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The Land Report

Agrarianism

The third of three special issues

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Cover: Paula Chamlee, *from the series High Plains Farm, Adrian, Texas, 1994*

Back Cover: Paula Chamlee, *from the series High Plains Farm, Adrian, Texas, 1994*

Above: Scott Jost, *Wahaub Prairie, The Land Institute, 1996*

Our Mission Statement

When people, land and community are as one, all three members prosper; when they relate not as members but as competing interests, all three are exploited. By consulting nature as the source and measure of that membership, The Land Institute seeks to develop an agriculture that will save soil from being lost or poisoned while promoting a community life at once prosperous and enduring.

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In Distrust of Movements

Wendell Berry

I am here today to give you my thoughts, and I must burden you as I have burdened myself with the knowledge that I speak from a local, some might say a provincial, point of view. When I try to identify myself to myself I realize that, in my most immediate reasons and affections, I am less than an American, less than a Kentuckian, less even than a Henry Countian, but am a man involved with and worrying about my family, my neighbors, and the land that is daily under my feet. It is this involvement that defines my citizenship in the larger entities. And so I will remember, and I ask you to remember, that I am not trying to say what is thinkable everywhere, but rather what it is possible to think on the westward bank of the lower Kentucky River in the summer of 1998.

Over the last 25 or 30 years I have been making and remaking different versions of the same argument. It is not "my" argument, really, but rather is one that I inherited from a long line of familial, neighborly, literary, and scientific ancestors. We could call it "the agrarian argument." This argument can be summed up in as many ways as it can be made. One way to sum it up is to say that we humans can escape neither our dependence on nature nor our responsibility to nature — and that, precisely because of this condition of dependence *and* responsibility, we are also dependent upon and responsible for human culture.

Food, as I have argued at length, is both a natural (which is to say a divine) gift and a cultural product. Because we do not live in the Garden of Eden, but must *use* land and water and plants and animals to produce food, we are at once dependent on and responsible to what we use. We must know both how to use and how to care for what we use. This knowledge is the basis of human culture. If we do not know how to adapt our desires, our methods, and our technology to the nature of the places in which we are working, if we cannot fit the farming to the farm or the forestry to the forest, so as to make it productive *and to keep it so*, that is a cultural failure of the grossest and most dangerous kind. Poverty and starvation also can be cultural products — if the culture is wrong.

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Though this argument, in my keeping, has lengthened and acquired branches, in its main assumptions it has stayed the same. What has changed — and I say this with a good deal of wonder and with much thankfulness — is the audience. Perhaps the audience will always include people who are not listening, or people who think the agrarian argument is merely an anachronism, a nuisance to be waved away, or a form of entertainment. But increasingly the audience also includes people who take this argument seriously, because they are involved in one or more of the tasks of agrarianism. They are trying to maintain a practical foothold on the earth for themselves or their families or their communities. They are trying to preserve and develop local land-based economies. They are trying to preserve or restore the health of local communities and ecosystems and watersheds. They are opposing the attempt of the great corporations to own and control all of Creation.

In short, the agrarian argument now has a significant number of friends. As the political and ecological abuses of the so-called global economy become more noticeable and more threatening, the agrarian argument is going to have more friends than it has now. This being so, maybe the advocate's task needs to change. Maybe now, instead of merely propounding (and repeating) the agrarian argument, the advocate must also try to see that this argument does not win friends too easily. I think, myself, that this is the case. The tasks of agrarianism that we have undertaken are not going to be finished for a long time. To preserve the remnants of agrarian life, to oppose the abuses of industrial land use and finally correct them, and to develop the locally adapted economies and cultures that are necessary to our survival will require many lifetimes of dedicated work. This work does not need friends with illusions. And so I would like to speak — in a friendly way, of course — out of my distrust of "movements."

I have had with my friend Wes Jackson a number of useful conversations about the necessity of getting out of movements — even movements that have seemed necessary and dear to us — when they have lapsed into self-righteousness and self-betrayal, as movements seem almost invariably to do. People in movements too readily learn to deny to others the rights and privileges they demand for themselves. They too easily become unable to mean their own language, as when a "peace movement" becomes violent. They often become too specialized, as if finally they cannot help taking refuge in the pinhole vision of the institutional intellectuals.

They almost always fail to be radical enough, dealing finally in effects rather than causes. Or they deal with single issues or single solutions, as if to assure themselves that they will not be radical enough.

And so I must declare my dissatisfaction with movements to promote soil conservation or clean water or clean air or wilderness preservation or sustainable agriculture or community health or the welfare of children. Worthy as these and other goals may be, they cannot be achieved alone. They cannot be responsibly advocated alone. I am dissatisfied with such efforts because they are too specialized, they are not comprehensive enough, they are not radical enough, they virtually predict their own failure by implying that we can remedy or control effects while leaving the causes in place. Ultimately, I think, they are insincere; they propose that the trouble is caused by *other* people; they would like to change policy but not behavior.

The worst danger may be that a movement will lose its language either to its own confusion about meaning and practice, or to preemption by its enemies. I remember, for example, my naive confusion at learning that it was possible for advocates of organic agriculture to look upon the "organic method" as an end in itself. To me, organic farming was attractive both as a way of conserving nature and as a strategy of survival for small farmers. Imagine my surprise in discovering that there could be huge "organic" monocultures. And so I was not too surprised by the recent attempt of the United States Department of Agriculture to appropriate the "organic" label for food irradiation, genetic engineering, and other desecrations of the corporate food economy. Once we allow our language to mean anything that anybody wants it to mean, it becomes impossible to mean what we say. When "homemade" ceases to mean neither more nor less than "made at home," then it means anything, which is to say that it means nothing. The same decay is at work on words such as "conservation," "sustainable," "safe," "natural," "healthful," "sanitary," and "organic." The use of such words now requires the most exacting control of context and the use immediately of illustrative examples.

Above: Paula Chamlee, *from the series High Plains Farm, 1996*

Real organic gardeners and farmers who market their produce locally are finding that, to a lot of people, "organic" means something like "trustworthy." And so, for a while, it will be useful for us to talk about the meaning and the economic usefulness of trust and trustworthiness. But we must be careful. Sooner or later,

Trust Us Global Foods, Inc., will be upon us, advertising safe, sanitary, natural food irradiation. And then we must be prepared to raise another standard and move on.

As you see, I have good reasons for declining to name the movement I think I am a part of. I call it The Nameless Movement for Better Ways of Doing — which I hope is too long and uncute to be used as a bumper sticker. I know that movements tend to die with their names and slogans, and I believe that this Nameless Movement needs to live on and on. I am reconciled to the likelihood that from time to time it will name itself and have slogans, but I am not going to see its slogans or call it by any of its names. After this speech, I intend to stop calling it The Nameless Movement for Better Ways of Doing, for fear it will become the NMBWD and acquire a headquarters and a budget and an inventory of T-shirts covered with language that in a few years will be mere spelling.

Let us suppose, then, that we have a Nameless Movement for Better Land Use and that we know we must try to keep it active, responsive, and intelligent for a long time. What must we do?

What we must do above all, I think, is try to see the problem in its full size and difficulty. If we are concerned about land abuse, then we must see that this is an economic problem. Every economy is, by definition, a land-using economy. If we are using our land wrong, then something is wrong with our economy. This is difficult. It becomes more difficult when we recognize that, in modern times, every one of us is a member of the economy to use the land (and the air, the water, and other natural gifts) on our behalf. Adequately supervising those proxies is at present impossible; withdrawing them is for virtually all of us, as things now stand, unthinkable.

But if we are concerned about land abuse, we have begun a profound work of economic criticism. Study of the history of land use (and any local history will do) informs us that we have had for a long time an economy that thrives by undermining its own foundations. Industrialism, which is the name of our economy, and which is now virtually the only economy of the world, has been from its beginnings in a state of riot. It is based squarely upon the principle of violence toward everything on which it depends, and it has not mattered whether the form of industrialism was communist or capitalist or whatever; the violence toward nature, human communities, traditional agriculture, local economies has been constant. The bad news is coming in, literally, from all over the world. Can such an economy somehow be fixed without being radically changed? I don't think it can.

The Captains of Industry have always counseled the rest of us to "be realistic." Let us, therefore, be realistic. Is it realistic to assume that the present economy would be just fine if only it would stop poisoning the air and water, or if only it would stop soil erosion, or if only it would stop degrading watersheds and forest ecosystems, or if only it would stop seducing children, or if only it would quit buying politicians, or if only it would give women and favored minorities an equitable share of the loot? Realism, I think, is a very limited program, but it informs us at least that we should not look for bird eggs in a cuckoo clock.

Or we can show the hopelessness of single-issue causes and single-issue movements by following a line of thought such as this: We need a continuous supply of uncontaminated water. Therefore, we need (among other things) soil-and-water-conserving ways of agriculture and forestry that are not dependent on monoculture, toxic chemicals, or the indifference and violence that always accompany big-scale industrial enterprises on the land. Therefore, we need diversified, small-scale land economies that are dependent on people. Therefore, we need people with the knowledge, skills, motives, and attitudes required by diversified, small-scale land economies. And all this is clear and comfortable enough, until we recognize the question we have come to: *Where are the people?*

Well, all of us who live in the suffering rural landscapes of the United States know that most people are available to those landscapes only recreationally. We see them bicycling or boating or hiking or camping or hunting or fishing or driving along and looking around. They do not, in Mary Austin's phrase, "summer and winter on the land." They are unacquainted with the land's human and natural economies. Though people have not progressed beyond the need to eat food and drink water and wear clothes and live in houses, most people have progressed beyond the domestic arts — the husbandry and wifery of the world — by which those needful things are produced and conserved. In fact, the comparative few who still practice that necessary husbandry and wifery often are inclined to apologize for doing so, having been carefully taught in our education system that those arts are degrading and unworthy of people's talents. Educated minds, in the modern era, are unlikely to know anything about food and drink, clothing and shelter. In merely taking these things for granted, the modern educated mind reveals itself also to be as superstitious a mind as ever has existed in the world. What could be more superstitious than the idea that money brings forth food?

I am not suggesting, of course, that everybody ought to be a farmer or a forester. Heaven forbid! I *am* suggesting that most people now are living on the far side of a broken connection, and that this is potentially catastrophic. Most people are now fed, clothed, and sheltered from sources, in nature and in the work of other people, toward which they feel no gratitude and

exercise no responsibility. There is no significant urban constituency, no formidable consumers' lobby, no noticeable political leadership, for good land use practices, for good farming and good forestry, for restoration of abused land, or for halting the destruction of land by so-called "development."

We are involved now in a profound failure of imagination. Most of us cannot imagine the wheat beyond the bread, or the farmer beyond the wheat, or the farm beyond the farmer, or the history (human or natural or sacred) beyond the farm. Most people cannot imagine the forest and the forest economy that produced their houses and furniture and paper; or the landscapes, the streams, and the weather that fill their pitchers and bathtubs and swimming pools with water. Most people appear to assume that when they have paid their money for these things they have entirely met their obligations. And that is, in fact, the conventional economic assumption. The problem is that it is possible to starve under the rule of the conventional economic assumption; some people are starving now under the rule of that assumption.

Money does not bring forth food. Neither does the technology of the food system. Food comes from nature and from the work of people. If the supply of food is to be continuous for a long time, then people must work in harmony with nature. That means that people must find the right answers to a lot of questions. The same applies to forestry and the possibility of a continuous supply of timber.

People grow the food that people eat. People produce the lumber that people use. People care properly or improperly for the forests and the farms that are the sources of those goods. People are necessarily at both ends of the process. The economy, always obsessed with its need to sell products, thinks obsessively and exclusively of the consumer. It mostly takes for granted or ignores those who do the damaging or the restorative and preserving work of agriculture and forestry. The economy pays poorly for this work, with the unsurprising result that the work is mostly done poorly. But here we must ask a very realistic economic question: Can we afford to have this work done poorly? Those of us who know something about land stewardship know that we cannot afford to pay poorly for it, because that means simply that we will not get it. And we know that we cannot afford land use without land stewardship.

One way we could describe the task ahead of us is by saying that we need to enlarge the consciousness and the conscience of the economy. Our economy needs to know — and care — what it is doing. This is revolutionary, of course, if you have a taste for revolution, but it is also merely a matter of common sense. How could anybody seriously object to the possibility that the economy might eventually come to know what it is doing?

Undoubtedly some people will want to start a movement to bring this about. They probably will call it the Movement to Teach the Economy What It Is Doing — the MTEWIID. Despite my very considerable uneasiness, I will agree to this, but on three conditions.

My first condition is that this movement should begin by giving up all hope and belief in piecemeal, one-shot solutions. The present scientific quest for odorless hog manure should give us sufficient proof that the specialist is no longer with us. Even now, after centuries of reductionist propaganda, the world is still intricate and vast, as dark as it is light, a place of mystery, where we cannot do one thing without doing many things, or put two things together without putting many things together. Water quality, for example, cannot be improved without improving farming and forestry, but farming and forestry cannot be improved without improving the education of consumers — and so on.

