of the land in this country is designated as public land, which means it is under the management of some governmental agency, and that percentage has continued to increase slowly, as various agencies have acquired new land for highways, parks and military bases.

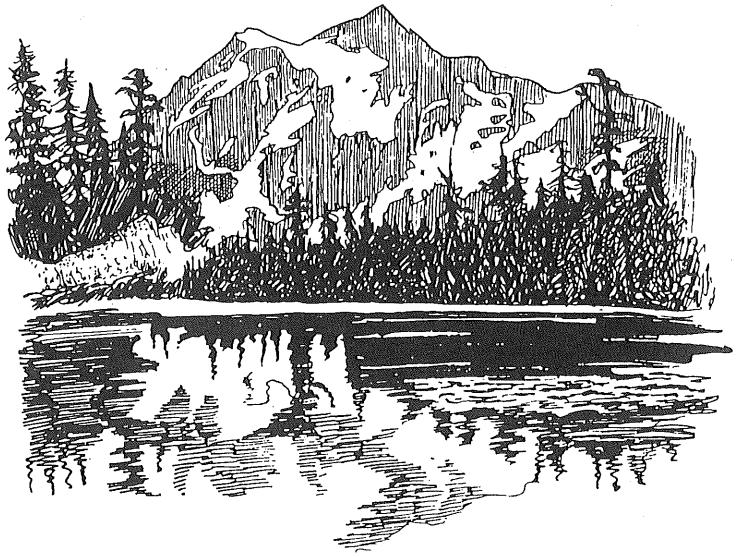
...conservation is a set of land policies that grew out of a discontent with the workings of the privatized economy. It is an effort to define and assert some broader community interest in the environment than traditional American thinking allowed.

The federal government alone holds 34 percent of the nation's land, though its share ranges from a mere six percent of Iowa to 96.4 percent of Alaska. Most of the public land lies in the Western states. Again, nothing like this alternative system of public lands is explicitly mentioned in the Constitution as a legitimate function of government; but the American people have tolerated it, in large part because they have lost some of their faith in private property as a universal panacea. We <u>say</u> that individual land ownership is our ideal, and as far as a family homesite is concerned, it is; but all the same we acknowledge the <u>limits</u> of that ideal when we demand or expect or tolerate the evolution of a county-system of government ownership.

The conservation movement is far and away the chief reason why this reversal of land patterns and land attitudes has occurred. It has given us, without our quite realizing it, an entirely new kind of commons. For that is precisely what the public lands constitute -- a commons that belongs to all of us, where individuals may collect resources but which no one can take into his own exclusive possession. What is unique about this American commons is that there is nothing feudal or hierarchical about it: at least in theory it is the achievement and patrimony of a democratic nation. Indeed, it may be the only way our democracy can bring itself back from near extinction at the hands of holders of great private wealth. The conservation movement has been, in its finer moments, a movement to conserve our threatened democracy, and it has done so by reinventing the idea of the commons.

One man who was born just as the conservation movement was beginning to take shape (1887) and grew up with it, watching it, promoting it, criticizing it, was Aldo Leopold, the son of German immigrants who had settled on the banks of the Mississippi River. Leopold would devote the whole of his professional life to that movement, first as a forester on the public domain in the Southwest, later as a wildlife scientist in the state of Wisconsin. I suppose that he must have believed strongly in the need to establish an alternative system of land tenure, since he worked in that commons for so long. But by the 1930's, he was beginning to have a few criticisms of the conservation movement and its land program. It was still based, he feared, on a narrow economic attitude toward the natural world; it started from the same premise that the old private property approach did, namely, that the role of the land is to make us rich. Now, it was true, we had accepted a more collective method of deriving wealth from the soil and of distributing it to the population, but the danger of ecological degradation was still there. In the first place, public managers could feel just as pressured as private ones to make the land produce to the maximum, and could destroy it just as readily. Secondly, there remained outside the public domain millions of acres, mainly farmlands, that were still part of the private realm and open, in the old way, to heavy exploitation. On all these lands, Leopold insisted, we must "quit thinking about decent land-use as solely an economic problem." It is time we began to apply broader ethical principles to the relationship.

Thus was spawned the single most important new idea about land we have had since we adopted the institution of private property, even more



important than the idea of the American commons. It grew out of the conservation movement but required an imaginative leap beyond anything conservation heretofore had meant. Leopold called his idea "the land ethic." Briefly, it says that we belong to the land as much as it belongs to us. It is our community--all the trees, insects, parasites, waterfowl, the whole collective organism. And the prosperity and health of this land community ought to become our concern, just as the prosperity and health of that small part of it called the human community is our concern. We have obligations and duties here, as well as opportunities and advantages.

Leopold was worried that, in setting up the American commons under official government management, we might fail to make the land's welfare an individual responsibility. He wanted to instill in the ordinary farmer and hunter as well as in the federal employee an ethical awareness. I understand completely his concern, but regretfully suggest that it led him to a false, unworkable solution. Himself a private landowner of some extent, Leopold readily accepted the institution of private property as the basis of his land ethic. He did not want any form of government moving into rural areas and communalizing them; rather, he wanted to see the private owner continue his tenure but under a more enlightened outlook. Government, he felt, could not become an effective moral force; only individuals could.

> At what point (he asked) will governmental conservation, like the mastodon, become handicapped by its own dimensions? The answer, if there is any, seems to be in a land ethic, or some other force which assigns more obligation to the private landowner.

In short, he called for a purely "voluntary practice of conservation" by individuals acting on their own lands. It was a false solution because it could not work. American history had already proven that.

Remember that the origins of private property involved the placing of individual interest above that of the community. The virtue of the individual or his affluence, the two motives behind the institution, could be secured, it was felt, only through the supremacy of self-interest. How then can one derive a land ethic, with its strong emphasis on community, out of the institution of private property? How can one expect people living within such a system to develop broader moral ideals than the self-interest of the individual? They can only do so by becoming bad private property owners. Once a farmer has put other values ahead of acquiring personal wealth, he has ceased to have a good reason for private ownership. The private deeds and the private fences simply get in the way of the land ethic.

The land ethic, it bears repeating, teaches a communitarian outlook. It calls for more cooperation and mutuality.

I suppose Leopold might answer that ownership is essential, or at least is useful, to developing the love and concern needed in a land ethic. But history has quite clearly proven otherwise. We do not have to possess something as property in order to love it. Quite the contrary, possession has generally led to an alienation of affection, to exploitation and indifference. No Indian ever needed to own the land in fee simple in order to feel a sympathy with all its creatures. No human being owned as property ever wanted to continue in that condition, or had any confidence that it was the best arrangement to promote affection between two people, the owned and the owner. Possession is a form of domination, precisely the evil that Leopold was seeking to overcome.

The land ethic, it bears repeating, teaches a communitarian outlook. It calls for more cooperation and mutuality. Logic and experience together suggest that its full development will necessitate the achievement of a more fully communitarian society, where the land is held in common ownership. I have in mind not only the forests and deserts of the American West, but the farms and ranches and waterways and woodlots all over this country. It is, of course, not necessary that every acre be held in this way, but most of it must be or the ethic will not take root. Neither is it necessary that the land be put wholly under federal control, as Leopold feared; a local, decentralized kind of communalism might be pursued instead. But if we are to move forward in our land thinking, if we are ever to become Leopold's "plain citizens of the land," we will first have to make a few last changes in the American economic and social order.

Put another way, people must first be trained in the habits of thinking collectively about the society in which they live before they can be expected to think collectively about their place in nature. It is that simple.

Already, we are creeping towards community in our relationship with the land and each other. At least, we more or less practice it 40% of the time, if you take the size of the public domain as an index. Where we have an opportunity to speed up that cultural evolution is on what are presently held as private agricultural lands. And there too changes have been in process for more than five decades, beginning with the soil conservation program of the 1930's and including recent sodbusting laws, pesticide regulations, and groundwater control legislation. All of these involve qualification of the old idea of a sacrosanct private tenure, and all are evidence that we are awakening to other

...people must first be trained in the habits of thinking collectively about the society in which they live before they can be expected to think collectively about their place in nature.

values in land use than maximizing personal wealth. In many sites we have laws restricting the free market in land; zoning some acres as agricultural, for example, and buying development rights. Several affluent towns in my part of the country have purchased outright a considerable amount of endangered farmland and other open space. This is obviously a strategy that can work only where there is lots of local money; state and federal funds must be provided for areas of limited population and economic distress. Someday we may be ready to divert the money we now spend on crop production controls and on military procurement to buying prime agricultural land in the public name all over the country. No one can know just how far this move to establish an American commons will go, but I suspect it will have a long vigorous future ahead of it. And one day we may be surprised to learn that we have lived through a revolution.

So far all this shifting of ideas about the land, from the 18th century to the dawning of the 21st, has gone on without any effect on the Constitution and its clauses. Maybe that has been for the better. People might have been more reluctant to do that shifting if they had to put it in writing. On the other hand, the Constitution has itself promoted significant changes in our popular thinking, as the civil rights movement, which has drawn heavily on the 14th Ammendment for authority, demonstrates. The same might be true of a Constitution that spoke outright of our obligations as citizens to the land we inhabit.

I can now see the possibility, in the not too distant future, of a new document that schoolchildren will learn and adults will sit down to read now and then. It will declare that all the lands of these United States belong in a final sense to all the people and that present occupants have the use of them for their fruits only. It will declare that any use of the land must not leave any lasting impairment, nor diminish its beauty, nor endanger public health. Finally, that revised Constitution will declare, in the spirit of Aldo Leopold, that all forms of life, nonhuman and human alike, are henceforth to be considered as citizens dwelling together in this great and virtuous republic.

Why Does Kansas Need a State Soil?

Dana Jackson

School children have learned about the legislative process in their efforts to get elected representatives to declare a state bird, or insect or animal. No doubt they have also learned about the particular creature they were promoting for the honor. The legislators have encouraged the children and supported the bills.

There has been little legislative support for bills to create a state soil in Kansas. It is harder to drum up enthusiasm for silt loam than it is for the box turtle.

Orville Bidwell, professor *emeritus* of soils in the Agronomy Department at Kansas State University, wants citizens to understand that the designation of the Harney silt loam as our state soil would benefit Kansas. It would have an educational impact much greater than the other legislative recognitions of the natural world. Acknowledging the rich prairie soils which made Kansas a leader in small grain production can be a step towards soil conservation. Orville is spearheading a grassroots educational effort to develop interest in naming a state soil. The following material has been taken from one of his handouts answering the big question, "Why do we need a state soil?"

1. To provide as a teaching tool an example of a typical Kansas prairie soil for which there is abundant physical and chemical data, and to which other soils of local or specific interest may be compared.

Students no more can learn all of the Kansas soils than they can all of its kinds of plants. To assure they use an acceptable model, the Harney silt loam is proposed.

2. To recognize the unique symbiotic relationships among prairie plants, animals including Man, and geologic mineral matter that has interacted according to Nature's laws to produce the prairie soil, the thickest of the extraordinarily thin films existing between the atmosphere and the lithosphere upon which all terrestrial life depends.

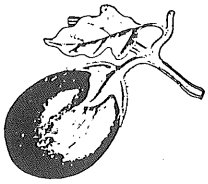
Except for the discovery of America, never in the history of Mankind has there been a greater revelation than the discovery of the North American prairie, the largest of three such natural areas in the world. Except for inextensive areas in the southeast and on the floodplains of eastern Kansas, most of Kansas's 52 million acres once was in prairie.

3. To acknowledge dependence of the State's economy on unusually productive soils.

Interaction of favorable soils and climate are responsible for Kansas's ranking first in the production of wheat and forage sorghum, and second in the production of grain sorghum, among the 50 states.

CONTINUED ON PG. 26

U.S. Winter Vegetables and Pesticide Poisoning



Jess Ennis

Faced with the problem of relying upon pesticides whose toxic effects have been shown to linger stubbornly in the environment, governments have banned or restricted the use of some compounds, such as DDT, and industry has developed chemical substitutes which are less persistently poisonous. Those substitutes, which manage to break down much more rapidly in the environment, are often, however, much more acutely toxic to humans and other creatures, according to Angus Wright, a main speaker at the 1987 Prairie Festival. As long as we properly manage the use of those "far more immediately toxic" chemicals, problems can be minimized, according to Dr. Wright, but in the Third World "the idea of management becomes a kind of black humor or sick joke because there is no management."

Angus told of a perfect example now occurring in northern Mexico's Culiacan Valley, which provides the U.S. with one-third to two-thirds of its vegetable supply from December through May. A lack of proper management and the consequent misuse of agricultural chemicals are causing severe health problems to agricultural workers and extreme environmental degradation in that valley and in northern Mexico in general.

Angus, who did his doctoral work in Latin American history and has been a professor of environmental studies at the University of California at Sacramento since 1972, received a Fullbright Senior Research Award to investigate pesticide abuse in northern Mexico's Culiacan Valley in the state of Sonora. In 1983 and 1984, he observed the working and living conditions of agricultural workers in the Culiacan Valley and tried to determine how the region's socio-economic situation influences the farm workers' conditions. He has since returned to the area, most recently in February.

In May, Angus came to his hometown, Salina, and described at the Prairie Festival what he has found to be an "incredibly reckless use of chemical pesticides" in the Culiacan Valley.

The U.S., Angus pointed out, is a prominent player within the socio-economic context of the region. In fact he called the Culiacan Valley "an extension of the U.S. economy," because agricultural production there is devoted to supplying the U.S. market and because 90% of the financing of its agricultural enterprises comes from the U.S. But in Mexico, unlike the U.S., the wage rate is $2.80 per day and "growers and their financiers don't have to worry at all about nit-picking environmentalists or public health people, either."

Without those nit-pickers or much effort devoted to public health, Mexican agribusiness continued in the 1970s to use the persistent pesticides that had been banned in the U.S. In their 1981 book, **The Circle of Poison**, David Weir and Mark Shapiro documented how crops entered the U.S. carrying residues of pesticides that were banned here. In the late 1970s and early '80s though, the Mexican growers also began switching to other pesticides. This happened for several reasons: Growers were concerned about the image of their produce in the United States, which had been tarnished by **The Circle of Poison**; Florida growers, the Mexicans' main competitors, pressured the U.S. government to ban imports of Mexican produce on the grounds that it was contaminated by banned pesticides; pests were also developing resistance to the older, U.S.-banned pesticides. It was in that context, according to Angus, that the Mexican growers signed a pact with the U.S. Environmental Protection Agency and the Food and Drug Administration, agreeing upon which chemicals could and could not be used on produce exported to the U.S.

While the switch to the newer pesticides served to protect U.S. consumers from the lingering effects of the persistent pesticides, it did nothing to improve the conditions for Mexican agricultural workers and their families. In fact the new chemicals are much more acutely toxic than the old.

"By all international standards, industry standards, and Mexican law, agricultural workers should be wearing rubber boots, rubber coveralls, rubber gloves, masks, and head coverings when using the highly toxic pesticides," said Angus. "I never saw them in 1983 and '84."

Although in danger of exposure himself to toxic agricultural chemicals and of angering the growers who were less than pleased with his snooping around and who commonly employ gun-toting thugs to keep the peace, Angus interviewed and photographed many workers in the fields. He showed slides of workers, many of whom were young children, who were spraying and being sprayed while wearing no more protection than bandanas over their faces. One particularly revealing photograph showed a "flag man" standing in a vegetable field, signalling to a plane overhead that was about to spray him along with the crop. It is not unusual for crews of twenty to fifty workers to be sprayed by plane.

The migrant agricultural laborers now number up to 250,000 in the Culiacan Valley, according to Angus, and are mostly Mixtec and Zapotec Indians from the southern Mexican state of Oaxaca. Often they are illiterate, and sometimes they understand little or no Spanish. The typical laborer thus has "only a very elementary

"Cosmetic standards do more to encourage pesticide use in Mexico than residue standards do to discourage it."

understanding of his work." Often the migrant families, unable to read the warning labels on pesticide containers, will cook their meals in the discarded metal containers, oblivious to the dangers of doing so.

The migrant labor camps, which Angus said can include forty to five thousand people each, are usually located directly in the fields.

"Men, women, and children are eating pesticides, breathing pesticides, drinking pesticides, having pesticides in contact with their skin. And the same goes for all of the wildlife -- birds, mammals, and insects."

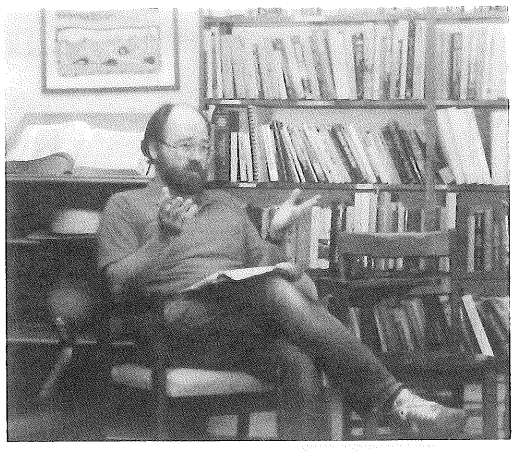
Although the Mexican government is not eager to disclose the public health problem, there is obviously a substantial problem of pesticide poisonings. According to a Mexican health survey, the rate of childhood leukemia in the Culiacan Valley's migrant camps, three times higher than in the non-agricultural areas of Sonora, is of epidemic proportions. The best documented cases of pesticide poisoning that Angus found were of the acute poisonings of young pregnant women. A number of miscarriages in the valley have been diagnosed as resulting from acute organophosphate poisoning, presumably because of skin contact with newly sprayed plants.

The dramatic long-term effects of two or more years of constant exposure to these acutely toxic chemicals, including debilitating illness and death, are not apt to be attributed to long-term exposure to pesticides. For example, when a farm worker dies of suffocation due to excessive growth of his lung tissue, his condition is unlikely to be properly diagnosed as resulting from frequent and steady exposure to the herbicide, paraquat. According to Angus, a field will be sprayed with various chemical pesticides 25 to 50 times in a single growing season.

Pesticides are sprayed so abundantly in the vegetable fields of the Culiacan Valley partly because the U.S. applies strict cosmetic standards to the produce that it imports from Mexico, so strict that with the slightest blemish or imperfection of shape, produce is declared unfit for import and rejected. Those standards do much to encourage such frequent sprayings, many of which take place without any visible sign of the targeted pest, but are merely preventive. Even with such heavy spraying, typically only 30% of a crop passes inspection for import.

"Cosmetic standards," Angus told the audience, "do more to encourage pesticide use in Mexico than residue standards do to discourage it.

"But I cannot get people to pay attention to this issue. Not one single journalist has mentioned the cosmetic issue," although he estimates having spent over 300 hours in the last three years talking to journalists about the situation.



Angus Wright

Angus has also told the story of the Culiacan Valley and presented his slide show to people from Asia, Africa, and South America, and "over and over again people have said, 'That's just what it's like at home.'" He said that in most cases those people are trained agriculturalists, making informed judgements.

"We estimate," Angus said, "that 70% of the pesticides used in Third World agriculture are used on products imported into the developed world -- into Europe, Japan, or the United States." Those imports are mainly of intensively grown crops such as vegetables, "or the all-time killer in terms of pesticides-- cotton." As for other crops, such as grains, theirs is "not so horrendous a story, at least not in Latin America."

So as not to leave his Prairie Festival audience with the impression that all of Mexican agriculture is the same horrendous story, Angus showed a slide of a Mexican *campesino* successfully raising an intercropping of corn, beans, and squash, without using any pesticides. He also mentioned an ancient system of Mexican agriculture known as the *chinampa*, which is maintained successfully today in parts of Mexico.

But those examples of pesticide-free agriculture in Mexico are "not the solution to the Culiacan problem," according to Angus. Rather the solution "must be a complex economic and political solution."

.....

For a more in-depth analysis of the situation in Mexico's Culiacan Valley, see Angus Wright's article, "Rethinking the Circle of Poison -- The Politics of Pesticide Poisoning Among Mexican Farm Workers," in Latin American Perspectives, Issue 51, Vol. 13, No. 4, Fall 1986.

Angus plans to conduct a similar study in Florida, northern Mexico's main competitor in vegetables. He suspects, and has "rough information" that "the situation is not too greatly different in Florida." Currently he is writing a book about the history of agriculture Mesoamerica.

The Future of Pesticide Reform

Terry Shistar

Although Rachel Carson's **Silent Spring** has been said to have ushered in the era of environmentalism, pesticide reform has been largely an orphan issue among environmentalists. Activists who work on pesticide reform are mostly separate from those who work on other environmental issues such as clean air, clean water, and hazardous wastes. Perhaps this is largely because we have let our frame of reference be set by the constraints of the existing system of regulation. Rather than challenging the premises that serve as the foundation for the current system, we have concerned ourselves with making minor modifications in the way it works.

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) is not an environmental law so much as a law for settling disputes among manufacturers. Legislation dealing with FIFRA and state pesticide laws is generally referred to agriculture committees, rather than to the environment committees that consider environmental legislation. Implementation of pesticide regulation is generally placed in agriculture departments rather than in departments of environmental protection.

The time has come to change the way we regulate pesticides, to make pesticide regulation consistent with regulation of other environmental hazards. In this article, I examine some of the ways in which pesticide regulation is out-of-step with environmental protection statutes. I hope it will help bring together environmental activists and pesticide activists to change our approach to regulating pesticides.

SHORT HISTORY OF PESTICIDE REGULATION

Pesticides have been regulated in this country since the passage of the Insecticide Act in 1910, which sought to protect consumers from ineffective products and deceptive labeling. But it was not until 1947, after the development and use of pesticides had received a boost from World War II, that Congress passed the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), which required that pesticides in interstate commerce be registered with the U.S. Department of Agriculture. FIFRA was still aimed more at questions of efficacy rather than safety. It was unenforceable because the Secretary of Agriculture could not deny a registration, there was no regulatory control over use, and the Secretary had the burden of proof to show the product was unsafe or ineffective.