The proper business of a human economy is to make one whole thing of ourselves and this world. To make ourselves into a practical wholeness with the land under our feet is maybe not altogether possible (how would *we* know?) — but, as a goal, it at least carries us beyond *hubris*, beyond the utterly groundless assumption that we can subdivide our present great failure into a thousand separate problems that can be fixed by a thousand task forces of academic and bureaucratic specialists. That program has been given more than a fair chance to prove itself, and we ought to know by now that it won't work.

My second condition is that the people in this movement (the MTEWIID) should take full responsibility for themselves as members of the economy. If we are going to teach the economy what it is doing, then we need to learn what *we* are doing. This is going to have to be a private movement as well as a public one. If it is unrealistic to expect exploitive and wasteful industries to be conservers, then obviously we must lead in part the public life of complainers, petitioners, protesters, advocates and supporters of stricter regulations and saner policies. But that is not enough. If it is unrealistic to expect a bad economy to try to become a good one, then *we* must go to work to build a good economy. It is appropriate that this duty should fall to us, for good economic behavior is more possible for us than it is for the great corporations with their miseducated managers and their greedy and oblivious stockholders. Because it is possible for us, we must try in every way we can to make good economic sense in our own lives, in our households, and in our communities. We must do more for ourselves and our neighbors. We must learn to spend our money with our friends and not with our enemies. But to do this, it is necessary to renew local economies, and revive the domestic arts. In seeking to change our economic use of the world, we are seeking inescapably to change our

lives. The outward harmony that we desire between our economy and the world depends finally upon an inward harmony between our own hearts and the creative spirit that is the life of all creatures, a spirit as near us as our flesh and yet forever beyond the measures of this obsessively measuring age. We can grow good wheat and make good bread only if we understand that we do not live by bread alone.

My third condition is that this movement should content itself to be poor. We need to find cheap solutions, solutions within the reach of everybody, and the availability of a lot of money prevents the discovery of cheap solutions. The solutions of modern medicine and modern agriculture are all staggeringly expensive, and this is caused in part, and maybe altogether, because of the availability of huge sums of money for medical and agricultural research.

Too much money, moreover, attracts administrators and experts as sugar attracts ants — look at what is happening in our universities. We should not envy rich movements that are organized and led by an alternative bureaucracy living on the problems it is supposed to solve. We want a movement that is a movement because it is advanced by all its members in their daily lives.

Now, having completed this very formidable list of the problems and difficulties, fears and fearful hopes that lie ahead of us, I am relieved to see that I have been preparing myself all along to end by saying something cheerful. What I have been talking about is the possibility of renewing human respect for this earth and all the good, useful, and beautiful things that come from it. I have made it clear, I hope, that I don't think this respect can be adequately enacted or conveyed by tipping our hats to nature or by representing natural loveliness in art or by prayers of thanksgiving or by preserving tracts of wilderness — though I recommend all those things. The respect I mean can be given only by using well the world's goods that are given to us. This good use, which renews respect — which is the only currency, so to speak, of respect — also renews our pleasure. The callings and disciplines that I have spoken of as the domestic arts are stationed all along the way from the farm to the prepared dinner, from the forest to the dinner table, from stewardship of the land to hospitality to friends and strangers. These arts are as demanding and gratifying, as instructive and as pleasing as the so-called "fine arts." To learn them, to practice them, to honor and reward them is, I believe, the work that is our profoundest calling. Our reward is that they will enrich our lives and make us glad.

Above: Paula Chamlee, *from the series High Plains Farm, Adrian, Texas, 1994*

Breathing

Donald McCaig

I retired my eight-year-old Border Collie, Harry, from sheepdog trailing after a 600-yard uphill run when Harry collapsed. Turns out Harry's got a bad heart valve and when he's stressed Harry hasn't enough oxygen in his blood to think or attend or even walk straight.

Along with Harry's heart medicine the Virginia Tech veterinarians gave me a stern warning: no strenuous activity, keep this dog quiet!

But Harry is a sheepdog and sheepdogs are genetic workaholics and telling Harry "forget it," every time he asks, "We going to work today, Boss? Is this a work morning?" is intolerable.

For man and dog alike, there are things worse than death.

So I use Harry for light farmwork, here and there, bringing in the big flock for feeding, putting them out after they eat, nothing tricky or high-stress.

We've been lambing for two weeks and catch sleep in shifts. Anne woke me at 2 a.m. because a ram had climbed one fence and was destroying another to break through to the ewes. "I heard this twanging! " Anne said.

Harry's our only dog that'll work by flashlight.

Sure enough, the minute Harry and I stepped outside it sounded like a rock group smashing guitars. That ram was hitting the high-tensile fence, "KA-WHANG KA-WHANG."

And before Harry and I could get in front of him, Ram-O broke through and he and his new girlfriend ran into the night. There were eighty ewes in that field, many due to lamb momentarily; the rest aged ewes no longer able to bear and rear lambs. Seeing Ram-O disappear in the dark was like watching a serial rapist dropping over the wall of a nunnery.

It was pitch black, raining a little, and at the end of my flashlight beam I couldn't see anything but sheeting mist. Since dogs (and sheep) see better than humans at night, I switched the light off. "Harry, I need you," I said. When Harry was well away I turned the light on and headed for the barn lot.

At night you can hear their hooves before their eyes come into sight like bobbing, amber road reflectors. Sheep are terrified by the unknown, and by flashlight the familiar gateway looked dangerous to them. Harry kept working back and forth, turning on a dime just to hold them in the opening. When I switched off my light the gateway looked sheep-friendlier and they bleated through.

Gate cutting sheep is what it sounds like — you let a few slip through and slam the gate on others while Harry keeps up the pressure behind. I keep an eye peeled for Ram-O (he's the sheep with enormous horns). The braver sheep go first, next the medium-brave, until only a dozen timid ewes and Ram-O are still in the lot. Ram-O charges the gate, which I hold (barely) by throwing all my strength to it. Harry comes to my rescue and peels Ram-O away.

I latch that gate and run to our cutting chutes. The sheep have been through these chutes a hundred times, but by flashlight they look as safe as a slaughterhouse ramp and Ram-O is getting awfully cross. Ram-O weighs 350 pounds, has horns like a bighorn mountain sheep, and doesn't care to have any other animal stand between him and the objects of his desire. Horned rams can smash a dog against a fence, break bones, even kill him, and horned rams are not susceptible to reason. Ram-O lowers his head, paws the ground. Harry slides forward, crouched like a predator. Ram-O backs a step, another, bumps into a ewe. Oops. He charges. Harry jumps out of the way and nips Ram-O's hock and promptly gets right back in his face. Ram-O backs up, regroups, lowers his head. Harry shows many, many teeth. One inch at a time, lit by the flashlight, Harry backs that huge animal into the chutes.

When I close the gate, it's all over: ewes into one pen, Ram-O back with his pals. I'm about half whupped and Harry is panting hard. We've been at it for an hour.

Back inside the house, Harry laps a little water. He isn't coughing. The vets say the first sign of Harry's heart getting worse will be coughing. His lungs will fill with fluid and he'll try to cough it out.

I told Harry to get up on the bed next to me and laid my hand on his silky flank. In a few minutes he was asleep. It took me somewhat longer to fall off, listening to my dog's breathing.

The Folly of Trying to Repress the Agrarian Impulse

Thoughts while watching weeds push up through a shopping center parking lot

Gene Logsdon

In the spring of 1999, for the first time ever, urban people with no money to gain not only marched and demonstrated to save farmland, but raised a cool million dollars to make it happen. Although outside the local area the event passed without fanfare, it may in retrospect come to be hailed as a turning point in this cycle of history, the first indication that a largely urban society is beginning to understand that life is impossible without agriculture. The place was Yellow Springs, Ohio; the land they kept out of the hands of commercial developers was Whitehall Farm which lay invitingly right next to the town limits, in the center of a growing metropolitan area bounded by Dayton, Columbus, Springfield and Xenia. It was prime development land, all in one, luscious 940-acre chunk.

Yellow Springs (population 4,000) is not your usual midwestern village. Just getting a MacDonald's restaurant in town 20 years ago almost caused a local civil war. Officials of most rural Ohio villages favor "growth" — any growth, no questions asked — bowing in adoration before the myth that growth is always good for the local economy, except (cross yourself) growth in whorehouses and bars. But in Yellow Springs even the village leaders were suspicious of turning Whitehall Farm into another sprawl of houses and business places. The woman organizing a little army of demonstrators on the day of the sale reflected the crowd's mood: "When we drive outside the town limits, we want to see farmland, not a jam of strip malls and trash stores and houses that all look the same." Or as another person said and then vanished in the crowd: "Look, we're not stupid. We know that as long as population increases, there's going to be urban sprawl. But why can't there be places where people by mutual consent are willing to limit family size and spending to stop growth. If this is a free country why can't we foster a few no-growth communities?"

And so the lines of battle were drawn, one side asserting that commercial growth was a necessary and unavoidable fact of life, the other that there needed to be places removed from this necessity — especially since farmland acreage was continuing to shrink at an alarming rate. (Ohio loses 77 acres of farmland every day to other uses.) Money always settles conflicts about growth, and since commercial developers usually hold the high hand in these contests, they win. Yellow Springs understood that fact and so the people did not just stand around talking piously and doing nothing about the issue, but got to work earning money.

It was a genuine grassroots people-project. There were some big donations, true, but also a lot of small ones, the money raised dollar by dollar with bake sales, car washings, local festivals and door-to-door solicitations. Led by local lawyers, government office holders, and professors retired from Antioch College (the heart

Demonstration at Yellow Springs early 1999. Photo by Gene Logsdon.

of Yellow Springs), plus many just plain angry and fearful citizens, the town established a Land Trust to act as a legal entity to buy the farm and place it under conservation easements in perpetuity. That meant the land could be resold only for farming or open space. It also meant that the Trust would have to raise enough money to cover the difference between what developers would bid for it at auction and its farmland value, so it could be sold back to farmers at the latter price.

Few businesspeople or experienced observers of farm preservation attempts thought the "Save The Farm" coalition had a ghost of a chance of success. The money needed seemed an impossible amount for a town of 4,000; some would rather have the land developed. They also had to find farmers willing to buy land that would remain farmland forever. (Most farmers piously lament developmental pressure on their farms but when they retire want to sell it to the highest bidder.)

To make a long story short (a detailed account of the land sale can be read in "Showdown at Yellow Springs," by this author, in *LandOwner*, Vol. 21, No. 6, April 5, 1999), the people did raise the money. Their lawyers, who also were buying some of the land to keep in farmland for themselves, simply outbid everyone else. The property sold for $3.2 million. The Trust had no trouble finding farmers to buy land under conservation easements for about $2000 an acre, with $1.2 million raised by the Land Trust covering the difference. Large cash grain farmers and small organic market farmers were eager to buy in fact. So another myth, the one that says farmers won't buy land in conservation easements, bit the dust.

But the showdown at Yellow Springs was very much the exception to the rule, at least so far. Whether it heralds a new attitude about farmland on the part of both urban and rural people remains to be seen. In the meantime, government is pretending to want to save farmland by pointing out the evils of urban sprawl. Although no one has stumped more vigorously for farmland preservation than I have, there is much in the current opposition to urban sprawl that seems to me to be fruitless or deceitful. First of all, how can society take the need for farmland preservation seriously when landowners are paid millions of dollars to take millions of acres out of production under the Conservation Reserve Program? How can people seriously believe those of us who worry about land loss when farmers are raising huge surpluses that drive down farm prices and drive farmers out of business?

Close investigation reveals that "urban sprawl" is the same thing that was called "rural development" 20 years ago, which was not rural development but industrial development in rural areas. Ironically, the same commercial, governmental and educational offices that trumpeted rural development now want to damn it as urban sprawl. An example of this turnabout is the huge Honda plant that spreads over at least a hundred acres of prime farmland near Marysville, Ohio. When the Japanese were throwing "developmental" money around like holy water, their sprawling, land-wasteful plant was hailed and hallowed by bank, political party, university, and the Farm Bureau, the mouthpiece of big agribusiness, as great "rural development." A company trying to do that today is accused of "urban sprawl."

Finding factory jobs for a wrecked rural culture is not rural development but rural dismantlement. But that didn't become apparent to mega-agribusiness until rural dismantlement began to compete with them, not just with small family farmers. Then rural dismantlement became urban sprawl and had to be contained to preserve the monopoly that industrial grain and meat factory investors enjoyed in acquiring more land. It was all right when mega-farmers could run the bid up on land beyond the reach of small farmers; it was not all right for commercial developers and private citizens

Above:
Greg Conniff,
Dane County,
Wisconsin, 1995

seeking a homestead in the country to bid up land prices beyond the reach of mega-farmers.

But if, with small farmers gone, farmland is to be preserved by blocking off huge chunks of land exclusively for industrial food production (as some opponents of urban sprawl suggest), how is that farmland preservation? I think it's factory-farm monopoly preservation. Industrial food conglomerates, aiming to control food from seed to shelf, don't want competition in land acquisition and are taking advantage of naive advocates of farmland preservation to gain even more monopoly power. Moreover, they are themselves "urban sprawl." In fact, the expansion of large industrial grain operations and huge animal factories displacing farms and destroying rural communities appears to me as a kind of "urban sprawl" that is worse than strip malls and tract housing development. Huge hog factories, financed by urban money (even mutual funds) and operated by paid managers and ill-paid immigrant workers, are just more industrial urban development in the country.

The meetings held to discuss urban sprawl, which were last winter's agricultural college craze, revealed how divided and hypocritically society stands on the subject. The group most legitimately opposed to urban sprawl (as they were to "rural development") are family farmers who want to keep their land in their families forever if they can but fear that commercial development will bring property tax escalation forcing them to sell. Another group, large-scale animal factory operators, oppose urban sprawl (other than their own of course) not so much for tax reasons (since they get property and personal property tax breaks not available to small farmers), but because they know newcomers will make trouble for their stinking facilities. The third and most conspicuous opposition group, the ones that I say agribusiness manipulates for its own ends, are ex-urbanites who have already moved to the country and now wish to keep other people from doing the same.

Most older farmers, land investors and developers support urban sprawl just as they supported rural development, for obvious financial reasons. Farmers want to be able to sell out at the highest possible price when they retire, as I have said; developers want to buy land that is cheaper than property in town; and land speculators, seeking a balance to the nervous jitters of the stock market, want to be free to wheel and deal in land while raking in "Freedom To Farm" and CRP payments. *LandOwner* magazine reported last year that a wealthy Illinois farm couple stopped by the big Plummer land auction near Johnson, Kansas, while on vacation. On the spur of the moment they bought a 160-acre tract out of the estate for an "investment." Writes editor Jerry Carlson: "Their 'hobby' is collecting extraordinary farmland buys. They felt the quarter section they acquired for $65,000 would be a good investment. Their ten years of CRP payments will return $56,360."

The debate over urban sprawl seems to exhibit little realistic thinking on either side. There has been no discussion over slowing population growth, precluding any rational plans for saving farmland in the long term unless people are forced to live on algae in tenement housing and high-rise apartments. There has been no discussion over the mad, ongoing extension of highways over rich farmland. Little attention has been paid to the unavoidable fact that growing towns and villages must extend corporation lines into the countryside because they don't have any inner-city space to use more efficiently. There has been no proposal to stop government from acquiring farmland whenever it pleases for prisons, parks, research sites, hazardous and radioactive waste dumps, airports, or utility rights-of-way. Indeed, when Ohio State received, mostly as a gift, the 1500-acre Firestone estate near Akron two years ago, it had a perfect opportunity to practice what it was trying to preach at the meetings and sell that land (or lease it long-term) to young farm families at a reasonable price. Instead, the university sold the property for $12 million to a big-time developer who plans to subdivide it into acre and a half lots, what opponents of urban sprawl consider a "wasteful" use of land.

The best suggestion anyone has come up with so far is for the state to buy up developmental rights to farms in exchange for farm owners agreeing to keep the land in farming permanently, much like the citizens of Yellow Springs did. But as farmland preservation advocate and Ohio state legislator (as well as one of the few bonafide farmers on the Ohio Task Force for Farmland Preservation) Gene Krebs pointed out, such legislation has only limited application: "The math just doesn't add up," he says. At $1700 an acre for developmental rights, the average nationwide, even a program with a budget of $260 million a year, as has been suggested for Ohio, could buy development rights to only "an infinitesimally small amount of farmland."

The most concerted effort by farmland preservationists seems to be to stop new homes from "sprawling" into the countryside. I find this unconscionable because most of this effort comes from people who have already moved to the country and wish to stop others from doing so. More importantly, a significant number of people moving into the country do so to farm on a small scale, or to raise huge gardens or specialty livestock, or to grow and perpetuate groves of trees. Often they commit their small acreages to "wildlife sanctuaries," increasing the diversity of wild plants and animals. This is an extremely beneficial type of "urban sprawl." In our county many such homesteads are acquired and built in the few remaining rural tree groves, saving them from the bulldozers of industrial corn farmers gone berserk.

Development plans that would "block off" acreages and reserve them exclusively for industrial farming would play right into the hands of the giant agribusiness firms and their drive to monopolize the food business. Such segregation would also repeat the mistakes that cities have made. Jane Jacobs, noted writer on city growth and development, argues in her latest book that human neighborhoods should be a little "messy," that is, they should avoid society's hell-bent preoccupation with segregating humans and human activities into neat, everything-in-its-proper-place kind of development. That leads to stagnation and decline, she maintains. All you have to do is drive through Detroit, as I did recently, to see what she means. Like so many other large cities that became domains of monolithic big business, this metropolis contains widespread areas that look as if they had been bombed and the process of cleanup still in progress. What remains are decaying hulks of buildings erected during the heyday of the auto industry — when the reigning philosophy was to zone everything into neat and proper places and use the automobile to move people from one neat and proper place to another.

The suburbs continued the "no mess" policy. A gas station and repair garage close to houses where they might be particularly useful, like they are in villages? Heaven forbid. Chickens in the backyard and vegetables on front lawns? How trashy. Backyard composters to turn food waste, leaves and grass clippings into valuable fertilizer? Might draw rats. Little factories mingled in with the homes? Might make a little noise to disturb His Suburban Highness on Saturday morning — although with the roar of lawnmowers, who could hear anything else? Factories — without a neighborhood of active, influential citizens, workers and owners *nearby* to enforce clean operation — become more and more careless about air quality control until the smokestacks belch not just on the ghetto people who have to suffer their proximity, but on the richer people in the suburbs as well. The rich people move farther away. As conditions become more inhuman, and as the economic gods demand yet more consolidation and expansion of production and sales, people flee nice neighborhoods for new ones on the (current) edge of the city, and the whole round of growth and decay repeats itself. Churches, always the last root of a community to die, tell the story. In the last decade over 50 of them have been abandoned in Detroit.

The same "development" now affects rural areas. Side by side, you can find yesterday's animal factories, now obsolete, with today's animal factories on their way to obsolescence. The schools and churches stand abandoned because the people who can afford to, move away, hoping to escape the stench of huge animal factories, the endless strings of trucks rumbling in and out of the factories tearing up country roads. Poor people must stay behind. They work in the animal factories and stay poor. The ghetto moves to the country. Emptied rural areas and emptied city centers of industrial exploitation start looking uncannily similar.

Ironically, it is urban people who are showing that this situation can't last, that the agrarian impulse can't be repressed. They are the ones moving to the countryside in unprecedented numbers, at least here in industrialized Ohio, to establish new kinds of farms in spite of and in defiance of the misplaced fervor to stop urban sprawl. Andrew Stevens, editor of the *American Small Farm* magazine, in an April, 1997, editorial urges a positive attitude toward so-called urban sprawl: "As farmers, you should be looking at your new neighbors as friends and potential customers for your products. Farms that have flourished in rural/urban fringe areas have done so largely because they cater to the preferences of nearby residents. They tend to be more specialized in producing high value crops, sell more products directly to consumers, are smaller and make more efficient use of resources."

But urban people are also bringing agrarianism back to the cities. Developers build subdivisions that look and function like yesterday's villages or neighborhoods. Gardens and home businesses are planned into the landscape, as are nearby retail and service shops. Some communities even utter the almost forbidden words, "neighborhood schools," again. New neighborhood houses of worship in the ghettoes, small and humble and unassuming, return in the shadow of the abandoned cathedral-like churches. A surge of market gardening and farmers' markets recalls those years not so long ago when thousands of tiny truck farms, using horse manure for compost in their hotbeds and coldframes, supplied their cities with vegetables and fruits nearly year-round. The term "urban farming" turns out not to be an oxymoron. Chicago is even encouraging animal husbandry as part of its urban farming projects. In the heart of Cleveland, in the shadow of skyscrapers, horses plow garden plots.

I think I hear a faint rustle under the blacktop of shopping center parking lots, under the abandoned animal factories of yesterday and those yet to be abandoned tomorrow. Not only are the weeds pushing up through the cracking pavements, making way for the trees, but the irrepressible agrarian impulse is pushing through too. As long as humans are free to follow their hearts, there is hope.

Clear-Cutting the Last Wilderness
Compromising the genomes of our major crops

Wes Jackson

In April of 1997, *The Economist* carried a story entitled "The Green Gene Giant," featuring Monsanto and its CEO, Robert Shapiro. This well-known St. Louis chemical firm announced that it was about to spin off its central source of income, the chemical division which was then yielding almost a third of its $9 billion in annual sales. Mr. Shapiro wanted to make Monsanto the "main provider of the agricultural biotechnology the world will need if it is to feed itself in the future without despoiling the environment." The company was already selling genetically altered soybeans, potatoes and cotton. Dozens more genetically altered products were in the works including corn, sugar beets, and strawberries. This was no minor economic venture for, as *The Economist* reported, "one estimate is that there will be a world market for genetically altered seeds of $7 billion in 2005." Monsanto had already been called the "Microsoft of genetic engineering." The price per share at the time of the announcement had risen from $14 in early 1995 to nearly $40. Shapiro and other top managers had "promised to buy a large number of Monsanto shares with an interest-bearing loan from the company." This means they could owe the firm money if things didn't pan out.

The faith of Monsanto's executives is not exactly a blind faith. Productivity in the recent past has come largely from improvements in some form of technology. Realized possibilities in irrigation, fertilizer, pesticides, plant breeding and more have combined to give us low-priced food for home use and a commodity for export to help offset our balance of payments deficit. Countless ecological and social costs attend our past successes and cheap food policy, but they are largely ignored and discounted, so few objected to Monsanto's plans.

It is worth remembering, however, that several other ships of promise in the area of crop improvement have come and gone leaving little of value in their wakes. In the 1930s great hope rested on the possibilities of polyploidy, a reality far more prevalent in plants than animals. A polyploid organism has more than the usual two sets of chromosomes. Early on there was a widespread belief that gigantism accompanied multiple sets of chromosomes. In some early examples that was the case. Available at about the same time was a chemical called colchicine which was discovered to break down the spindle apparatus which pulls the chromosomes to their opposite poles after they have divided but before cell division. Without a spindle, without cell division, a cell would display four sets of chromosomes instead of two. Giant plants were to become the wave of the future. The hopes never really materialized though the idea persisted into the 1940s before it quietly subsided.

Radiation genetics, the rage of the '40s and early '50s, came next. Simply stick seeds in a radioactive pile, causing them to mutate, grow out the seeds and wait for a super plant to appear. That era too subsided, came back in vogue in the '60s for a while, then subsided later. I'll explain the reason later.

Quantitative genetics came next and with this trend came the increased understanding of the quantitative gene in the '50s and '60s. This era offered not a technological fix but a theoretical exercise for modeling the changes in phenotypes through breeding. The '60s also brought physiology and the importance of hormonal control. Each of these emphases added a wrinkle here and there, but nothing substantive. Finally, the '80s ushered in the molecular biology and biotechnology era — with a vengeance. In this climate of Gee-Whiz genetics the enthusiasm over the possible positive consequences surged. Thus Monsanto's stock value tripled from 1995 to 1997.

Some history may be useful here. One could argue that the modern era began in 1944 when Avery, MacLeod and McCarty published their results suggesting that DNA and not protein was the hereditary material. Nine years later Watson and Crick elucidated the molecular structure of DNA, and the world of biology *was* destined to change. Over the next 30 years we grew in understanding the nature of DNA, RNA, the code and protein synthesis. Public policy was in its infancy, but with more research that, too, was destined to change. A landmark meeting, which featured a physicist who started work as a policy analyst at the Office of Science and Technology Policy and an official from the Rockefeller Institute, took place in June 1982. These two invited a few other people of influence and power to a conference that summer at Winrock in Arkansas. The group concluded that the land grant institutions lagged behind in basic research and therefore desperately needed the new knowledge in biology. Funding was allocated to this new discipline. Biotech companies of various sorts began to pop up here and there. A few university professors began to quit their jobs for private firms. University salaries in these areas rose to compete.

Seventeen years have passed since 1982 and our biotech era is fundamentally different from Watson and Crick's world of 1953. But that different world in biology is still fueled more by promises than it is advanced by demonstration. It is fair to suggest that this is the way of progress. The promotional language is of two types. "New era in biology" trumpets one slogan. The other, a defense elicited when critics challenge biotech as being potentially harmful, claims this is "nothing new!"

So, what is my complaint? An examination of the language used to justify increasing the scale of the new technologies reveals a tone of industrial heroism. Heroic phrases such as "We must feed the world" ring out. The "we-must-feed-the-world" camp has Nobel Laureate Norman Borlaug whose award recognized his role in making what the press called the Green Revolution. Dr. Borlaug has openly derided various thoughtful and compassionate thinkers who have concluded differently about hunger, its causes, as well as about the approaches to the problem. These cautionary dissenters, in my view, are erroneously accused of opposing increased crop yields. This charge is unfair in that the cautionary camp mostly argues that the debate should have more to do with agronomic methods that are safe for farmers, farm workers, consumers and the need for a healthy habitat.