In 1964, FIFRA was amended to permit the Secretary to deny or cancel a registration and require the registrant to submit proof that the product is safe and effective. However, it was not until shortly after pesticide regulation was transferred to the newly-formed Environmental Protection Agency (EPA) in 1970 that uses of pesticides containing DDT, 2,4,5-T, and aldrin-dieldrin were suspended and cancelled in res ponse to suits from environmemtal organizations.

In 1972, amendments to FIFRA allowed EPA to classify pesticides for general use or restricted use by certified applicators and included penalties for misuse of pesticides. The 1972 amendments also gave trade secret protection and provided for reimbursement of original registrants for use of test data in additional registrations of products with the same active ingredients. In addition, the amendments require EPA to indemnify registrants and others who possess cancelled or suspended pesticide products, prohibits EPA from denying a registration because of non-essentiality (because the product is not needed), and extends federal authority to intrastate use and distribution of pesticides.

FIFRA was also amended in 1975, 1978, and 1980, but the basic structure has remained the same since the 1972 amendments. Thus, federal pesticide registration has moved from protection of consumers to protection of manufacturers, while occasionally giving attention to public health and the environment.

Since 1980, there have been annual battles in Congress over amendments, which have resulted in annual reauthorization of FIFRA. Environmentalists have sought amendments to improve the reregistration process, require more data, support the program through fees, and improve certification and training. Pesticide manufacturers have pushed for liability releases, increased patent terms, decreased state and local rights, and preemption of the National Environmental Policy Act's environmemtal impact requirement for pesticide use. In 1986, environmentalists bargained with the National Agriculture Chemical Association, then killed the compromise bill after other weakening amendments made it unac ceptable. None of these attempts at revision, however, have seriously tried to bring FIFRA into line with federal environmental legislation.

FIFRA VS. ENVIRONMENTAL LEGISLATION

There are several areas where pesticide regulation under FIFRA differs dramatically from toxics regulation under other federal statutes.

(1) Standard of safety: FIFRA, in defining "unreasonable adverse effects on the environment", explicitly allows environmental and

Terry Shistar, author of this article, is the volunteer Pest Management Coordinator for the Sierra Club's Hazardous Materials Committee, a member of the Board of Directors of the National Coalition Against the Misuse of Pesticides, co-author of the Sierra Club's pest management policy, and a founder of Kansans for Safe Pest Control. She lives near Lone Star, Kansas and is a graduate student in Systematics and Ecology at the University of Kansas.

health risks to be weighed against economic benefits. In contrast, most other statutes (such as the Clean Water Act and Safe Drinking Water Act) forbid actions that endanger public health and can be avoided.

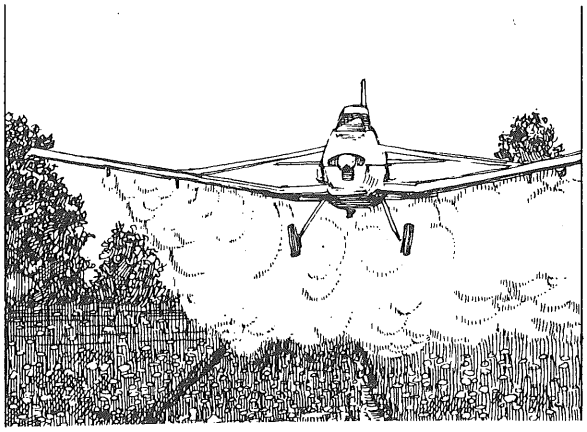
(2) Although the pesticide registrant has the burden of showing that the proposed use of a pesticide does not pose unreasonable adverse effects to the environment, there is a presumption of benefit or need built into the statute. The prohibition against denying a registration for non-essentiality means that EPA cannot refuse to register a product if it is not needed. Thus, if the pesticide kills pests (or even if it doesn't, since efficacy data is usually waived), there is a presumption in favor of registration unless the unreasonable adverse effects trigger is met. Futhermore, the data to meet that trigger is supplied by the registrant. Contrast this with the National Environmental Policy Act (NEPA) or Superfund, for example, where there is a burden to examine all alternatives and choose the least damaging one if practicable.

The presumption of need provides a built-in bias in favor of registering the pesticide. Once products are registered, dependence on chemicals in pest management is maintained by the regulatory and educational structure that defines needs as quick fixes to individual pest problems. Other approaches are no longer explored or used because the need is defined as doing what the pesticide does--kill the pest.

(3) Action to remove a pesticide from use is not triggered by environmental contamination. Although environmental contamination might be considered as a factor in a lengthy risk-benefit determination of whether there are unreasonable adverse effects, no immediate preventative action is authorized on the basis of known contamination. In contrast, permits for discharges granted under the Clean Water Act may be denied or revoked if water quality standards are not met.

(4) Citizens may not sue for enforcement of FIFRA as they may for violations of other statutes.

(5) If a pesticide registration is cancelled because it poses unreasonable adverse effects on the environment, EPA must indemnify the manufacturer for remaining stocks and dispose of the pesticide. This public expense is not required under any other environmental or consumer protection statute. For example, schools are not reimbursed for the expense of removing an asbestos hazard.



(6) FIFRA allows toxics to be released into the environment without control over the quantity and mobility of the chemical and without a site-specific permit. In contrast, other environmental statutes seek to restrict the release of toxic materials to a minimum through site-specific permitting procedures that require control over the quantity released and its movement, as well as a site-specific determination of the environmental and health risks posed by the release.

WHAT ARE ECONOMIC POISONS?

Pesticides were once referred to as "economic poisons." As poisons, they received special consideration under the law because they were useful in protecting from pests food crops and other things of economic value. However, as we have recently come to recognize that a much wider range of chemicals used in economic enterprises are toxic, we have created or amended environmental legislation to regulate the manufacture, disposal, and release of toxic materials used in business and industry. Thus, economically valuable poisons are also regulated under the Resources Conservation and Recovery Act (RCRA), Safe Drinking Water Act (SDWA), Toxic Substances Control Act (TSCA), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund), Clean Water Act (CWA), and Clean Air Act (CAA). Materials such as polycholorinated biphenyls (PCB's), cadmium, and trichlorethylene (TCE) all have the same claim to the name "economic poisons" as do pesticides: all are toxic materials that are present in our environment, sometimes in dangerous quantities, as a result of their economic utility.

When pesticides are judged in the same terms as other economic poisons, they are among the highest risks posed to public health and the environment. EPA recently performed an assessment of risks posed by hazards the agency regulates in its programs. The risks posed by pesticide use were greater than those in any other environmental regulatory program.[2]

What makes pesticides different from other economic poisons? The major difference is that pesticides are designed to be poisons. In addition, pesticides are generally used by broadcasting them into the environment, whereas most economic poisons are released accidentally or through disposal.

Why do we tolerate the intentional dispersal of poisons into our environment? We have been convinced that we need to broadcast poisons in order to produce food, protect our homes, and reduce nuisances. In fact, as discussed below, we do not need to broadcast poisons in order to control pests. Futhermore, the

regulatory structure of FIFRA never did restrict the use of pesticides to those cases in which pesticides are the best alternative.

We do not need to broadcast poisons in order to control pests. This point has been emphasized by Sheila Daar, Executive Director of the BioIntegral Resource Center (BIRC) in Berkeley.[3] BIRC does research on integrated pest management (IPM) strategies and acts as a consultant in implementing IPM. As researchers, BIRC's staff reviews about 400 articles per month on advances in biological approaches of managing pests. Sheila reports that in its role as a consultant, BIRC has dealt successfully with virtually every pest problem in every setting, from parks to agriculture to homes. "Successfully" to BIRC means three things. (1) The pest population was reduced below the appropriate threshold level (economic, aesthetic). (2) A minimum of toxic material, if any, was used in a controlled manner. (3) The cost of managing the pest was lower that it would have been if conventional chemical controls had been used. We can no longer point to a lack of research in IPM; we merely lack a comprehensive implementation program.

THE FUTURE OF PESTICIDE REFORM

Now that we are faced with the realizations that pesticides are only one class of economic poisons and that we do not need need to give them special treatment, we should undertake major revisions to bring FIFRA into line with environmental statutes. What should pesticide reform legislation look like?

First of all, in recognition of our country's prolonged dependency on chemical solutions to pest problems, pesticide reform legislation should contain, along with major changes in the regulation of pesticide manufacture and use, a largescale campaign against chemical dependency, an outreach program to teach people to analyze pest problems in a systems context and seek the most environmentally sound solutions.

To help craft a pesticide regulatory system that protects health and the environment, we will require the assistance of environmentalists who have had experience with legislation such as RCRA, Superfund, the National Environmental Policy Act (NEPA), SDWA, and so forth. Some aspects of such a law would be the following.

(1) It would restrict the use of pesticides to cases where they are necessary, after considering all alternatives, in order to avoid a greater risk (models: NEPA, CERCLA).

(2) It would control release of pesticides when they are used (models: RCRA, CERCLA, CWA, CAA).

(3) It would provide ecological and health-based standards in the media (air, water, soil) that trigger further restrictions on use (models: RCRA, CERCLA, CWA CAA, SDWA).

(4) It would accomplish the above through a thorough consideration of all alternative pest management strategies and all the risks and benefits of each, giving greater weight to public health and environmental risks/benefits than economic risk/benefits. The burden of proof would be reversed: pesticides could be released only if there were substantial risks to not using them and the risks of use are not excessive. The burden would be on the manufacturer to show that a chemical solution is the best way to address the problem (models: NEPA, CERCLA).

(5) The manufacturer and user would bear the burden of liability and recalls if use of a pesticide was shown to be unsafe (models: RCRA, RCRA, consumer product safety legislation).

(6) Citizens would have the right to initiate enforcement action if enforcement agencies did not respond (models: CWA, CAA, RCRA).

INDEMNIFICATION: INSURANCE FOR MANUFACTURERS

One unique provision in FIFRA is the provision that requires EPA to indemnify pesticide manufacturers for stocks on hand when a pesticide is banned. In addition, EPA must also dispose of the chemical if the manufacturer so requests. This is one glaring example of the outrageous level of protection that pesticide manufacturers get from FIFRA.

Automobile manufacturers are not paid by the federal government if they are forced to recall cars with defects that threaten safety. We don't even pay schools for removing hazardous asbestos, rather, EPA threatens recalcitrant school districts with fines that are larger than the cost of cleanup. It is incredible to most people familiar with other laws that the public bears the cost of removing dangerous pesticide products from the marketplace. Companies that make products for profit generally view regulation as a risk of doing business.

Indemnification has a tremendous negative effect on public protection. EPA's annual operating budget for the Office of Pesticide Programs is $40 million. The cost of indemnifying and disposing of dinoseb, which received an emergency suspension in October 1986, is estimated at $60-125 million.