No one has toiled deeper and longer in the trenches in this discussion than my long time friend, Friend of The Land and board member, Angus Wright. Angus' book *The Death of Ramon Gonzalez* details the world-views of the two sides. He and many others (such as Deborah Toler and Peter Rosset of Food First, an organization in Oakland, California) have detailed and drawn attention to the social and health problems of Green Revolution technologies, and to the documented fact that these technologies "have lead to *declining* crop yields after prolonged use, in addition to damaging the environment and human health." When biotechnology is promoted as a way to feed the world it is supposed to quiet the protesters and provide a license for more technology of this sort in the name of humanity. The work of these people illustrates that the battle cry, "We must feed the world," uttered in the spirit of technological heroism, distracts us from more productive engagement with the problem of hunger and the need for increasing the food supply sustainably.

Harvard Professor Richard Lewontin, one of America's top geneticists, in a letter to me wrote the following:

> All this talk about the billions of people who are hungry and need to be fed is a deliberate confusion of the issue because it really has nothing to do with genetically engineered crops. If one looks at what is actually being done in the genetic engineering of crops and especially in transgenics, which is what we are talking about, the whole industry is not centered [on] increasing yields or resisting pests. What transgenics and other genetically engineered crops are about is introducing specialty properties and qualities into crops for industrial purposes. Palm oils are being put into oil seeds like soybeans and rapeseed. Monsanto has developed very special varieties of potatoes for potato chips that give the so-called "light" potato chip, and genes are being put into crops that resist particular chemicals, especially herbicides. *The number of cases where there is an actual attempt to increase the productivity of land, labor and input resources which would benefit the nutrition of people around the world are very few indeed.* There is a program to increase methionine in the protein of beans by introducing a gene from the Brazil nut, and I suppose one could say that the introduction of BT gene that gives direct resistance to an insect also would increase production. But aside from these isolated examples, we are really talking about work that is intended to produce a commodity for sale by a pharmaceutical company or

The Tallgrass On Fire

Paula V. Smith, 1995

First comes a smoke cloud on the vigorous wind,
the distant flames rising and closing in.
Ashes fall lightly in the stirring air.

And now the fire takes root, a wall of heat
fans up as a companion to the wind.
Burning grass wafted by the wind sifts down,
kindling new fires in each place it falls:

As several fires dart, widening forward,
their clouds of smoke and roiling tides of flame
mingle and draw apart,
many-veiled phantoms whirling a wild dance.

Curling flames flap and bend, one devouring another
rising, spreading, racing, following —
each wave of flame can overtake the last
as knotted grass-stems crack and split:

I wonder at how the wind-fed fire
can cross the golden field so rapidly,
leaving a world that seems empty of life;
even the stones are smoked to the blackness of sod.

But as the dead, dry grasses feed the flames
they shield the vital root-beds down below:
the dark and heavy blanket of their ash
will hold the warmth of spring close to the land.

a seed company and that will not, in fact, increase yields. *The real work done for yield, for reduction in pathogen sensitivity, etc., is still being done by the normal procedures or, at most, by introducing genes from one variety into another even by genetic engineering.*

Professor Lewontin also answers the argument that such genetic transfer is necessary because the major crops lack the necessary genetic variation. He writes

> It is simply *not true* that there is not sufficient genetic variation in crops to produce the kinds of advances in yield and pest resistance that are needed. This is baloney. Virtually nothing is being done to exploit the immense amount of genetic variation present in, for example, local races of corn and soybeans that could be used to select all kinds of properties of plants (and I believe it is probably true in rice, too, although I do not have that information directly). The number of varieties in the world germ banks is now immense, [on] the order of 100,000, and little or nothing is being done to screen these accessions for the kinds of genetic variation that would be required for regular breeding programs or for intraspecific gene transfer.
>
> This entire business is a case of deliberately misleading by calling attention to world hunger and then using the techniques which are called for not to solve the problem of world hunger but to solve the problem of profit hunger. We need a strong reply that calls attention to the actual state of transgenics as it really is operating now in the world. We are certain to be greeted by the claim that all kinds of possibilities might exist with transgenics, but it is a lie to say that they are being exploited or [that] anyone is trying.

Please understand that neither Professor Lewontin nor I maintain there is no role for biotechnology, both now and in the future, to help meet humanity's requirements for food and fiber. Biotechnology can be used to speed up the evaluation of germ plasm. That is being done now and represents a great service to the breeder who still has to do the traditional testing. Even with all of this, the biotechnologist's role should be as a member of a team which includes the plant breeder and various sorts of ecologists. Biotechnologists should not carry the flag of biotech into the battle to feed humanity for some very good reasons. Of primary importance is the fact that alongside all our micro-technological sophistication there is much naiveté about what we might call the genome's ecosystem. Many molecular geneticists and molecular breeders actually believe that all one has to do is insert a gene of choice into some elite genotype of any of our major crops. They seem unable to learn or remember the hard lessons from even the recent past. Every conventional breeder knows that when one inserts new material into a genetic line, that line then must be tested against the real world. A few years ago, when corn geneticist and Iowa State University professor Arnel Hallauer suggested to some molecular breeders that they test after insertion of a new gene, the molecular breeders asked "Why?" Apparently they forgot or did not know of the experience with Texas male-sterile cytoplasm and the genetic restorer system developed and used in the 1950s and 1960s. The Texas male-sterile cytoplasm carried a gene outside the nucleus rendering any plant carrying the gene male sterile. Labor to detassel corn plants was greatly reduced, and breeders also had genes for restoring the fertility when needed. Yet even with the seductive labor-saving possibilities, corn breeders were cautious as they converted various lines to carry the Texas cytoplasm. They tested extensively to be sure they had the same lines, the same hybrids. The genes that restored fertility were introduced with the same level of conservatism. After conversion came more extensive testing. Well? It all broke down by 1970! The famous corn leaf blight which took nearly a third of the American corn crop, was the result — an episode that should sober any budding gene splicer bent on crop improvement with little or no testing.

What I have just described is a relatively simple example. The reality is far more complicated for most traits. All genes interact to some degree, and the traits that are *strongly* influenced by several genes working together will stand as a barrier to the gene splicer. Some traits (such as growth rate) are affected by many hormones, including episodal ones that are present for short periods of time in low concentrations. When their existence is known, isolation may begin, but if the genes are from widely divergent organisms, the new host may regulate these hormones in a way that is completely foreign to the implanted gene. For example, the same quantity of a particular hormone produced during development in one creature may yield a very different effect in another.

A gene is often separated into several pieces and located in widely separated places on the chromosome or even on another chromosome. While this is a tricky problem to overcome, it is no more tricky than isolating the various genetic components that regulate a particular gene in question. Once a complete gene and all of its regulators are isolated, there remains the problem of precisely incorporating the entire assembly into the genetic material of the recipient organism.

Let us assume that all these barriers have been overcome. We are now faced with a problem similar to what frustrated geneticists nearly 40 years ago, during the heyday of radiation genetics. The hope was that we could improve crops and speed up evolution by

irradiating the germ plasm and then selecting the desirable products. That generation of geneticists and plant breeders soon confronted the same problem that troubled the *previous* generation of geneticists — who had believed that biological wonders could be pulled from the progeny of very wide crosses. The problem in question: how to get rid of all the variation they suddenly found on their hands, *and how to reoptimize the desirable traits against such a scrambled genetic background.* Even when the background of spliced-in genes is not so scrambled the problem of reoptimization remains. In other words, even if all the steps are successful up to the point where the spliced gene and its regulators from a distant plant family are transferred, an untold amount of breeding work remains before the genetic background is shaken down enough to accommodate the newly introduced trait and its regulators.

Breeding programs require patience, persistence, perseverance, hard work, fortuitous choice of germ plasm, and more. Dramatic yield increases in many of our major crops over the last 60 years, particularly in the case of corn as Professor Hallauer notes, have come from "evolutionary breeding methods, not revolutionary ones." From a conventional breeder's point of view, what we are seeing and hearing now are some more-or-less instant experts telling plant breeders how to conduct their work.

Worse, we find ourselves in an era when the products of biotechnology are being forced on us — the genetically modified organisms the Europeans are refusing to receive, for example. Professor Hallauer's worries thus are three-fold: (1) forcing-of-product, (2) disparaging comments by some biotech people about conventional breeders who question the efficiency of the new products at the expense of the conventional breeding methods, and (3) the naiveté about the need to test.

Back to *The Economist* article for a moment. The article states, "So far the vast weight of evidence is that the products of agricultural biotechnology are environmentally sound." This is a "business risk not a scientific risk." The "genetically doctored seeds are safe." These quotes assist in adding point to my advertised topic "Clear-Cutting the Last Wilderness: Compromising the genomes of our major crops." The public in general is wondering if these genetically altered *seeds* are safe for humans or livestock consumption. That's an understandable question but the wrong question for it is a bit like asking if the trees of a planted monoculture forest are safe to make 2 x 4's for houses.

Monsanto currently anticipates that the population will become increasingly suspicious of the health and safety of their industrial chemicals. Monsanto's leadership sees the writing on the wall, to speak. They are turning away from the *single molecule approach* to the *single gene approach.* But have they learned the lesson of Darwin as they turn to the employment of new biotechnologies? Have they really embraced the Darwinian evolutionary ecological worldview? I suspect that they have not. They have 29,000 employees and on a visit to Monsanto I asked two top ranking officials about their ecologists. No response. I pressed by asking if they had any employed. The question was also met with silence. We should not be surprised. Monsanto is a chemical company and biotechnologists of the modern stripe emerged enamored of chemistry more than biology, let alone evolutionary biology. Now, what is the harm, you may ask, so long as they are good scientists?

The harm from the wholesale employment of the new forms of biotechnology will come in the threat to the very architecture of the genomes of our major crops. I'll repeat and then I'll explain.

Monsanto is backing off from chemicals because of the public's worry about poisonous consequences to people and to ecosystems, especially agro-ecosystems. We should applaud them for this. What is being more or less ignored is that some of the same principles and

The Grassland

Paula V. Smith, 1995

In this place you will learn
to travel for days without the sight of trees
under the wide tent of sky.

After a life in forests, you will stand blinking
at this land overflowing with light and space,
unshaded grass and sky. The land ahead

opens to endlessness, and if you travel through it
far enough, the prairie opens you, too, giving a voice
to new ideas, shaped to fit the land.

The grassland stretches out to the world's edge
without a tree, without a sign
of human presence. Stands of wild grasses grow

and wave above your reach; it is a land
without shadows, without echoes,
except those cast by you.

Here distance cannot be measured with the eye:
a settler's camp might be a distant mansion,
a yoke of oxen mimics a railroad train.

Here you may travel from morning until night
making good speed, but on looking around
think yourself back at the very place you started.

You are here. The prairie stirs your mind
and calms your spirit, places you in the landscape,
makes you look great and small, moving and still.

You plan to break the sod, to build your cabin,
but at night
you dream of tallgrass standing in the fields,
flexing and bending, easily slipping
out of the grasp of the wind.

processes that govern an ecosystem, like a forest or a prairie, also operate with genomes. The genome is a miniature ecosystem. The genes within the genome interact with one another *and* collectively interact with the environment, all the way from the molecular and cellular level to the ecosystem at large. In other words, the architecture of the genome results from the context of the history of gene-carrying predecessors in times past. At the level we are talking about the world is grossly unknown, indeed unknowable. So much is subtle; so much is small effect. The multicellular life forms that have survived to the present feature gene assemblies with small effects. Large-effect genes represent a minority.

Commercial outfits like Monsanto are unlikely to be interested in selling the small-effect genes. *It is a bit like trying to sell the life of the soil.* There is nothing easy for sale there, nothing marketable there. How could the mycorrhiza or the soil invertebrates of a forest or prairie be harvested, packaged, and marketed? A company will patent and transfer genes they can readily identify and which will make big differences. Such a company can do that for a while because the "genius of the genomes" is in their design and can handle the various perturbations that come at them, including genes from long

Above:
Greg Conniff,
North Dakota,
1990

evolutionary distances — for a while! A forest can handle selective cutting with little change in the architecture of the forest. The forest can adjust and foresthood will prevail. The genome can absorb the shock of an alien gene even from very unrelated creatures, such as a bacterium or a virus. In fact it happens but at a slow rate. Even so, adapted recombinants must be sorted out over time, time that I suspect on the average for each trait is roughly proportional to the evolutionary distance between the entities and the amount of material being transferred. So absorb the shock it will, but in so doing the genome must adjust to all incoming traffic driven there by the biotechnologist. I use the word "adjust" because a genome doesn't just bounce like a spring. As that adjustment is made, small compromises are also made. If the human is the agent of change, those compromises will mostly amount to an increased dependency on the agent which induced them, *Homo Sapiens*.

This is not new to humanity. This is the way we have interacted with our domestic crops beginning with the first few cuts of selection 10,000 years ago. It is the reason that eventually all our crops and livestock became dependent on *Homo Sapiens*. As the agents of domestication, we created a dependency for humanity. Now *Homo Sapiens*, variety *corpo-technologicus* is creating an ever narrower dependency. In such a manner these corporate disrupters of coherent context create problems for which they will sell future bandaid equivalents as solutions to a broader systemic disorder. It is faster treadmill on top of another treadmill. *In such a manner capitalism expands its markets.* The major threat to the life forms affected by some forms of biotechnology will not visit us in one year or five, but in 20 and 50 years. That threat will come from a created dependency on the need to keep the treadmill going with an assiduousness equal or greater to what agriculture has required of us since its invention eight to ten thousand years ago.