Chlordane has been increasingly under attack. With a lifetime cancer risk of one in 300 to homeowners whose houses have been properly treated, EPA no longer argues that the benefits of chlordane use outweigh the risks. However, it would cost about $53.2 million to indemnify chlordane and a similar amount to dispose of it, so EPA's action is likely to await legislative or litigative action.

AN INVITATION TO ENVIRONMENTALISTS

Pesticide activists, who have become accustomed to working within the constraints of FIFRA, will require assistance from other environmentalists. A prerequisite of real pesticide reform is a major change in world view among legislators, activists, and the public. Congressional Representatives and Senators who have crafted toxics legislation that protects public health and the environment must be shown that the same standards of protection should

apply for pesticides as for other toxics. They must be shown how FIFRA fails to meet those standards and how FIFRA's shortcomings cause unacceptable risks to public health and the environment. In particular, the expense and benefits in health and environmental protection created by other programs are dwarfed in comparison to the impacts of pesticide use allowed by FIFRA.

On the other hand, those representatives as well as the agriculture committees who have traditionally handled pesticide legislation must also be shown that we can manage pest problems without broadcasting toxins.

Finally, while we are preparing our case, we should also be helping to elect a Congress and President who can enact real pesticide reform legislation.

NOTES AND REFERENCES

1. Source for history of FIFRA: M.L. Miller, 1983. "Federal Regulation of Pesticides" in J.G. Arbuckle, G.W. Frick, R.M. Hall, M.L. Miller, T.F.P. Sullivan, and T.A. Vanderver, Jr., Environmental Law Handbook, Government Institutes, Inc., Rockville, MD.
2. Workshop on Integrated Pest Management at NCAMP's Fifth National Pesticide Forum. Washington, DC, March 1987.

ACKNOWLEDGMENTS

The impetus for this article came largely from conversations with Jay Feldman, Dave Baker, Karl Birns, and especially A. Tantalus, who asked the question "What are economic poisons?" Sheila Daar's presentation at NCAMP's Pesticide Forum provided the final inspiration.

STATE SOIL CONTINUED FROM PG. 20

Previous remarkable soil properties once present in virgin prairie soils now also are expressed in other ways; in buildings, highways, cities and towns, and in countless other improvements that were financed, at least in part, by farm crops and livestock they nourished.

4. To recognize and commemorate the properties of the Harney silt loam, a typical highly productive prairie soil.

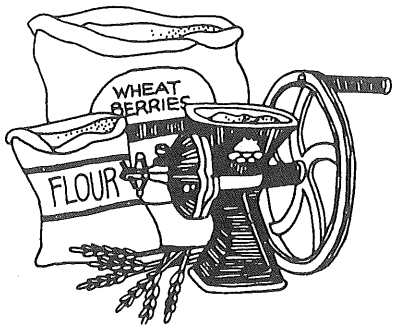
The Harney's nearly level slopes and thick, dark-colored silt loam surface provide an ideal medium in which to grow crops with a minimum of erosion and other deterioration. Occupying the most acreage of any Kansas soil, it exists on 3,870,000 acres in 25 counties, stretching from Nebraska to Oklahoma in west central Kansas. More than 1.3 million acres occur on 0 to 1% slopes; nearly 2 million acres, on 1 to 3% slopes.

5. To commemorate completion in 1987 of the State's soil inventory.

Consisting of aerial photographic maps and interpretive text, county soil survey reports may be used to identify soils, ascertain land quality, and numerous suitabilities, including that for specific crops, farm ponds, conservation and/or reduced tillage systems, highways, buildings, solid-waste disposal, wildlife, and countless other uses.

Armed with basic knowledge of the soil, agronomists now can devise "what if" computer programs to determine effects of various management practices on crop yields and on soil degradation.

It may be a few years before the words "Harney silt loam" become household words in Kansas, but a determined effort to achieve that is underway.



Making Bread

Nancy Paddock

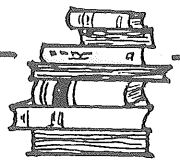
Wheat berries ground in my handmill,
oil of seeds that have followed
the summer sun,
honey, each spoonful the life
work of a bee.

All these lives blend
with sea salt and yeast
in my grandmother's bread bowl.
I stir with her spoon
that is worn
flat on one side from years
she made bread.

And then the dough, brown
as a summer child,
rolls over and over,
elastic young flesh in my hands,
Yeast creatures lift it round
as the belly
of the earth.

I form loaves that are nets
to catch the sun,
And when the winter kitchen warms,
rich with its smell,
we eat
and an ancient strength
flows into us
out of the ground.

Books



Hope for the Family Farm: Trust God and Care for the Land

Edited by LaVonne Godwin Platt
Foreward by Gregory D. Cusack
Faith and Life Press
718 Main, Box 347, Newton, Ks. 67114
231 pages, $7.95

Reviewed by Dana Jackson

Having been familiar with Lavonne Platt and her intense commitment to the message of this book, we have eagerly awaited its publication. **Hope for the Family Farms** lives up to our high expectations.

Lavonne, former editor of the inter-Mennonite newsletter **From Swords to Plowshares,** has compiled and edited pieces by nineteen authors for this book. Written from the Mennonite/peace perspective, the selections are applications of faith to rural issues. As Lavonne says in the introduction:

> This book is about rural people in relationship: in covenant with God, in caring for God's creation, and in community with other people.

Most of the writers are family farmers or have come from farm backgrounds, and all have worked on rural concerns in their own communities. All but two have Mennonite connections, and those two are associated with peace church denominations, Friends and Church of the Brethern. Greg Cusack, who wrote the foreward, is the executive director of the National Catholic Rural Life Conference.

The book is divided into four parts. Part I., "Farming God's Land," introduces the overarching concepts of dominion and covenant theology and applies these concepts to sustainable agriculture and sustainable social institutions and how they relate to one another. Lavonne defines sustainability as the "property of natural or social systems that protects their future integrity, function and productivity." Part II., "Family Farms in Rural Communities," looks at the historical processes that established the family farm and community structure of rural North America. Models of sustainable farming and community are illustrated. Part III., "Rural People in the World," centers on the relationship of family farmers to other people in the nation and the world. Public policy effects on family farms and rural communities are also examined. Part IV., "Family Farms in the Future," envisions a sustainable future.

Each chapter is followed with questions for group discussion or individual reflection, making the book an ideal selection for church school classes or study groups. A section of resources lists books, magazines and periodicals, films and video tapes, and organizations.

The movement to develop sustainable agriculture began with secular organizations. The authors acknowledge this by freely quoting from nonchurch leaders and spokespersons, such as Marty Strange, Wendell Berry and Wes Jackson. Christian churches and Jewish organizations have been involved in helping address the human problems created by the economic crisis in agriculture. But they are also becoming more vocal about the connections between faith and farming practices. The churches have the potential to spread the principles of sustainability into communities all over the country, and several denominations seem to be considering that mission. Art Myers, in the second chapter of **Hope for the Family Farm,** states the church's responsibility very directly:

> The church must become more involved in advocating a just and sustainable agriculture. Needed is a theology of ecology which will become the basis for this sustainable agriculture and for a sustainable society.

The book gives one encouragement because it presents the views of dedicated people who have a firm understanding of the concept of sustainability. In the epilogue, Lavonne Platt describes their vision.

> We who have shared our thoughts in this book look toward a future for rural America that will be just, participatory, and sustainable. It will be a future in which rural people live in covenant with the Creator as responsible stewards of the land and its life-supporting gifts. In this future, people will recognize their relationships to one another in everwidening circles of community that link them together across geographic boundaries and generations of time. In such a future, people will expand their sense of community to recognize their relatedness not only with one another, but also with the other creatures with whom they share the gift of life.

Altars of Unhewn Stone: Science and the Earth by Wes Jackson is now available from Northpoint Press, 850 Talbot Avenue, Berkeley, CA 94706. $19.95 (cloth) - $9.95 (paper)

Edible Wild Plants of the Prairie: An Ethnobotanical Guide by Kelly Kindscher is now available from The Prairie Company, Rt. 2, Box 394A, Lawrence, Ks. 66044. $9.95 (paper)

New Roots for Agriculture

Mid-Summer Research Report

Jon Piper

One adjective that could characterize this year's research is "long-term," as we move conceptually from the millenia-old prairie to our field plots. The ultimate goal of our research is to develop a successful polyculture of perennial grain crops, using as our model for this new agricultural system the native prairies of the central United States. This perennial polyculture will be like the prairie in four ways.

1) It will comprise a diversity of plant species.
2) Nitrogen will enter the system via nitrogen-fixation; it and other nutrients will for the most part be retained and recycled.
3) This agriculture will maintain itself on solar energy, without a human-applied fossil fuel subsidy.
4) The polyculture will display a relatively high degree of biotic integration. Thus, we plan to incorporate primarily species adapted to the local grassland environment.

Such long-term phenomena as demographic changes, species replacements, succession, periodicity in fruiting and pest outbreaks, and changes in soil chemistry are typical of natural communities. Because we have a long-term perspective in our research, we have to consider many of these factors. For example, how does population structure of a perennial grain crop change over five or ten years? What are the patterns of species replacement in a polyculture? Does seed yield increase, decrease, or oscillate over time?

Specifically, our research is designed to explore four questions.

1) How do the annual and long-term seed yields of perennial plants compare with those of annual grain crops?
2) Can a polyculture of perennials outyield the same species in monoculture?
3) Can a polyculture of perennials maintain itself through nitrogen-fixation and solar energy?
4) Can a polyculture of perennials successfully control herbivores, diseases, and weeds?

Since April, interns and staff have been involved in ten "basic" and "agronomic" research projects in the field. In the study of native prairie, we are examining how species are able to co-occur in space and time and the productivity levels of this inherently sustainable ecosystem. We hope then to transfer the relevant principles of sustainability from this natural plant community to agroecosystems. Mark Gernes has been sampling prairie vegetation at three locations and keeping phenological records on emergence, flowering, fruiting, and senescence of plants within the prairie community. In tandem with Mark's study, Amy Kullenberg is sampling insects in the prairie and in the research plots to provide the third year of an insect survey, and Doug Dittman is monitoring changes in soils from sites in prairie and experimental plots. Doug hopes to document the soil similarities and differences between our research plots and the native vegetation.