The positioning of most alien genes into a crop's genome will likely yield only short-term benefits. Dr. Don Duvick, Friend of The Land, a friend of mine, and former Vice President in charge of Research at Pioneer Seed Company, has noted that such genes eventually respond as though "tar has been smeared over them," which is to say that eventually the background of the genome shifts and effectively isolates and inhibits expression. But in so doing, I think it is safe to say that we are compromising the self-regulating resilience of a nano-ecosystem by forcing that system, meaning the genome, to adjust its architecture.

In forestry, as the value of the products of trees goes up, more and more of the best trees are cut and the criteria for selection is drastically changed. I understand that old-growth redwood *is* more resilient to decay than new-growth. But with the old-growth gone, new-growth redwood will do. At some point conventional economics dictates that it makes more sense to clear-cut, that is abandon discrimination, and take it all. At this point, in the interest of board feet, the loss of foresthood is complete. The incentive to plant a monoculture of the most commercially desirable trees increases. The fisheries, agriculture, anything downstream in the watershed and elsewhere are now dislodged to some degree from a former set of relationships. The total economic benefits of the former ecosystem in the watershed can never be adequately calculated. In a similar manner the economic benefits of the architecture of the genome can never be calculated.

From Jamestown on, trees on this continent have been understood as assets for building homes and other accommodations for the human enterprise. The ecological benefits which ultimately have economic benefits have been ignored. It is the still-intact wildness of the genomes of our major crops and livestock which stand behind the domestic traits that sustain us.

After the clear-cut of the forest it is not uncommon to see a near-monoculture planted as a replacement. Timber companies stand to make a lot of money in the short run on fast-growing trees, but it is during the ecological unraveling, as we diminish the ecosystem's services, that we in one way or another say "Uh-oh!"

With recent developments in biotechnology we are dealing more aggressively with evolution at the smallest level on the biological scale. The irony here is acute. Many evolutionary and conservation biologists understand the need to respect ecological/evolutionary processes at the forest or prairie ecosystem level, but they lack adequate appreciation for ecological integrity at the genome level.

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There have been other heydays loaded with promises that went unfulfilled. Our ability to invade and reorder the genome is rooted in technologies developed for specific purposes: to elucidate the nature of the hereditary material and how it works. We have made important strides, but still know only to a very small degree the interaction of DNA with its products and other components within the cell. Therefore, if biotechnology is the flagship commissioned to lead the fleet of other food producing technologies, we are certain to lose the battle to sustainably increase the food supply and not just because the flagship is loaded with genes for industrial oils and light potato chips.

The naiveté of molecular breeders about the need to test, and test, and test some more after genes are

introduced will cost more than the company which introduces the genes primarily because those products are being forced on us.

Finally, clear-cutting at the molecular level, the clear-cutting of the genomes of our major crops making them overly dependent on *Corpo-technologicus,* will force future geneticists to study the exits, none of which are likely to be painless.

There is a better way, a less expensive way, a Darwinian-evolutionary-ecological way: Natural Systems Agriculture, which acknowledges that the cultural and technological realities are one with the biological, especially in agriculture.

I could end my examples here but perhaps you are wondering if biotechnology has a role to play in our research in Natural Systems Agriculture. It does. If we can move the genes for perennialism in wild grasses into the annual crops in that family (for example, corn, wheat, sorghum, and rice), it seems unlikely that the architecture of the genome will be much disturbed. In a certain sense, the grass family can be seen as one big genetic system. With time, patience, and the breeder's repeated testing, after the biotechnologist's introduction and using the conventional techniques of the breeder, the technology can be employed more safely than importing genes from another family such as the legumes. According to my friend Dr. Charlie Sing, a professor in the Department of Human Genetics at the University of Michigan, we know "that the human genome has a very large amount of genetic material [with] a viral origin. Estimates are that a significant percentage of our genome is simply integrated viral information." But that integration has happened over millions of years, not over a decade or a century or even a millennium. I am delighted that we humans are part virus, but I would not have wanted us to get that way instantly or even within a few hundred years.

Even so, by endorsing biotechnology at this level are we validating what can easily become a slippery slope? That is something to worry about. But all slopes are not equally steep or evenly greased. This means that we climb the steps with caution, eyeing the slope, the potential slipperiness and opportunities for safe exit. This sort of technological assessment invites numerous questions: How many people are going to be involved? At what level of culture? What are the chances of backing out if things go sour? Who makes most of the money? To what extent is dependency created? And perhaps the most important question of all: What are the potential consequences for both ecosystem and human health? On the other hand, we need to worry about a deeply fundamentalist position of saying "No" to all new brands of biotechnology … for fundamentalism usually takes over where thought leaves off.

Rhizomes

Paula V. Smith, 1995

I.
Anchor and balance for the waving sea
of grasses bending in the prairie wind,
a silent force is working underground:
engines driving the prairie from beneath,
inches below and only inches deep.

Invisibly below, the grass advances,
stems growing outward, under the land,
rising, spreading, racing, following —
sending forth new culms and rootlets
from the ends of tips and nodes.

All that is prairie sleeps in this old hammock,
the rugged fabric of a dense earth layer
threaded all through with interwoven rhizomes,
not deep, not fixed, but vital, always in motion:
a cradling web for all that breathes above.

II.
Rising from fine black soil,
we roam and interweave our stems with flowers:
larkspur, wild strawberry, candlewick, violet,
prairiesmoke, windflower.

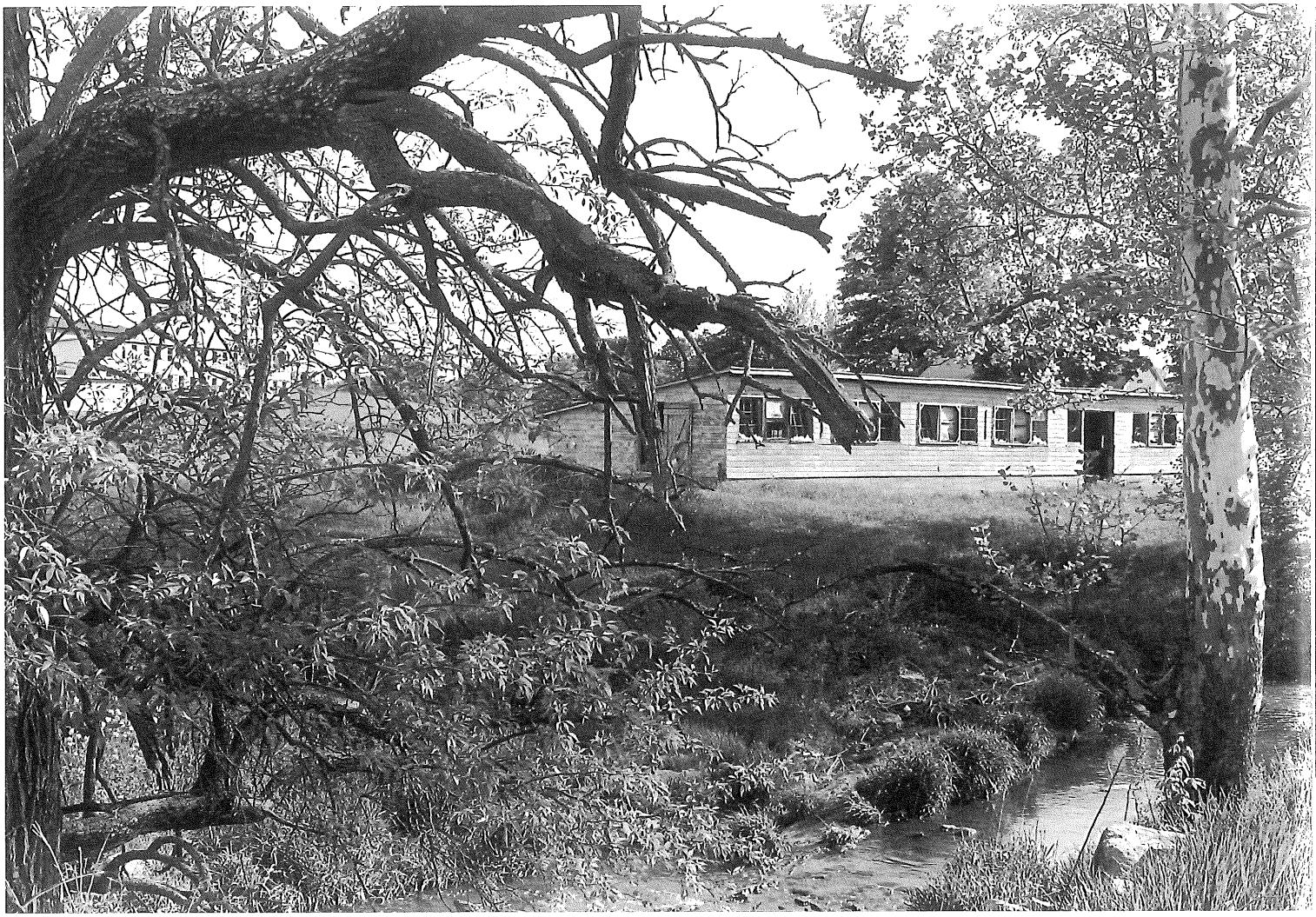
Gathering and spending ourselves
we can hold back the erosion of the land
offering shelter to the grassroot dwellers
pouring strength upward into the breathing flesh
of animal life —

until the season's dying and decay
sends us back down to grace the underworld,
hoarding and fattening the fine black soil,

III.
Those who put roots into the fine black soil
and choose to stay through flood, fire, drought and ice
know that the wild stock is waiting.

Along the tracks
of the first railroads to cross the land
in patchy remnants by old rural roads,
in family graveyards and in unploughed corners

old grasses stand tall to assert renewal,
ready to reclaim their former holdings,
to re-stake an ancient claim.



Scott Jost, *Near Purcell Park, South of Downtown Harrisonburg, Virginia, 1999* from *Blacks Run: An American Stream.*

The following selections — "The New Conquest" by Stuart Chase, "Hugh Hammond Bennett" by Jonathan Daniels, "Rain in Kansas" by Mrs. Frances V. Stegeman, and "White Trash and Fanatics: An Exchange of Letters" by Angus McDonald — are included to demonstrate that our concern and the high quality of expression about this concern goes back a long way. The Friends of The Land organization (not ours) goes back to the early 1940s and was organized to help the newly established Soil Conservation Service. It was an organization for the "Conservation of Soil, Rain and Man." Started after the Great Depression and before World War II, it lasted into the mid-50s and then disappeared when it merged with the Isaac Walton League.

The reader may respond with something like "since this has been going on for a long time and agricultural yields on the planet are greater than ever, what's the concern?" The difference is that, formerly, natural fertility sustained our planet's population. We have to ask what will happen when the fossil fuel-subsidized fertility declines. Vaclav Smil at the University of Manitoba states (and Marty Bender here at The Land Institute has confirmed) that 40 percent of humanity would not be on our planet now without the Haber-Bosch process of using natural gas to fix atmospheric nitrogen. Widespread and intensive use of commercial nitrogen was not available when the articles mentioned above were written.

Meanwhile soil erosion continues at an alarming rate. As natural fertility is lost, soil increasingly becomes a place to position plants where we add non-renewable inputs to generate the crop yields which feed humanity.

The New Conquest

Stuart Chase, *The Land*, Vol. 1, No. 1 (1941)

We Americans are always expecting new wonders to save us. There has been ground for that expectation in the past. For three generations an apparently limitless wealth of unspoiled soil, water, game and minerals was spread before us. We grabbed and used it greedily, like children at a feast.

Now we know that our resources are not limitless. Already we are running short of good soil. We know now that we must bend our best brains, will and energy to make restitution for the wrong we have done and to develop our resources anew.

We shall need research men, technicians and husbandmen on the land who are as skilled, in their way, as electricians, power engineers, surgeons, industrial chemists and airplane-makers. We can do wonders if we put our minds to it. But we can not expect to produce some minor new wonder and then lay off, and count on that to save us.

I think immediately, in this connection, of proposals to grow crops in mineral-water, without any soil at all. Certain rare crops in time may be produced this way, possibly; but it is the extreme of folly to suppose that without good soil mankind can survive. No real scientist advances any such claim. But there is a general Sunday-supplement attitude that again, without taking thought, we stand facing new frontiers of exploitation, opened by the magic of chemistry; and that, now as in the past, we can surge right on, hell-to-leather, without taking stock or taking thought.

Nature always comes into the equation at base. Science cannot save us this reckoning. Science can help us meet it, only if it recognizes basic realities, and the unified order of enduring life.

We are creatures of this earth, and so are a part of all our prairies, mountains, rivers and clouds. Unless we feel this dependence we may know all the calculus and all the Talmud, but have not learned the first lesson of living on this earth.

Hugh Hammond Bennett

Jonathan Daniels, *The Land*, Vol. 1, No. 1 (1941)

Anson County, North Carolina, where Hugh Bennett was born, is on the Pee Dee River. Up above the big power plants and the huge aluminum works, it is called the Yadkin River and runs, swift and yellow, from green mountains behind the estates of the Winston-Salem millionaires through big lakes to make more power and drain more land than any other river in North Carolina. Earth has gone off with the rain. The river is not to blame. Riches grow now behind the blue windows of textile factories beside it and far away, too, at the end of the long power lines which run back from it, but riches also went down it to South Carolina and the sea for decades before it was harnessed. Rich earth goes down it still, not to come back.

Hugh Bennett is getting on toward 60 now. He has been a long way off since he was born on the plantation in Anson and went beyond the University of North Carolina where nobody taught him what he needed to know about the earth. But he comes back. He came South once as Chief of the Soil Conservation Service and stopped on the way at Shadwell, the hill plantation in Virginia where Jefferson was born. It is just another worn-down red-land farm now, with its steeper hills washed bare.

"Let's get out of here," Bennett said. "It turns my stomach." He drove home. There he said something

which, also, was the last thing Tom Wolfe, the state's great native novelist, wrote.

"There is really no such thing," he said, "as returning to the places and people you remember from your youth. You realize that, on this old earth with its endless changing processes, we are all transient visitors; and you begin to count your score.

"Even in my time this part of the country has changed. The old swimming holes I remember have fallen away to shallow little red mud-puddles. The lines of the hills, the entire landscape has changed. Many a field I remember in virgin woods or thick grass has been cottoned out and gutted."

From the high road the change does not seem disturbing. The road down from Winston-Salem is not poverty road. Part of the land within the drainage of the Yadkin is the richest industrial region in the South. On that road, which runs down the way the Yadkin does, one executive in Reynolds, which has grown rich processing the product of the land, has an estate four miles long — a green estate, well tended. The present looks rich and all the memories of the past in the South are somehow poor. It does not seem that way to Hugh Bennett. New factories do not replace an old earth. Nothing can do that quickly. The rivers here are red, and all America has been going down its rivers with every rain.

Bennett's hair is getting white now and scant. But he still looks like the Anson farmer, quiet spoken but ready for laughter. The country boy is still in him. Dressed like a man who has lived in the cities, he is still the tall, ungainly native with big hands and big feet. Red-faced as a farmer, he remembers how rich the land was and how important it is that the fertility be kept, even in a mechanical age, for farming in the future. His native hills were never very rich. They had no productive limestone soil, no grass lands like the corn belt, only narrow strips of fecund alluvial soil. From tidewater Maryland even into Mississippi men cleared more and more forest as land wore out under continuous cropping. They tried to save the land but often they were pushed up the hillsides to feed their families.

"Today," Hugh Bennett told me, "about 15 per cent of this typical lower Piedmont county has been made valueless for further farming, although much of it is producing timber. Nearly seven-tenths of the remaining area of arable land from now on must be cultivated under modern conservation methods if it is to be retained as a capital asset."

Much of the damage has been done in his own lifetime. It happened not so much because the land was less capable of producing foodstuffs as because, under changing labor conditions, the average farmer considered it more profitable and satisfactory to grow a larger acreage of cotton. It happened when the mills were rising, in a period in which the state believed — and believes still — that it was stirring in progress. Maybe it was. It was certainly poor in the nineties. Hugh Bennett can testify to that himself. But what he remembers makes the poor past a confusing mixture of poverty and pleasantness, of more independence and good sense than cash.

Of course, every man does come home again in his heart a thousand times. He may go back, also, to times when he was young with as much sentiment as recollection. And big Hugh Bennett must be understood not merely as scientist but as having those qualities of the poet, also, which may turn a scientist with a faith almost into a fanatic with a mission. Nevertheless, looking back across the damage to the land in which he participated, he remembers in his North Carolina youth inconceivably bad roads in winter and spring, five- to eight-cent cotton, walking to school when the mules were too busy for him to ride, chopping cotton as well as hunting and fishing. He recollects that the old folks talked about crops, the Democratic party and the Civil War. Now, especially, he remembers the deep gullies on the Wooten Place nearby. All the same, he recalls a picture of North Carolina and the South which is as pleasant as valid.

It is difficult now, Dr. Bennett told me, to make people understand the good life in the hard times. It is hard to give them a conception of the vast fascination of cotton-ginning time or of the delight of corn shuckings and big August meetings. There were not many visitors, but those who came arrived for leisurely stays at the end of roads just passable during good weather.

"In those times," he said, "it was not easy for farmers to borrow money. They could get credit for goods purchased at the store in town but cash was not to be had. Accordingly, at the end of the year there were no debts to be paid at the bank, and generally it was possible for diligent farmers to produce something more than enough to pay their store accounts. Economically speaking, my recollections go back to a long period of definitely low prices and perennially unpromising outlook on the farms — the decade of the nineties. That was a long lean ten years on Anson County farms."

But it was a strange poverty by that which continues now, and rich as remembered.

"Our family — there were nine children — as well as some of the neighboring families, managed during those years to send most of the children to college, solely on the proceeds of the plantation. When my father died, about 23 years ago, no mortgage or indebtedness of any kind stood against the place. This degree of success had come about partly because the 'live-at-home' plan of farming had been followed in a very full sense of the word and partly because it was not very easy for a farmer to mortgage his land."

Usually on other farms — as on his father's place, he remembered — there was ample production of corn, wheat, potatoes, milk, butter, chickens, turkeys, eggs, hogs, beef, honey and a long list of vegetables for home needs, with frequent surpluses for sale. Whatever cotton was grown was largely on the surplus side of the farm ledger, so that cotton prices did not entirely govern the economic situation. Cotton was ginned and compressed on the plantation by horse power. All blacksmithing, horse-shoeing, and iron work were done in the farm smithy. Other repairs were made in the carpenter shop. Nails and staples were made of scrap iron, even plows, bolts, nuts and washers. The life of a farm wagon was practically endless. If a part broke or wore out, whether of wood or iron, it was quickly replaced, usually without a cent of expenditure. Homemade fertilizer was liberally used, he said, — a compost of forest litter, cottonseed and barnyard refuse, heaped stratum on stratum, with sometimes a sprinkling of store-bought acid phosphate. The compost grew after the structural pattern of a layer cake.

There were home knitted socks of homespun and homegrown cotton, and cloth woven on the looms of Aunt Jane, a remarkably versatile ex-slave. The cloth was died bluish with a concoction of copperas and tulip poplar bark and was of extraordinary durability.

"Trousers made of it," Bennett recalled, "became as stiff as leather when they dried out after you were caught out in the rain." (Stiff as the leather they got from the local tannery for making and repairing shoes at home.)

He remembered food again, as a man will during his whole life-time, from the appetite of boyhood: "Flour, meal and grits were ground at neighborhood grist mills, and big hominy was made at home by boiling shelled corn in ashes. Ash hopper lye was used for manufacturing an extremely useful soft soap that had an excellent edge for cutting dirt. Fragrant hickory-smoked hams, link sausage, bacon, and hog-jowl always hung in the smokehouse. Red pepper, sage, horseradish, and other condiments came from the home garden, where grew, also, lavender for the clothes chests. Coffee, on occasion, was brewed of parched okra seed. Sometimes this was sweetened with sorghum syrup or brown sugar crystallized from homemade syrup."

Bennett interjected in wry-faced honesty, "But a cup of this particular brew failed rather dismally as a source of good cheer."

Not even the memory of okra coffee, however, troubled his remembering.

"Thus, so recently as a little more than a generation ago," he told me, "many of the old-time cotton plantations of North Carolina and neighboring states were profitably operated through a long period of hard times. The profits were not large, to be sure, but the mere fact that the cost of farming was better than balanced argues well for the system — that is, if you are speaking of people who can feel any almost-lost nostalgia for travel by horse-and-buggy, kerosene lamps, home-churned buttermilk, persimmon beer, and sillabub."

I do not know how many farmers there are in Anson County now, or North Carolina either, who would regard such homesickness as something less than a disease. A good many looking back remember that those years had not seemed to all men sweet. They were the years in which the Farmers' Alliance grew in terms of farmer fury, when men in North Carolina heard and answered the big-voiced woman from Kansas who cried that it was time to raise less corn and more hell. In North Carolina they kept on growing more cotton — and tobacco, too — but they were angry enough to vote as Populists with the Republicans against the Democrats. And that was angry in the South! But light did not come with the heat.

In Wadesboro now, there are more than 25 stores which help feed the farmers, more that clothe them. There are as many places to take care of their cars. Even an undertaker has a filling station as a side line. The livestock dealer sells autos, too. Something has happened to ourselves as well as our soil. It began, of course, with the shift from slavery to tenancy and the emphasis which sharing put on cash. Not all that sharing was between landlord and tenant. In the credit system it extended to people far away who could only keep the books of business in money and were not concerned about subsistence.

Also, in those years across the whole South the land answered the world's increasing demand for cotton. It spread from 15 million acres across 45 million (now it has fallen back to 25 million). More smokers

Greg Conniff, *Dane County, Wisconsin, 1995*

paid more cash through the enriched companies for tobacco. More, but not enough, cash went to the countryman. He spent more in town. Store soap stunk sweeter than that made in the old black iron pot. Not even Hugh Bennett's ingenious father could have devised a homemade substitute for gasoline. The schools helped the newspapers — even the farm papers which talked "live-at-home" — teach new desires. Coca Cola took the place of persimmon beer.

All that was progress, like the higher taxes which had to be paid in cash. But the whole process has sometimes meant spending more in town and having less at home. And I think the people prefer it even when it impoverishes them. A girl could save money making her own clothes, but chain store dresses do something to her soul that maybe Hugh Bennett and I could not understand.

But what Hugh Bennett tried to make me understand — and what he has tried to make America understand, I think — is that the good soil does underlie the good life. And that good life was his North Carolina boyhood. It was not merely sound agricultural economics. It was not merely the farm leisure during winter and the springtime rush of plowing and seeding. It was satisfying also, or it seemed so, after fifty years. Maybe you have to love the land to save it. The field hands then sang loudly and cheerfully, he said, to a crescendo in July when the season of cultivation closed, to a plaintiveness in October, which matched the changing foliage of the trees. He remembered particularly "laying-by" time on the cotton farms, a well earned recess from late July to late August when tenant and landlord found respite from crops and labor, and the fields were left to sunshine and rain. It was a time of hot day and the cool of the evening. Then were the big meetings where, as he told me, spiritual affairs mingled indiscriminately with neighborhood gossip and baskets sumptuously laden with pound cake and fried chicken.

"Just sittin' was a form of recreation not to be despised," he remembered. "Delicate fragrance spread across the cotton fields. The miracle of countless blossoms, changing from natal yellow of forenoon to delicate pink with the setting sun, and finally, to deep pink of maturity the following morning, was a beautiful thing. Those who lived by the side of cotton fields had a deep affection for them — the same kind of feeling that makes the rustling of corn a merry sound to the Iowan."

Beyond summer: "October morning! Like phantom mountains, cumulus clouds paraded the heavens. Beneath them throughout cotton land millions of acres of fleecy fiber gleamed in autumn's warmth. Cotton harvest was on. Every day hundreds of thousands of human machines, long sacks strapped to shoulders, marched up and down the fields gathering with their hands the fluffy locks of vegetable fleece. On sheets spread by the side of fields, small piles of silken whiteness grew into cone-shaped hillocks as the day progressed; they were weighed, recorded and hauled to the nearest gin."

Obviously such talk is poetry. Even then, as Dr. Bennett knows better than the rest of us, the soil was being sold with the cotton. He helped the process along himself and in doing so began his education and, maybe, the education of America. It was a strange joke that he did it trying to help earn the money to pay for his college which was supposed to teach him to be a scientist. During the winter of 1896-97, with a colored farm hand named Watt Gaddy, he cleared about 30 acres of hill and bottom land — on what he called the Rocky Ford tract. It was all good soil, but some of the hill land was too steep for cultivation. Also, he had had some share in clear-

Greg Conniff, *Dane County, Wisconsin, 1992*

ing a very steep slope near the house of Aunt Jane, the old weaver of the leather pants.

By that time most of the virgin stand of mixed hardwoods and pine that once covered the Piedmont region from Virginia to Alabama had been cleared off and the land brought into cultivation. Many stands of second growth pine were being cleared for the recultivation of land that had been abandoned mainly as the result of soil impoverishment by erosion. Farmers all up and down the country were no more ignorant than young Hugh Bennett was. But that was pretty ignorant. He was less ignorant, years later, when he came back to look at the old home place. He spoke sadly about it.

"It seemed to me as I walked over fields and abandoned fields that terrific changes had taken place. The Rocky Ford hillside Watt Gaddy and I had cleared of virgin timber was pouring its soil into the Pee Dee drainage system. Rambling through the pine woods near the 'Jane' place, I found much land that had been terribly slashed with gullies. There were exposures of rock in the field I had helped clear as a youth. The

magnificent oaks, hickories and forest pine that once covered these hills were gone — along with the productive soil and the people. Forest fires had left only a vestige of Aunt Jane's house.