Peter Kulakow is overseeing our crop development research, which involves four perennial species and a hybrid. Eventually, we may incorporate these plants in a successful polyculture. Veronica Mecko-Ray and Perri Butler are responsible for maintaining newly-established germplasm accessions of *Desmanthus illinoensis* (Illinois bundleflower) and *Leymus racemosus* (wild-rye), respectively. These plots are important as the success of any breeding program depends upon the genetic diversity of its breeding stock. Our work with *Tripsacum dactyloides* (eastern gama grass) is continuing as Mary Handley and Patti Boehner examine the effects of fungal and insect pests on seed production in both pistillate and normal varieties of this species. Jess Ennis is evaluating crosses between dwarf *Sorghum bicolor* (milo) and *S. halepense* (Johnsongrass) to produce a winter-hardy grain sorghum. This fall, they will examine offspring from numerous parents for the production of overwintering rhizomes. Roger Liebovitz is measuring seed yields in three-year-old plots of *D. illinoensis*, *L. racemosus*,

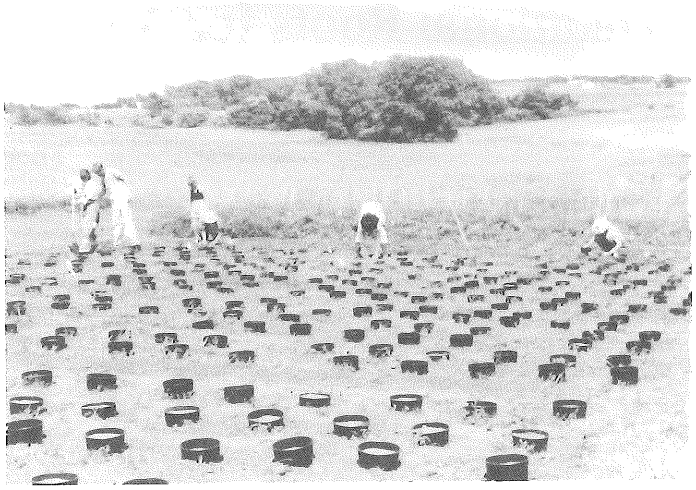
Peter Kulako

and *Helianthus maximilianii* (Maximilian sunflower). This study is keeping the interns very busy, as the *Leymus* harvest was completed in early July, the bundleflower harvest began in late July, and the sunflower harvest will commence in August. This year, some of our Illinois bundleflower plants are the largest I've ever seen, over two meters high! Bruce Kendall's project, a polyculture of *D. illinoensis*, *L. racemosus* and *T. dactyloides*, brings our research full circle as this plot constitutes a possible "domestic prairie." Within this plot, Bruce is examining how the three species, a legume, a cool-season grass, and a warm-season grass, differ in morphology and seasonal patterns of flowering and fruiting. He is also studying which of these species grow best together.

Finally, Randy Kempa is performing some much-needed housework as he develops a permanent cataloging and storage system for seed harvested from our research plots and the Herbary.

Historically, long-term perspectives have not guided agricultural policy and research in the United States. Yet, long-term studies of the sort we have undertaken are crucial to research in sustainable agriculture as we work to reduce our dependence on high-input annual grain monocultures and secure a future for our children.

Scientists from Pioneer Seed International (P) toured the research plots at The Land on June 26. From l. to r.: Peter Kulakow, Rob Fincher (P),James Henson (Kerr Center), Candy Gardner (P), Wes Jackson, Dale Millis (P), Mary Handley, Tony Cavalieri (P), Howie Smith (P).



Interns bury plastic pots into which sorghum will be planted. In late summer, these pots will be removed, and the soil will be washed from plant roots to check for the production of rhizomes by milo/Johnsongrass hybrids.

1986 RESEARCH SUPPLEMENT AVAILABLE

The papers contained in this third **LAND REPORT RESEARCH SUPPLEMENT** present detailed results from the 1986 field season. Papers in this volume range from studies in basic prairie ecology to the current status of our work in the development of perennial grain crops. The cost per copy is $1.75 postpaid. Write to THE LAND REPORT RESEARCH SUPPLEMENT, 2440 E. Water Well Rd., Salina, Kansas 67401.

In addition, we have available the following reprints:

--Mary Bruns, 1983. "Illinois Bundleflower: a Perennial Food or Feed Crop?" **The Land Report**, 25:6-9.

--Brad Burritt, 1986. "Leymus: A Plant with a History of Human Use," **The Land Report**, 28: 10-12.

--Dennis Rinehart, 1986. "Sorghum: a Perennial Future?" **The Land Report**, 28: 12-14.

For each reprint, please enclose $.25.

RESEARCH STAFF MEMBERS PRESENT PAPERS

Jon Piper and Mark Gernes attended the 38th annual American Institute of Biological Sciences (AIBS) Meeting held August 9-13 in Columbus, Ohio. Jon presented a paper summarizing the first year results of the prairie vegetation study entitled, "The Prairie as a Model for Sustainable Agriculture: Some Preliminary Investigations." Mark gave a paper, co-authored with James Henson and Juli Kois, which covered the first two years' study of density dynamics and cultural practices in Maximillian sunflower. The paper was entitled "Relationships of Cultural Practices with Stem Density and Yield Components in *Helianthus maximiliani Schrad.*"

Peter Kulakow will attend the American Society of Agronomy meetings in Atlanta, Georgia, November 29-December 4. He will present a paper, co-authored with Jon Piper, about research at The Land Institute in the poster session on sustainable agriculture.

Traditional Roots for Agriculture

Diversity: Corn, Convolvulus and Coons

Thom Leonard

At warm-up sessions with visitors present, we each in turn introduce ourselves, telling something of our background and of our work at the Land. I have several times taken small pleasure in saying, "I grow annuals in monoculture at The Land." On occasion, usually with hoe in hand, Randy Kempa has reminded me that I only try to grow just one species in my corn plots. Despite my best efforts and those of the crack intern weeding crew, a few other plant species manage to sneak in, most notably *Convolvulus arvensis* and *Amaranthus retroflexus*, bindweed and redroot pigweed. With persistent cultivation, we have managed to virtually eliminate the pigweed, leaving, in effect, a botanic biculture of *C. arvensis* and *Zea mays*.

Carl Sauer lauded the squash-beans-maize triculture of the Native American farmers as forming "a symbiotic complex, without an equal elsewhere. The corn plants grow tall and have first claim on sunlight and moisture. The beans climb up the corn stalks for their share of light; their roots support colonies of nitrogen-fixing bacteria. The squashes or pumpkins mainly grow prone to the ground and complete the ground cover.[1]" Field bindweed will both climb the cornstalks and form a densely matted ground cover. Nitrogen in the Grain Exchange corn plots was adequately provided this year by last year's alfalfa in the rotation. Our biculture fills the remainder of Sauer's functions, and utilizes a perennial, bindweed, in place of the natives' annual beans. One might argue that we have but one useful crop, where the traditional tri-culture yielded three edible harvests. We must ask whether our goal is maximum production of economic crops or the establishment of polycultures that require a minimum of inputs and employ perennials.

There are two other species present, representative of the other major taxonomic kingdom, that play a significant role in these supposedly monocultural corn plots at the Land. Of these two, *Heliothis armigera* exists at a much higher population level, with at least one individual present for each *Zea mays* plant. The corn earworm plays a further role in increasing the species diversity by creating an environment suitable for fungal growth on the maturing fruits of the dominant species and by introducing spores of at least two species of fungi, yet to be identified by our plant pathologist, Mary Handley. Granted, this increase in diversity comes at a sacrifice in yield, but again we must consider whether diversity or economic production is the goal of our work here at the Land Institute.

The other important species in our polycultural corn plots this year, *Procyon lotor*, does not actually live entirely within the bounds of the plots, but rather includes them in its range, visiting only nocturnally and then only when the grain is in the milk stage and perhaps for a few days after that. Despite our best efforts, *P. lotor*, like *C. arvensis*, has managed to sneak into the plots, foiling all attempts to maintain a monoculture and eliminate raccoons from the species mix.

Because the raccoon provides only fleeting and temporary ground cover, and that only at night when it is least needed, because its manurial contributions to the corn plots are less than its nutrient harvest, and because it introduces no significant diversity beyond itself, we have continued our best efforts to exclude this species from the plots. But, alas, with only limited success.

Our first attempt was to surround the hilltop corn plots with two strands of electrified wire. I had been assured by a local gardener that this was the only sure way to keep 'coons out of the corn patch. When I asked why there was no corn in his garden he confided that he couldn't stand to hurt the poor little things. We'd already decided that harvesting seed from these thirty-odd open-pollinated maize varieties was worth two of us hand pollinating every day for six weeks. No, we hadn't spent endless hours in the sun and wind with scissors, staplers, pollen masks, and assorted colors and sizes of bags stuck in pockets and gripped between teeth while tottering on tall ladders just to provide midnight snacks for a few

electro-shock therapy in behavior modification to these little thieves get in my way now. Ah, smug success. The first morning after the wire was up and hot there was no new damage to the corn.

Garrison Wilkes has said that "the genetic heritage of a millennium can disappear in a single bowl of porridge."[2] I thought of this when, by week's end, there was fresh damage and a significant percentage of the world's stock of Grain Exchange accession number zm0024 had become raccoon food. So after determining that the 'coons had gone either over or under, we lowered the bottom wire and added a third on top. Surely nothing could penetrate this. And it seemed nothing did.

By this time the sweet corn in the Land's garden was ripening. I began to suspect that perhaps there was some correlation between the lack of fresh damage in the Grain Exchange's electrified compound and the nightly raids on our lunch supply; that perhaps *P. lotor* saw no reason to risk ten amps for mealy old Indian corn when she or he could feast on supersweet to heart's content. This suspicion was strengthened by the raccoon dining pattern at another corn planting among the research plots on the 160 acres. The patch had a panhandle of four rows, 25 feet long, that was inconvenient to fit within the three wires that enclosed the main body of the planting. All the ears outside the fence in the panhandle were stripped before the invaders braved the hot wire and began on the crop in the main patch within. If there's food as good or better outside, why cross the line? After a couple of raids across the wire, they must have decided that the corn was too far along and moved on to more succulent fare.

Dana took another tack to protect the sweet corn in our continuing game with the raccoons. Some gardeners insist that if you leave a radio going all night in the corn patch, the 'coons will stay away. Now this same gardener, who would rather not have corn than buzz the poor innocents, had tried the radio method, too. Depending upon what station you tune to, I'm not so sure that the radio may not cause the raccoons more pain than a hot fence. Anyway, it worked great for him until the batteries ran down one night, and the raccoons discovered that this was no person out there talking all night and playing music, just a plastic box with funny round knobs and a few buttons. They were back for the rest of the season, radio blaring or no.

Dana was forewarned and bought two extra sets of batteries and was prepared to change them at regular intervals. There it was in the middle of the sweet corn patch, enthroned on a cardboard box: the $12.95 special from K-Mart, playing your favorite rock tunes all night long. But the 'coons still came (Dana thinks the coons came earlier in the evening, before she put out the radio) and some of the corn still disappeared. One morning, I found the box tuned to some jazz station in Kansas City. Sorry I missed the party!