"I found, also, that Gould's Ford Creek, which had been canaled by convicts of the State Farm in 1899, had again filled with the debris of erosion. Land where once I had hoed cotton and corn was covered with lakes and a swampy growth of cattails, rushes and willows. The most beautiful piece of virgin hardwoods I had known in my youth — that on the Grace tract of an adjoining plantation — which had been cleared about the close of the century, had been largely washed to a condition of sterility.

"Nothing could be done about it. No one was interested."

Well, not quite no one. He was. The North Carolina story might have ended right there in the gullies if Bennett had not made an American story, too. I think he made it by hammering and harassing, working hard and raising just a little hell. Even then, he needed the dust storms of the West to convince the senators.

Beyond the University of North Carolina, he began to get his real learning on a soil survey which he helped make in Louisa County, Virginia. There he made the simple lesson of sheet erosion which washed off the topsoil so gradually that both farmers and agricultural scientists had not seen the change.

They would not see it even when Bennett showed it to them. As late as 1909 the Bureau of Soils officially declared, "The soil is the one indestructible, immutable asset that the nation possesses. It is the one resource that cannot be exhausted, that cannot be used up."

"That was written under the direction of my chief," Bennett said and Bennett knew it was absolute foolishness.

"Ten years ago," Bennett told me, "not so many as fifty people in the United States knew what sheet erosion was. The average person did not know what you were talking about when you discussed the subject of erosion."

It took a lot of educating when you had to educate not only the farmers but the scientists as well. Meantime, his chiefs sent him off looking at the soil of this whole hemisphere, from Alaska to Peru, while he kept talking about the condition of the land beneath their feet. Finally, in 1929, an appropriation was made by Congress to investigate the effects of erosion and develop measures for its control. The Soil Erosion Service was established in 1933. Then there was the dust storm of May 12, 1934.

"It had considerable educational effect," Bennett told me with the gift of understatement which farmers sometimes have in North Carolina as well as Vermont.

The next year he was testifying before the Senate Public Lands Committee on Public Bill 46, 74th Congress, the first soil conservation act.

"The hearing was dragging a little," Bennett said. "I think some of the senators were sprinkling a few grains of salt on the tail of some of my astronomical figures relating to soil losses by erosion. At any rate, I recall wishing rather intensely, at the time, that the dust storm then reported on its way eastward would arrive. I had followed the progress of the big duster from its point of origin in northeastern New Mexico, on into the Ohio Valley, and had every reason to believe it would eventually reach Washington.

"It did — in sun-darkening proportions — and at about the right time — for the benefit of Public 46.

"When it arrived, while the hearing was still on, we took a little time, off the record, moved from the great mahogany table to the windows of the Senate Office Building for a look. Everything went nicely thereafter."

The big Anson County farm boy laughed. I was not sure in his triumph whether he was scientist or evangelist. I do not think it matters. The important thing is that an army of men set out to try to do something to the lands that had been scratched and beaten, wasted and gullied so long. Some of them came to North Carolina and Anson where Bennett himself hacked the old Rocky Ford tract long ago. Much has already been accomplished, but it is a job that is not finished and will not be finished soon, even in Bennett's own Anson County.

Rain In Kansas

Mrs. Frances V. Stegeman, Kansas,
The Land, Vol. 1, No. 4 (1941)

Following an entire season of excessive moisture when even the straw and hay stacks and the shocked feed reeked to high Heaven with must and mold, a super ten-inch flood followed countless minor deluges of from four- to five-inch rains. The highways here were blocked with water. They were virtually impassable in places for days afterwards, because of chassis-deep silt deposits from the farms.

We are two people on this four hundred acre farm. My husband is in the way of becoming a casualty, since farm help is non-existent. His painfully constructed terraces and topsoil are swept away. (I recall a neighbor just across the road who brooded upon the gullies that were consuming his farm until he became unbalanced and blew his head off with a shotgun.) My husband, who is one of the best farmers by oldtime standards, is surely shortening his life in this struggle. Yet the poor or sloppy farmers who do not, like my husband, disc or harrow following each rain have proven this year kinder to their land and have saved more soil than he has. With them the weedy top growth helped hold the soil.

In this country we have lost more topsoil through heavy rains in preparing land for alfalfa than the crop could build in many years. These swept tablelands make the heart bleed. There is no permanence here.

—Mrs. Frances V. Stegeman, Kansas

White Trash and Fanatics: An Exchange of Letters

Angus McDonald, *The Land*, Vol. 1, No. 1 — 1941

Dear Angus:

You suggest that I read what Archibald MacLeish, Erskine Caldwell, Paul Sears, John Steinbeck and other literary bigshots say about eroded land and people. Well, I have read some of the books these men have written and I've seen some of the picture books too that show woebegone people and big gullies and all that. And I want to say to you, Angus, that I am about fed up with such stuff. Here in Oklahoma a lot of these Grapes of Wrath people are just poor white trash. They were born that way and nothing the government can do will help them in the long run. A lot of them got put off their land because they were too trifling to take care of it. I think you government fanatics and literary people should stop writing and taking pictures of erosion. I'm sick of the subject. ...

— Sincerely, Joe

Dear Joe:

Three thoughts in your letter angered me, and one thought saddened me. I am going to tell you just what I think. First, I do not like that crack against good writers such as Sears who have done so much to press the tragic facts about soil misuse out beyond the little rim of technicians and scholars, into general knowledge. Second, your sneer at white trash. Genetically, there is no ground for considering poor white Southerners or their occasional strays to the North inferior. Feed them better; give them a chance; and they will become our "contemporary grandfathers." (See Henry A. Wallace's dollar book, The American Choice; Chapter II, "People and Resources.")

And now the third thing, which saddened me, is that you, Joe, who write for papers with a large farm following, as well as city people, should take such a blind and brutal view of soil waste and human waste in our own state, Oklahoma.

You are an old-timer in Oklahoma. You know that in the beginning land was almost free. The early settlers didn't know about conserving the soil. They had come from the East where it rained and they didn't know those sandy land farms would blow away. So they plowed up the prairies and in a few years the wind began pushing the sand around.

That was in the West; in central Oklahoma the farmers didn't know that when they cut the timber off those blackjack hills the soil would wash off. Nobody was interested in erosion then. There weren't any picture books. There wasn't any Soil Conservation Service, and there weren't any Deserts on the March people. There were a few pioneers but they didn't have the skill to create a work of art like The River and they couldn't write as well as Lorentz, MacLeish, Sears, or Caldwell.

One of these pioneers was John Fields. Probably you knew him. Another was "Bermuda Grass" Mitchell of Lincoln County; another was Harry Kelley of Fort Smith and another was J. A. McDonald of Sallisaw. All of these men made nuisances of themselves. I know because I used to ride up and down those Sequoyah County hills with my father and people would wink and say to me, "The old man McDonald is a fanatic on soil conservation. People are just about fed up with all his talk about the country's going to rack and ruin."

It was the same way with Harry Kelley. He said to me last summer, "In the early days people said they didn't want to hear any more talk about bermuda grass. We don't want to hear any more about soil conservation, they said."

And one man wrote in to John Fields' paper once and had his subscription cancelled because he wrote so much about bermuda grass. But these men didn't stop preaching soil conservation ideas. They knew if the farmers didn't start practicing soil conservation they would be ruined. They would lose their farms. They would become less prosperous. They would become poor as church mice and their children would

Paula Chamlee, *from the series High Plains Farm, Adrian, Texas, 1995*

be called white trash, and would be blamed because they hadn't picked out better homes to be born in.

But these men did a lot of good even though erosion increased as Oklahoma grew older.

The first area to be washed away was the blackjacks. The flood year of 1908 ruined a lot of farmers. I suppose you'd call that year a white trash maker, for a lot of farmers lost their farms. And when they became renters the landlord said "Raise cash crops." So the land suffered and as time went on wind erosion increased. A lot of people were blown out in 1901, 1903, and 1911. A lot of people lost their farms. It didn't rain much those years and some people let their farms go for taxes or sold out for a song. They became renters, sharecroppers, white trash.

And John Fields and Bermuda Grass Mitchell preached on — said the country was going to the dogs if somebody didn't do something. They tried to rouse all of the people to the menace of erosion. But people didn't take their advice — not many at least.

The land's not all washed away yet, they said. So the land continued to be mined instead of farmed.

This went on for years and years and more land became submarginal and more farmers couldn't make a living. I knew some of these people who were washed out. I knew a young fellow who lived in the county where I was raised and to begin with he had 80 acres of the best hill land in the county. Tom was a good hard-working man, part-Indian, but the only kind of farming he knew was cotton farming and he ran his rows the long way of the field regardless of whether they were up or down or on the contour. He moved onto this farm just before the World War. I think it was in 1916. He had as pretty a little wife as you ever saw but she could pick and chop more cotton than most men in the community. Yes, Tom and his wife were hard workers. In crop time they were out in the field by sun-up and Tom was one of the first farmers to get his cotton to the gin.

Well, for a few years he prospered. He got 30 cents a pound for his cotton and on Saturday he and his wife would get into the new John Deere wagon, as is the custom in Oklahoma, and go to town. Tom was proud of his wife and she wore pretty dresses and even had high-heeled shoes. And after the babies started coming they had one every year. He dressed them well, too.

But Tom never did raise anything much but cotton. Oh, he had a few acres of corn for his mules and he had a little hay for his old scrubby cow and he usually had a little meat in his smokehouse but the main thing was cotton. And why not? It was the only way a farmer could get any cash money.

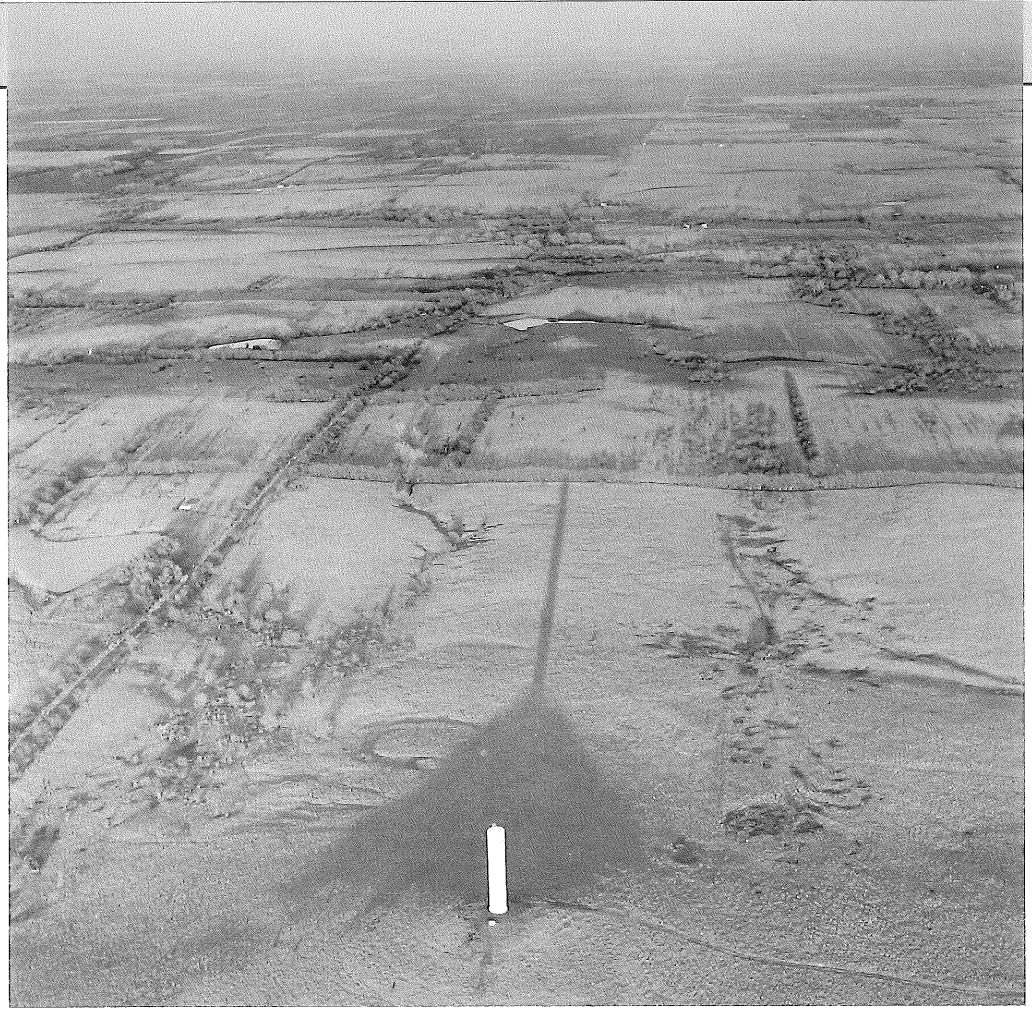
Then the seven lean years came and cotton went to six cents and soon Tom was right where he started. He had saved up a little money during the fat years but it didn't last long and soon he was borrowing money at the bank. And after a few years of low prices, when sometimes the cotton wouldn't much more than pay for picking, Tom had to go down and get a loan on his farm. He thought times would get better and he could make a good living again. By this time Tom realized he should have taken the advice of men like my father, but it was too late. He had to raise cotton because the bank wouldn't lend money on any other crop.

So every year Tom went down and got money to live on until his crop was made, and in the fall he often couldn't pay it back because prices didn't come up.

Tom went on like this for ten years, I guess, and finally he lost his farm. The bank closed him out. It got so he couldn't even pay the interest, for every year the bank had let him have a little more money until finally they had let him have more than the farm was worth.

Well, finally the bank had put out so much money on farms like Tom's that it couldn't make any money either and it had to close its doors. About 1927, 1 think, the bank failed and then the people who took it over closed Tom out.

Well, Tom continued to farm the same old farm as a renter but now there were big gullies down the slopes and in some places the soil was almost yellow. Tom didn't make as much cotton as he used to. He



Terry Evans, *Tower for Saline County, Kansas, Water District #2, April 18, 1991.*

didn't average more than 200 pounds to the acre in the seed.

So, of course, Tom made less and less money. He mortgaged everything he had, his cow, his team, his tools, and even his chickens and the few pieces of furniture.

To make a long story short, Tom finally lost everything. Creditors came and took his mules and his tools and about all he and his wife and kids had left was the clothes on their backs. So he moved into town and got a job on W.P.A.

Now there are a lot of people like Tom in Oklahoma and for that matter all over our country.

People began to say, well, maybe we should try to get all the people aroused to the menace of erosion. Maybe if we'd show some pictures of people who had been washed or blown out, that would help. And some literary big-shots wrote books written in such a way that a person didn't have to be an expert to understand them. The hopeful part of it is that people liked to learn about these conditions. They said, "We are sorry. We will try to help those people. You can't blame those children even if their parents are white trash."

So a Soil Conservation Service was started in Washington and men were sent out all over the country to try to help the people stop the blow and the wash and give them a fresh start. Of course, a lot of these poor people were ignorant and had to be shown, but the government said they cooperated almost 100 percent. And for the first time almost everybody became interested in the land.

A lot of people saw that if the land wasn't saved the country would go to rack and ruin, as my father said twenty years ago. They knew also that our people could be improved as well as the land. They knew it was a big job and that it would take a long time to make soil savers out of soil wasters, but they resolved to do everything they could in any way they could, be it ever so little. Maybe they couldn't write a novel, or a Deserts on the March; maybe they could only write bulletins and articles about soil conservation.

I hope in your next column that you will put in a good word for soil conservation. John Fields made a compact with Harry Kelley in 1906 that he would never publish another issue of the Oklahoma Farm Journal without an article devoted to bermuda grass as a means of erosion control. I would like to make such a compact with you.

— Sincerely, Angus McDonald

I Kings, Chapter 5

AND Hiram king of Tyre sent his servants unto Solomon; for he had heard that they had anointed him king in the room of his father: for Hiram was ever a lover of David.

2And Solomon sent to Hiram, saying,

3Thou knowest how that David my father could not build an house unto the name of the LORD his God for the wars which were about him on every side, until the LORD put them under the soles of his feet.

4But now the LORD my God hath given me rest on every side, *so that there is* neither adversary nor evil occurrent.

5And, behold, I purpose to build an house unto the name of the LORD my God, as the LORD spake unto David my father, saying, Thy son, whom I will set upon thy throne in thy room, he shall build an house unto my name.

6Now therefore command thou that they hew me cedar trees out of Lebanon; and my servants shall be with thy servants: and unto thee will I give hire for thy servants according to all that thou shalt appoint: for thou knowest that *there is* not among us any that can skill to hew timber like unto the Sidonians.

7And it came to pass, when Hiram heard the words of Solomon, that he rejoiced greatly, and said, Blessed *be* the LORD this day, which hath given unto David a wise son over this great people.

8And Hiram sent to Solomon, saying, I have considered the things which thou sentest to me for: *and* I will do all thy desire concerning timber of cedar, and concerning timber of fir.

9My servants shall bring *them* down from Lebanon unto the sea: and I will convey them by sea in floats unto the place that thou shalt appoint me, and will cause them to be discharged there, and thou shalt receive *them:* and thou shalt accomplish my desire in giving food for my household.

10So Hiram gave Solomon cedar trees and fir trees *according to* all his desire.

11And Solomon gave Hiram twenty thousand measures of wheat *for* food to his household, and twenty measures of pure oil: thus gave Solomon to Hiram year by year.

12And the LORD gave Solomon wisdom, as he promised him: and there was peace between Hiram and Solomon; and they two made a league together.

13And king Solomon raised a levy out of all Israel; and the levy was thirty thousand men.

14And he sent them to Lebanon, ten thousand a month by courses: a month they were in Lebanon, *and* two months at home: and Adoniram *was* over the levy.

15And Solomon had threescore and ten thousand that bare burdens, and fourscore thousand hewers in the mountains;

16Beside the chief of Solomon's officers which *were* over the work, three thousand and three hundred, which ruled over the people that wrought in the work.

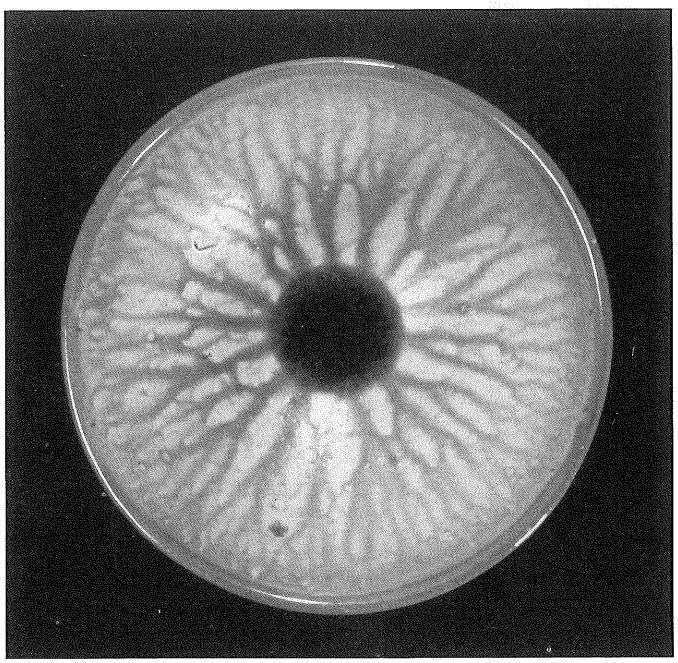
17And the king commanded, and they brought great stones, costly stones, *and* hewed stones, to lay the foundation of the house.

18And Solomon's builders and Hiram's builders did hew *them,* and the stonesquarers: so they prepared timber and stones to build the house.

Editor's note: Where those cedars which went into the temple once stood, the soil is now mostly bare. The temple was later destroyed. What if wilderness itself had been the temple?

At The Land

Prairie Festival 2000



"The Art of Living in Place" is the theme for the **Prairie Festival 2000** to be held **May 26-28, 2000.** Terry Evans, board member and Land Institute Arts Associate, is coordinator of the upcoming festival. Artists and scholars will address the interrelatedness of aesthetics, beauty, place, sustainability, and the art of living in relation to these concepts. There will be performances, presentations, and panel discussions.

The weekend Prairie Festival also features music, dancing, guided prairie walks and birdwatching, children's activities, and food. It gives the Institute an opportunity to host visitors while providing entertainment, education, and a social event for area residents and visitors alike. Campers are welcome on our grounds during this event (primitive facilities).

Registration information will be available in early March 2000. Current information can be found in the events section of our website at **www.landinstitute.org**. For information, e-mail *theland@landinstitute.org* or call (785) 823-5376.

Above:
Deep sea sediment organized into this patterned glaze during firing on this ceramic bowl by Joan Lederman.

New Website!

www.landinstitute.org was born this September. Look here for Organization, Programs, Events, People, Publications, Giving, and photos. Read about our Graduate Research Fellowships with due date and application. Find timely information about events – including Land Institute speakers in public programs across the country and our Prairie Festival dates and program. Gradually we will be filling in all of the program areas and archiving essays, papers and research reports from The Land Institute. This first edition will evolve in response to reader comments. So please let us know your reactions: e-mail our collector of suggestions and webmaster **Liz Granberg** at ***webmaster@landinstitute.org.***

About the Photographers...

In the third issue of this special series on agrarianism, we again feature the photographs of four photograhers committed to an exploration of the human relationship to land and landscape: **Paula Chamlee, Greg Conniff, Scott Jost,** and **Terry Evans.** Please look for Scott Jost's new book coming around Thanksgiving, *Blacks Run: An American Stream.* It is available at the Center for American Places, P.O. Box 836, Harrisonburg, VA 22801-0836; 540-433-1180; www.americanplaces.org. This book brings each of us back to the places we cherish in our own home landscapes, with his eloquent expression in photographs and words about the abuse and restoration of a stream near his home.

About the Authors...

We are again featuring articles by **Wendell Berry**, **Donald McCaig**, and **Gene Logsdon** in this third issue of the special series on agrarianism.

Paula V. Smith is a professor of English at Grinnell College in Grinnell, Iowa. She flourishes in the enterprise of sending forth rhizomes from central Iowa. Her poems, fiction, and essays have seen publication in many literary journals.

Thank you to our contributors, May 1 through August 31, 1999.

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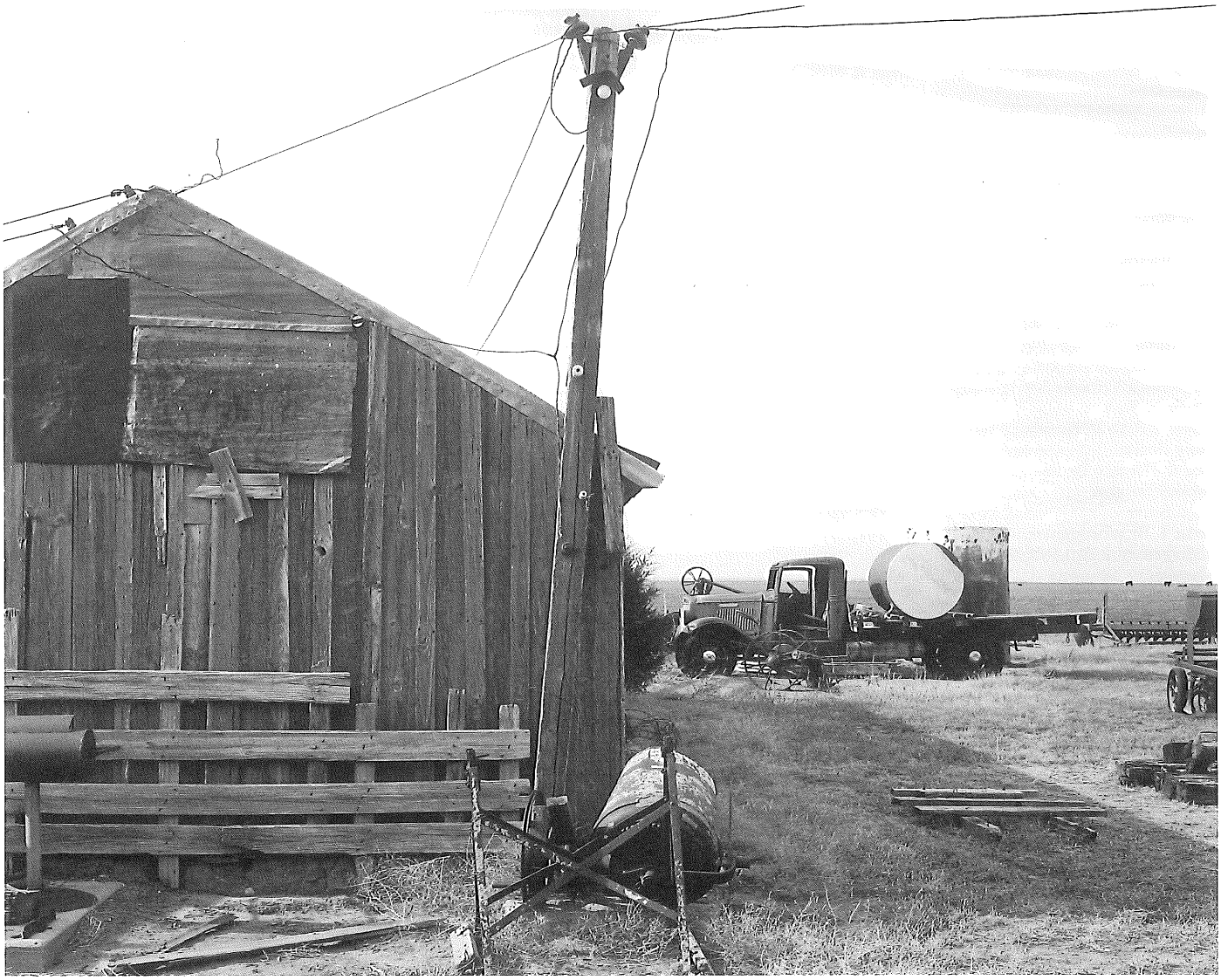

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