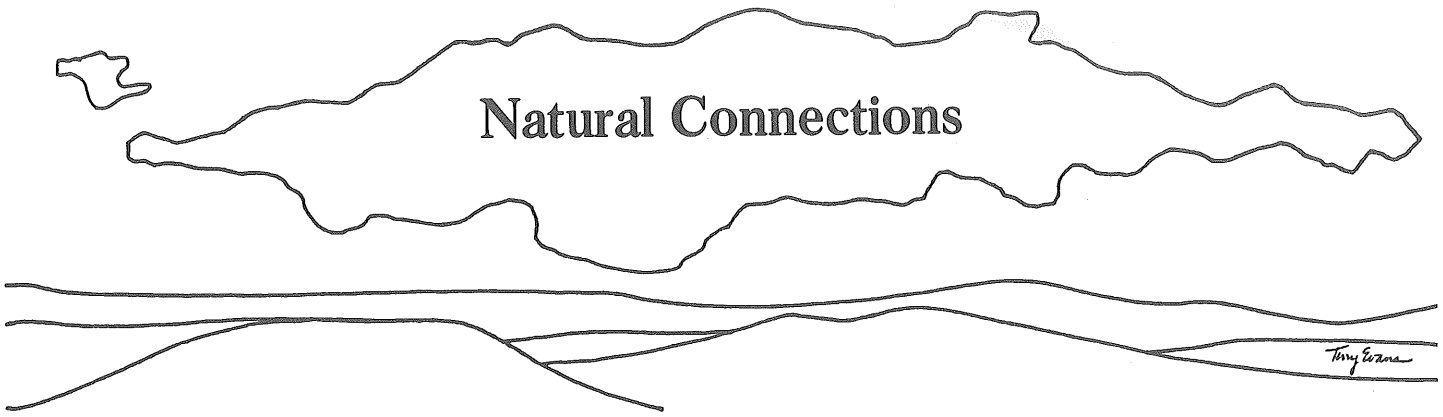
Carole Gernes pollinates corn in Thom's plots.

In the middle of all this came a letter including three tips on how to keep raccoons out of the garden. One slips my mind, the second was the radio trick, and the third was to plant melons and squash and pumpkins around your corn. Raccoons, so the author wrote, don't like to walk on the leaves and vines and won't cross the border for the corn. So how does that explain how my biggest, sweetest melon, right in the middle of the melon patch, was opened and eaten and surrounded by raccoon tracks? Then came the final word on raccoon control in sweet corn. In the August issue of Rodale's **Organic Gardening** a reader from New England wrote that he had protected his corn for fifteen years with a three-foot high fence of black plastic that extended another foot across the ground on the outside of the fence. Doug Dittman's prediction would probably hold true if we tried this on our Kansas 'coons: "If you'd leave the hose out there, too, they could make a water slide."

I'm convinced that despite all attempts to the contrary, diversity prevails. Next year I'll plant melons around the sweet corn, provide a radio and a compact disk player, black plastic and water, and let 'em party. I'll plant land races of wheat in the Grain Exchange preservation plots and hope the raccoons don't start to make cookies!

REFERENCES AND NOTES

1. Carl O. Sauer, 1969. **Seeds, Spades, Hearths, and Herds**, MIT Press, Cambridge, Massachusetts, p. 64.
2. Garrison Wilkes, quoted in Noel D. Vietmeyer, "A Wild Relative May Give Corn Perennial Genes," **Smithsonian**, December 1979.



Concepts of Time

Bruce Kendall

As we wrestle with the environmental problems that seem to crop up more and more frequently in our society, we have turned to the biological sciences to help us. In particular, ecology has provided many clues of how we affect the environment and how our actions can be compounded and magnified, often to our own detriment. But in order to apply this biological perspective to solve environmental problems, we need to have a broader concept of time.

Time implies change (if nothing ever changed, time would have no meaning). We can divide change into three general categories. In the world of the higher plants and animals, there is catastrophic change, which takes place over the course of a few years (or less).[1] Successional change occurs over the course of a century, or a human lifetime. And finally, evolutionary change occurs over the course of a millennium or more. This is not to say that only these sorts of changes occur over those time periods, but these are the general sorts of ecological change that characterize them. Some successional change occurs in less than a century, for example, some in more; and there are changes that occur over that period which are not successional. But successional change is characteristic of a century, and it is useful to equate the two.

In our modern culture, there are analogues to the first and second types of change: political and historical change. But there is no human analogue to evolutionary change. We are most comfortable with the political timeframe: we use it constantly. We can understand the historical timeframe, although we usually choose to ignore it. But we seem to be incapable of understanding the evolutionary timeframe.[2]

What does this mean? All organisms are bundles of physical and behavioral traits, expressions of adaptations acquired by the species through interactions with the environment, and subsequently fixed in their gene pools.[3] In an ecosystem, each organism can be so described. But how did it come to pass, this intricate balance among thousands of individual traits that we call ecology? How else but through evolution, through the slow changes that occur in a population over hundreds and thousands of years. So without an understanding of its evolutionary history, we cannot comprehend an ecosystem in a truly ecological sense: it is still and always changing, and the dynamics of that change are just as important as the dynamics of the interactions among individuals in the present, especially if we want to introduce catastrophic (political) change into the system.

In most mature ecosystems the populations have evolved together, in balance, adapting to slow climatic or physical changes, or merely becoming better adapted to the constraints of their environment. This evolutionary change is slow and often imperceptible to the human observer. But when rapid, catastrophic change is introduced, through the elimination of a major species, or the change of the physical environmment by volcano or bulldozer, rapid "evolution" of the local populations will follow, as only those individuals which can survive and reproduce will contribute to the genepool of future generations (there will also be new species migrating into the area). But to return to a stable system of organisms under the new environmental constraints may require many generations of evolution.

Consider what happens when we do not take the evolutionary timescale into account. In his essay "Thinking Like a Mountain," Aldo Leopold[4] observes the phenomenon of wolf extermination. The rancher sees the wolf as a threat to his cattle on the nearby range, and, thinking of a lifetime's livelihood, says that wolf extermination is good. The hunter sees the wolf as a threat to game, and, thinking of next year's recreation, says that wolf extermination is good. The deer sees the wolf as a threat to life, and, thinking of tomorrow's grazing, would say that wolf extermination is good. But what of the mountain? The mountain sees the wolf as an integral and essential part of the dynamic and changing ecosystem which thrives on the mountain's slopes, and, thinking of the continued existence of this ecosystem and itself, says that wolf extermination is bad.

We exterminate the wolf. The deer popula-

tion explodes, eating almost all of the vegetation. The cattle population expands, overgrazing and leaving bare, dry, dusty soil. The deer starve. The mountain itself erodes.

The deer dies, tomorrow's existence gone. The hunter's recreation is a travesty, hunting sickened creatures in a devastated environment. The rancher's livelihood blows away. The mountain washes away and carries with it the future of a once-flourishing ecosystem. "Only the mountain has lived long enough to listen objectively to the howl of a wolf." [5]

The many "environmental crises" which have come to light in the past few decades are often explained as "too much, too often": an issue of power. But that is not the cause, only the symptom. Underlying it is the fact that we know not what we do. As a body politic, we do not, we will not, see that nuclear power plants require radioactive wastes leaking into the groundwater for the next thousand years, for example, or that the topsoil lost in fifty years of current farming practices will require thousands of years to be replaced. We, policy makers and common citizens alike, have little or no sense of our connections through time with the world to come.

If we want to maintain a species in a landscape, we must not change the environment faster than it can evolve. Conversely, when we make a change in the environment, we need to know not only what will happen tomorrow, in the political timeframe, but also what will happen in the evolutionary timeframe. We need to recognize, for example, that certain species are better adapted to disturbed areas, and as the number of disturbed areas increases, these species will come to predominate in our environment.[6] Moreover, the continuous existence of large disturbed areas, in which weedy species flourish, will promote the further evolution, to fit that environment, of "super-weeds" which are even more noxious than the ones we now have.

But a bird is just a bird to many people; this is an attitude we must deal with. They see no loss when the meadowlark is replaced by the English sparrow, although their lives may be the poorer for it. However, the criterion of adaptation to an environment applies to the species *Homo sapiens* as well. It is true that we can create our own environments, reducing our dependence on the constraints of the natural one, as when we make clothes and build houses so that we can live in cold climates. However, we are not freed from all of the constraints of our natural environment, particularly in our needs for food, air and water. We are putting the same sort of pressures on our agricultural and living environments as we are on wild ones, with potentially detrimental effects on us.

Even our artificial environments are changing faster than we can keep up. Much of the man-made environment is no longer designed to be an optimal fit to our bundle of adaptations; rather it is designed for optimal efficiency of production and consumption. Eventually, the human species could evolve adaptations to fit this environment, in the evolutionary timescale. But in the meantime, untold billions of individuals would suffer from living in an environment to which they are not adapted. Imagine the lion pacing back and forth in his cage. "Nothing is as ridiculous, as pathetic, as obscene as an organism out of context." [7] Is there any way to justify that cost for the profit and pleasure of a few in the present? In fact, given the cruelty of placing an individual in an environment to which it not adapted, can we ever justify making environmental changes in the political timeframe that will require the evolutionary timeframe for satisfactory adaptation? Before this question can even be addressed, an understanding of and an ability to think in the evolutionary timeframe is crucial.

I am not calling for an end to all human activity which has long term consequences. But if we take into conscious consideration the evolutionary ramifications of our actions, if we place the same importance on these ramifications as we already do on the political ones, then we are more likely to avoid those actions which have only frivolous benefits to start with. If we care about the future of our kin, the future of our society, the future of the human race, the future of the very biotic community, to do anything else is gross irresponsibility. Ignorance does not absolve us of our sins.

"Only the mountain has lived long enough..." But we, too, live a long time. Through written record, our memory extends back several thousand years. Through imagination, our vision extends far into the future. We have the tools to start thinking on an evolutionary timescale. We need only learn to use them.

REFERENCES AND NOTES

1. "Catastrophe: . . . a violent and sudden change in the feature of the earth." **Webster's Third New International Dictionary**, 1961 (G. and C. Merriam Co., Springfield, MA), p. 351.
2. This tripartite division of time, together with the concept of the evolutionary timescale, was the original germ of this article. They came from Kenneth A. Dahlberg, 1979. **Beyond the Green Revolution** (Plenum Press, New York), pp. 76-89.
3. Daniel G. Kozlovski, 1974. **An Ecological and Evolutionary Ethic** (Prentice-Hall, Englewood Cliffs, NJ), p.9. The spirit of this phrase is Kozlovski's. I have changed it to make the use of terminology more precise. This little book of essays also provided much of the early inspiration for this essay.
4. Aldo Leopold, 1966. **A Sand County Almanac** (Ballantine Books, New York), pp. 137-141.
5. Leopold, p. 137.
6. For a good discussion of this point, see Reed F. Noss, 1987. "Do We Really Want Diversity?" **Whole Earth Review**, no. 55, pp. 126-128.
7. Kozlovski, p. 51.

Marooned

She is aground,
here on the prairie,
where she came to escape
the sea, the cold
fjords that cut deep,
sucking at the heart.

Here there is flatness
and the wide empty sky,
where tumbleweeds
pile up in the windbreak
and the rolling,
heavy-headed wheat is bleached
by late July.

Here are storms
breaking in from the west,
nothing but waves
of grass
from here to the Rockies--
grass and the wind,
the eternal wind.

Now the shadow
of the new silo lies down
over her
like a tombstone,
bearing her name.

In its island
of trees
the small house stands,
shipwrecked,
in the heavy trembling air.
The horizon dissolves in dust
as gulls scream over the field.

She shivers in the heat
and knows the sea
again.

Iowa Immigrant

In the dark, hardwood hills of Tama County,
she sees Czechoslovakia gone wild,
as though that peopled land she'd known
had been abandoned to the trees
or she were catapulted back
before the human
hand had made a human world.

She stares through tangled branches.
How far she has come for firewood
and enough land
to make a living.
Sad shapes hang like ghosts
In the air before her:
her mother in the old country
gleaning kindling
from a rich man's land. her father
dividing his small acreage
among four sons.

Always she hears the songs
that drew needles and bright thread
through cloth, songs
that quickened the harvest rhythm
of slashing sythes.

Now as she buries
in this new ground
the seeds she brought from home,
her song is thin against the silence,
But in her ears, voices distant
as the not yet born
rise to sing the missing parts.

She hears a harmony
she will have to make, herself,
in this new place,
or die.

Nancy Paddock, the author of the play, **Planting in the Dust**, is also a poet. A collection of her poems, **A Dark Light**, was published in 1978 (Vanilla Press, Minneapolis, MN). She has been a poet-in-residence in several Minnesota schools. Stories she heard while involved in an oral history project inspired the poems on this page.

The Role of Women Has Changed, and my Husband Doesn't Want Pie

Perdita Butler
Patricia Boehner
Amy Kullenberg
Veronica Mecko-Ray

We four women interns decided to co-author an article about women in American agriculture. Our purposes for the joint effort were to strengthen our skills in group communication and cooperation and to learn more about women, who, in general, are integral to farming, but whose views concerns and qualities are not often articulated.

It became clear that we had no common definition of what constituted a "farm woman." Must she be a wife, a mother, a gardener? Could she have a professional career or be employed somewhere off the farm? Could she live on a ranch, raising cattle to sell instead of crops? Rather than try to narrow down the definition and do a study to report facts and statistics on farm women, we decided it would be more interesting and educational for us to meet some "farm women."

We arranged interviews with four women in the Salina area. From the tape recorded interviews, we juxtaposed the women's responses in dialogue form as if they were all talking to each other. Though fictitious names are used, we have kept the content as accurate as possible, making alterations only to present the material in a more easily readable style or organize it under certain topic headings.

This issue of **The Land Report** contains half of the transcribed interviews. Look for the second half in issue number 31.

We wish to thank the four women who opened their lives to us and generously shared their thoughts and experiences. They helped us gain a much better understanding of American farm women, both present and past. We hope readers of **The Land Report** will also enjoy becoming acquainted with them. We are pleased to introduce the four farm women in order of their appearance in the dialogue.

--SHIRLEY: age 51, works for the Soil Conservation Service, has grown children.
--BEA: age 71, now retired from the farm.
--REBECCA: age 27, a city girl who married a farmer and has pre-school children.
--LYNN: age 37, married to a rancher in partnership with his father and brother, mother of two daughters active in 4-H.

GETTING STARTED IN FARMING

SHIRLEY: I've heard girls say, "Oh, I'd never marry a farmer." These are girls who have grown up on a farm! But I've enjoyed it; I think it's a fun way of life. Ed, my husband, and I started farming when we were still wet behind the ears!

BEA: We started out almost like the pioneers did. It was during the Depression, a pretty rough time. My husband, Will, worked labor work when he wasn't on the farm in the winter. He helped a brick layer; he carried cement and mortar. The bricklayer was a farmer, too.

REBECCA: Brad, my husband, farmed with his grandfather, and when he was ten, he started going out on the tractor. I guess that's when he knew what he wanted to do. I can remember him having eight cows, and going with him to feed. We started from scratch. We bought a tractor. And then we started a family.

LYNN: Greg's job took us to southwestern Kansas. He managed a registered Hereford herd out there for six years. And then the partnership out there dissolved. My husband and his brother bought some of their cattle and brought them back here. My husband grew up on this place, and his parents still live here.

BEA: I was also raised on a farm, right near here. First, we had 160 acres. Then my dad bought an 80, and then it seems like he farmed another 80, so he had 320 aacres in all. It was just a family farm with wheat, but we were getting into corn and other crops, too. We had a little pasture with cows and chickens, the whole bit, you know. It was on a small scale compared to what you'd think of as a farm now. Of course, then it was pretty much average size.

REBECCA: Now it seems like the average size is bigger; it has to be. Brad and I farm around 600 acres. Of that 600 we own less than 80 acres, and of that there's only 63 tillable acres and the rest is pasture. We rent the rest through his grandma and some other people. But we did buy our house and the land by it.

SHIRLEY: Our farm is 1400 acres. That's

including the rented land. We started with a half-section, 320 acres, and a lot of this place is range land.

LYNN: We've got about 3000 acres, so there's a lot of pasture land. I grew up on a farm, too, but it was very small scale to what I'm on now. We didn't have livestock to speak of, just had a couple of cows, so I'm learning a lot about cattle here on our ranch. Most of our land is leased; we don't own our land yet. We lease part of our land from the government by bids. It's tricky, because when you put them in, you don't know the price of the other bids. You may bid awfully high and get it, or you may bid pretty low and get lucky and get it.

BEA: I've heard about those government bids. But you know, Lynn, it's hard to buy land nowadays, compared to when we started farming. It's ridiculous. Our land was appraised for $400 an acre for tax purposes, and then some land right next to it was going for $1000 an acre. You couldn't even buy a farm like ours today. We inherited it from our folks. For a long time, you've always had to have help to get started farming. It's the ones who have their own land to start with, the ones who inherited it, they're the ones that are able to stay in I would say.

REBECCA: Well, we're making it, and we didn't really have any help getting started. We used Brad's grandpa's tractor once in a while, but we never just stepped into any land. Every year it gets better financially, and we get more paid off. But we did a lot of the work ourselves. Most of the people we know rent, though; it's common for folks to rent land.

SHIRLEY: One of the aspects of renting that's gotton to be terrible is renting land under another's nose. It's nothing for one farmer to go and talk to another farmer's landlord and try to rent his land away. That never ever happened in my Dad's time. We may rent a lot of land but we own quite a bit, about 800 acres. And my husband will say, "One thing I can't understand is how these people can go and try to rent somebody's land away from them. I've never done that, ever." And that's good. I'm proud of him for that.

FARM WORK AND FARM WOMEN'S WORK

REBECCA: On our farm, we have wheat, milo, cane and cane silage from sorghum, soybeans and hay to keep us busy. And then we have quite a few cows, about 150, and Brad has a couple of bucket calves that he's been raising to sell in the winter. He says he would like to get a hog just to butcher, but it's too much time and trouble. He has enough to do in the winter with cattle, and in the summer he's busy in the field.

LYNN: On the ranch there's the vaccinating, de-horning, artificially inseminating, and preparation for showing our cattle. We also grow wheat and alfalfa. But Greg and his brother just love it! Their dad still works out here too--he's out there now driving the tractor in the west field. I think they're maybe above-average hard workers. A friend used to say about Greg, "He always puts in an eight hour day, eight in the morning and eight in the afternoon."

BEA: Well, we're not that busy anymore because we are retired and don't farm it ourselves. But we used to be busy. We used to do just about everything. We had wheat, oats, alfalfa, and corn, although our corn was never very good. Wheat was always the best. We had a garden and canned out of it every year, because you didn't buy things out of the stores like you do now. We also had an orchard. In the wintertime we canned meat, too, beef, pork and lamb. We had a nice little cellar and pantry. My dad was mostly into sheep and just a few cows for milk and butter. Of course we didn't have a refrigerator. And we didn't have a telephone, or electricity or a bathroom or drinking water. We caught rain water for drinking.

REBECCA: I don't have many farm chores. I might step outside for awhile, but I don't leave the house because I don't feel comfortable leaving the children alone. However, before we had the children, I often went out with Brad to feed the cattle in the wintertime and bring in the bales of hay. I remember carrying five gallon buckets of water clear across the yard here in snow up to my knees. I've done quite a bit: I've baled, I've disked, but he won't let me plant because I plant uneven rows. I say the plants know how to grow anyway!

BEA: I seldom drove the tractors or worked in the fields. The boys pretty much did all that work. I helped out some during harvest, but it wasn't till the boys both left that I went out and helped Will.

SHIRLEY: Like Bea, I didn't do too much field-work on the home place, only during harvest. I basically didn't help my dad because my brother was just a year and a half older. I've done more of the field work on our own place, but I didn't do too much of that when the children were young either.

LYNN: In the summertime, Greg is usually up and out earlier. I don't help too often. If it was just Gregg and I on the farm, I'd probably be doing a lot more, maybe more of the bookwork or the fieldwork. Greg doesn't mind me being out there, but, you know, he and his brother just haven't let us do any of the plowing or disking. They've always been there to do that part. As far as making decisions, Greg and his brother and father pretty much do that. They kinda know

what they want to do with the land and the cattle, and they talk it over.

REBECCA: Well, if Brad wants to buy something he won't buy it without my permission. But I don't think he'll ever go and buy another combine with me along! Last harvest we started cutting, and we didn't even make a full round in two days because the combine kept breaking down. I said, "Forget it, Brad. Let's do something about this," so we did. I think I was probably embarrassing. I asked too many questions.

BEA: Oh, I think Will and I always talked. We had a lot of decisions to make, and a pretty rough time when we started up.

SHIRLEY: Ed and I are very much into making decisions together. In fact, today before he went out, he sat down with me and his little map and we tried to figure out what he had to work and what part of his farm he is going to work--how many acres.

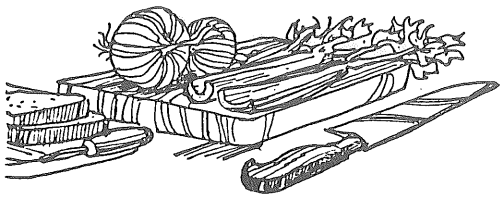
REBECCA: Brad talks to me about his work. I'm glad because that way if we're ever out with other people, than I at least know what the conversation is about. Unlike some friends I know, whose husbands don't talk to them at all about their work. One will say her husband is out disking, but not really know what that is. At least I know what disking is; I've done that before. Brad talks a lot so he tells me a lot.

LYNN: I guess I just don't get quite as involved with the farm as I'd like. I support my husband, but his work is kind of foreign to me. I don't know if I could handle all the decisions on my own that Gregg and his brother make.

SHIRLEY: Many times I've considered going to the ASCS office to do the business instead of Ed. But can you believe it? I never have gone. Farm programs are the one area that I don't know much about. But I do know about fixing up dinner for ten hungry men! I used to bring full meals to the field, and when my son was home, they just used to never quit combining. I thought that they had to have a warm meal and pie. But when I worked at the sale barn and I had to stay late and balance the receipts, my son David would fix dinner for the family. When the kids had this responsibility, they realized what it was like without mom around and that they had been kind of spoiled.

BEA: Back in my childhood the men always came to the house; we used to have several men at the table. But when I was raising my family, I would most times take food to the field.

REBECCA: I take care of all the cooking; my husband just won't cook. If I have to go for a week or so, he'll eat at his mom's or eat chips. But during the wintertime when I'm working, he vacuums a few times and helps with the dishes.



SHIRLEY: Good for you. Because if women are out there working, by golly men can take the vacuum and vacuum too. My son helps, and Debra my daugher-in-law keeps saying, "Gosh, you must have brought him up right." If I get home from working all day long and then get out and mow the grass, I'm not going to feel sorry for my husband when he comes home from riding in his air-conditioned tractor all day. The work load has changed now and my husband enjoys that I'm working. He always helps me clean. It's nothing for him now in the morning to throw in a load of clothes. But he never did that when the kids were little, and then I could have stood the help. But now the woman doesn't have to do all the housework while the man's out there making money--that's the way it used to be in the cave days! **The role of the woman has changed, and my husband doesn't want pie!**

BEA: Things have changed so much since when I was raising a family. Back then you were busy enough taking care of the family. It was hard work. I never did have another job because my husband always had two jobs. But I know it's tough on the farm nowadays. I wouldn't go against women working, but my husband has never accepted the idea. He says, "That's when it got bad, when momma went to town to go to work." But even then we had to supplement the farm income, and nowadays women are doing that.

LYNN: If I had a choice, I'd still be working at home, but farming isn't good income. I did go to secretarial school, and I met Greg on the first job. But I like being outside. When I was a secretary, those walls used to drive me nuts in the springtime. Now I'm a teacher's aide, and this job works out great because I can still do the things I like. I get summers off, and I'm home when the girls get home from school. Greg helps out a little--he makes breakfast for the girls before they go to school.

BEA: You women are all in the work force and you must have some college education too. In my day not many people even thought about college.

SHIRLEY: That's not so different from my experience either, Bea. Going to college was a good ideal, but nothing you had to do. Nowadays it seems there's an incredible pressure on kids to go. Anymore people don't ask what you're going to do after high school, but rather, what college you're going to. I didn't go to college and it's hard to get a job. I too chose to be home with my children when they were growing up. Now, with all the modern machinery, a lot of

farm women work, but I don't know how I could have. I didn't start working with the Soil Conservation Service until after my youngest was a freshman in high school. I thought it was real important for me to be around when the kids got home from school and not two hours later when I got home from work. I liked the old life when women were home. I prefer it. I also liked that Ed was around for the kids. He was always popping in and out, coming in for coffee or lunch. But now I work myself, and I see a lot of young mothers working, and it seems like today's economy demands it. Besides, I guess every woman has to decide for herself what she wants to do. No one else can make that decision.

REBECCA: I appreciate that, because I enjoy my kids and I enjoy my job too. I went to school for teacher's training. I wanted to work for the school system just because of the hours and periodic breaks. I love it. I feel like I need to be around other people and not just my kids all day. And honestly I have to say that my father worked 9-5 and he was always home in the evenings, whereas Brett is never home. He's always working in the field, and in the winter he works construction.

SHIRLEY: You know, the more I think about it, I realize that I spent as much time doing volunteer work as I spend time at my job now, so I was probably just as busy then too. So with a lot of women in the work force, what happens to all that unpaid but necessary work?

BEA: That's a good question. I know that with fewer women available for those clubs that do volunteer work, they just slowly die out. That's what happened to the ladies club in my hometown community, Poheta. And those women used to do things for the elderly and the sick.

SHIRLEY: Yes, when I wasn't working I used to go to a women's group at the church or Extension Homemaker's Unit. Now you can't even get women to help in the afternoon church group because most of them are working. And my friends that I used to see often? We never see each other!

LYNN: We used to have an organization, just the girls in the neighborhood, when we had little tiny babies or didn't have children yet. We'd go to a show once in awhile or just get together. But now that our children are in school, it's just too hard to squeeze it in. The Hereford organization has a women's auxiliary, and I've been the secretary of that for the last year.

SHIRLEY: I used to be involved with 4-H and helped the kids with their 4H projects. I'm not sure if I'd have had the time if I'd been working then. Lynn, you're helping your girls with 4H aren't you?

CHILDREN ON THE FARM

LYNN: Oh, yes! This summer is as busy as usual because of 4-H projects. Jenny's been raising a bucket calf since February, and Debbie is going to show one of her prize Herefords at the fair this year. I'm real proud of them both. I used to be a nervous wreck. But after four years, Debbie is getting to know the ropes of the show; she can go over there and at least lead the thing by herself without me wondering if it is gonna run away with her. This year when Jennie started with the calf, it seemed that she was going nowhere quickly, but now she's having some success at leading it.

SHIRLEY: My kids say that 4-H was good for them, especially because it helped their public speaking. But 4-H takes up all of your summer. I just have bad memories because the summers were hectic. You know, I think there are too many scheduled things for kids to do during the summer now. They have to play softball on the team and they have to have swimming lessons and music lessons. When I was growing up, we just got a softball game going in the neighbor's pasture and used cowchips for bases. We had time to just watch butterflies. Kids need time to be kids.

LYNN: But Shirley, you have to give your kids some opportunities to be with other kids their age and do some of the stuff other kids do. There just aren't that many farm neighbors anymore. Many of the farm houses are empty or childless, and so some of these structured events replace those spontaneous softball games.

REBECCA: Yes, and I really worry about my children because there are no young kids in the neighborhood. Being out here in the country, if they want to play with someone, I have to take them. We have friends with children their age, but they live six miles away. I've heard people say that farm life's the best life you can know, but what I'm thinking about mostly now is the kids. Who are they going to play with?

BEA: Well, I guess times really have changed. Our two boys loved the farm. They loved it for playing. When my boys were growing up, I just never worried about them having other boys to play with. But I distinctly remember one day my younger son came up to us and said that he would finish that year, but the next year he wasn't going back to his school. There were only four kids left in his class. Both my husband and I and our older son graduated from that high school, but times were changing and the people started to leave the small communities. We ended up sending our younger one to school in Salina, and they finally closed the old school down awhile back.

But farm kids have to work, and soon enough you'll see your kids up on a tractor or stacking bales. My sons were working with those Ford tractors when they were eleven.

LYNN: My daughter Jenny is getting involved in the cattle operation. I sure was surprised the other day when I found out that she was at the tail end of a cattle moving crew, just pushing 'em on--she enjoys that part. The girls helped with wheat harvest, and they help feed cattle as long as it doesn't interfere with their homework.

REBECCA: Look's like I can expect things to get even busier when my children get older. Will there be any time to see a movie or go on a vacation?

LYNN: Tonight the girls and I are going to see a show. We get out once in awhile to see a Walt Disney movie. But it's hard to make time to get away; Greg and I rarely see a show--maybe once a year. On weekends we rarely have time to squeeze in a nap. Usually we're out walking the steers or getting the cattle used to us that we're going enter in shows.

SHIRLEY: My husband and I have taken up golf and bicycling to help us get away from the farm for awhile. I really enjoy that. But something I miss are the vacations with the kids. They knew that after the fair and 4-H was over, then we could go on vacation.

BEA: I don't think we used to do much vacationing, but now that we're retired, we've been everywhere in the U.S., except for the Pacific northwest, and we've even been to Europe.

FAMILY AND NEIGHBORS

SHIRLEY: I think it's important to get out and see something. Rebecca, Brad, Ed and myself, we take care of each others' animals so we can all get away once in a while.

LYNN: It's hard when you've got livestock, but we arrange vacations around Hereford conventions and shows. Having three families to take care of the animals really helps.

REBECCA: My mom and dad are always out helping us. Mom has helped with harvest for five years now. Dad runs the combine for Brent. Mom babysits a lot for us, and so do Brad's parents. I'm glad they live pretty close.

LYNN: My mother-in-law and sister-in-law and I take turns fixing food for the guys sometimes. If one of us is helping out in the field, the other takes food over.

BEA: Neighbors were particularly important when my dad farmed. It was common for people to share equipment and to help each other out during harvest. And we always had a neighborhood club for the ladies. I remember once a farmer in our community got in an accident and couldn't work, so the men all got together and worked his fields, and the ladies club got together and made lunch.

SHIRLEY: What would we do without family and neighbors? Ed's mother or my mother kept my children when it was needed. Women will come together in the time of crisis. They'll turn back to the old ways. When someone dies in the community, I get up a big Swedish tea ring and bring it to the neighbor. And I never think anything of it, because that was bred into me from my mother. I thought that it was a tradition. But people started saying, "That Shirley, she's so busy but she always seems to find time to think of others." I think that's just what life is all about.

We will continue the dialogue among four Saline County farm women in the next issue of **The Land Report**, Number 31.

The Silos

Nancy Paddock

All week she watched
the silo grow from concrete staves.
He had to have it,
this seventh silo--
(each one larger than the last).
And now they line one side of the drive,
half-circling the old house
with a great question
she dares not ask.

That house
with its drafty kitchen and slant floors--
nothing but a shelter for the night
when no work can be done.
(Real time spent with machines.)
He said, when they were married,
eighteen years ago this spring,
he'd tear its boards to shedwood and kindling,
build her a real home
on the wooded knoll.

But now that hill is planted
straight in corn
rows up one side and down
and as the sky fades,
fragile as a broken
robin's egg,
silos loom around her
like black corridors
a woman could get lost in.

Friends of The Land

NAME_____

ADDRESS_____

_____

PHONE_____ DATE_____

CHECK CATEGORY OF CONTRIBUTION)
(Contributors receive **THE LAND REPORT**)

_____$15 _____$25 _____$50

_____$100 _____$500 _____Other

Subscription to **THE LAND REPORT**
_____$ 5 U.S. _____$10 Foreign

The Friends of The Land have been extremely important. They helped us keep going after a fire in 1976 by laboring to reconstruct our classroom building. Over the years they have donated materials, books, equipment and cash for general support. We need these Friends - and new Friends too- to continue our work.

The Land Institute is a private, education-research organization financed by personal contributions and grants from foundations. The broad-based support of individuals making annual contributions helps The Land in applying for financial support from foundations.

Won't you become a Friend of The Land by sending your donation? Contributors receive **THE LAND REPORT** and other occasional publications, plus notices of events sponsored by The Land Institute. The Land Institute is a non-profit organization, and gifts are tax deductible.

THE LAND INSTITUTE
2440 E. WATER WELL RD.
SALINA, KANSAS 67401

ADDRESS CORRECTION REQUESTED

NON PROFIT ORGANIZATION
U.S. POSTAGE PAID
PERMIT NO. 81
SALINA, KANSAS 67401

The Post Office does not forward 3rd class bulk mail. Please inform us if you change addresses. If 30 appears on your label, your subscription expires with this issue. **PLEASE RENEW NOW.**

IF YOU WANT TO VISIT THE LAND, please call or write ahead of time and make arrangements. Phone (913) 823-5376. Office hours are 8 to 5 on weekdays.

THE LAND INSTITUTE