

New Alchemy

A long time ago, when I first wrote about New Alchemy as it was just beginning, it wasn't too difficult to give a rendering that rang fairly true. There were so few of us then, and we had taken only a few cautious steps around the edges of the vast idea we were exploring. Each aspect of our work, every fish and garden crop, every new wind gadget, could be remembered, named by all of us. We had all taken part or at least been present for part of the activity surrounding each one of these.

But slowly at first, and then more rapidly, the group expanded, the number of projects increased, new fields of work were incorporated, and some of the sense of the turning seasons and years was lost; some of the harvests began to blur together a bit. Even then it was possible when writing of an event or particular period of time to convey a feeling of the place, of the people and what it felt like to be together, of the various projects, and of the underlying intellectual framework in which it all took place.

It has become much harder to do so. So many of the areas of research; the computer modeling of solar design, the analysis of the water chemistry in the solar-algae ponds, the details of suitable tree management, have reached a level of complexity requiring expertise well beyond that of the amateur. It has become challenging for any one of us to give a comprehensive explanation of all facets of our research. The range of subject matter in this Journal testifies to this. The report on toxic chemicals in the

Ark, for example, or the one on modeling algal growth and decline in solar-algae ponds, is highly technical and while still of interest to nonexperts, could not have been generated by them. Clearly, in spite of our best intentions, we have had to give way to a degree of specialization. It is frequently essential that we have subgroup meetings in addition to the regular weekly meeting of the complete group. Five definable categories of work have evolved: agriculture, aquaculture, bioshelters, the National Science Foundation team, and administration and outreach. Each of these requires informed decisions, and although all meetings are open to everyone, none of us can possibly find the time to go to many that don't directly concern us.

With this unavoidable separation of work and, spatially at least, of people, it's harder to summon a phrase that encapsulates a feeling of a time common to all of us. A summer of great productivity in the garden may be one of mishaps in aquaculture. The windmills may be behaving commendably during the same period that the office staff or outreach people are running constantly just to stay in the same place. I used to write paragraphs that began, "It was a summer of sunflowers, marigolds and cabbages, tilapia and midges, weeding and picking . . ." and feel that such phrases gave a summary and essence of that time. I don't think I could do so now. It is so much harder to extract and distill a commonality from a more complex and diffuse reality.

Ron Zweig



And yet, at base, the fabric remains a whole. New Alchemy is not made up of departments, the work and goals of which are unrelated. We are conscious most, if not all, of the time whether some one of us is running the computer, or cleaning out a fish tank, or hoeing the soil, that we are working physically and conceptually to help make possible a sustainable future. Inching slowly forward, always falling short, that is the reason, the hope, and the ethic in which we work. So most of the time the prevailing psychological climate, although more disparate than it once was, is not one of disunity.

And then there are still the wonderful times like communal work sessions, or gatherings, or feasts like the weddings of Colleen Armstrong and Sheldon Frye, and Susie Hoerchek and Jeff Parkin, or Harvest Festival, or even a good Farm Saturday. Then it's all still there, an unshakable sense of what it is we set out to do, and why, and a sense that we would not have our collective life other than it is.

In this section, devoted somewhat loosely to events at the center on Cape Cod and its affiliate in Costa Rica or to various activities of New Alchemists, we have included a sampling of doings in the office, an account of apprenticeship, a description of our outreach program, some observations of a traveling New Alchemist, and Bill McLarney's saga of the eventful life in Costa Rica.

N.J.T.



Hilde Maingay



Hilde Maingay



Hilda Mangny

Adventures in the Mail Trade

Denise Backus

In October 1979 *New Alchemy* appeared on ABC's "Good Morning, America." The film crew arrived just days before Harvest Festival weekend. We were swamped with preparations for that, in the middle of reglazing the Ark, and talking with a writer doing a cover story on us for *New Roots*. The film crew was easy to have around, the weather cooperated, and to our surprise we enjoyed it.

On October 23 the three- to four-minute segment appeared on TV and our address was flashed on the screen for a split second at the end. I suppose we did discuss what the publicity might do to our already heavy mail load, but we were unprepared for the deluge of letters. Fifty the first day, then a hundred, and more in the days that followed. By the end of the third week, the numbers dwindled, but we had received a total of about 1,350 letters. Our small office staff couldn't handle the job, so we farmed it out to another person, who put all names and addresses on labels and helped us send out the letter John and Nancy Jack Todd composed along with a brochure and a bibliography.

Some wonderful versions of our address arrived

at 237 Hatchville Road in East Falmouth:

Biotransition, Etc., Hatfield Rd.
 Solar Living, Hatchmore Rd.
 Solar Research Farm, Hatchenow Rd.
 The Academy Corp, Hatchfield Rd., MA
 Food Farm TV, Hackford Rd.
 Organic Life Farm
 Scientific Thermiology
 Alchemy 2000
 Hatchmill Institute of Solar Energy
 New Way of Living
 Food Without Fertilizer
 Alcohme Society, Homestead Project, Hatchmouth,
 Facemouth, MA

and my favorite:

Solar Energy-Windmill Power-Fish Raising-Vegetables (with nonchemical humis fertilizer) Experimental Farm, Hatchville, RFD, MA

Not bad for a quick flash on the screen. And hats off to the post office that brought it all to us. The mail hasn't been quite the same since.

Reflections on Apprenticeship

Scott Stokoe

“Volunteer.” “Apprentice.” “That new guy working with Ron.”

All these epithets point to the meaning of being a volunteer at The New Alchemy Institute. But each of these categories alone is incomplete.

Volunteer. This definition touches the basic nature of our position here. We receive no pay, no benefits, no board or housing. We have come to donate our time, energy, and ideas. Yet our role runs much deeper; we do, in fact, receive so much.

Apprentice. We have come to learn, to practice under a skilled and learned person. And from our contribution of time and support we receive invaluable hands-on experience and an opportunity to study the basic research and information for which New Alchemy is noted.

“That new guy working with Ron.” This third label points to our individual relationships with our work, our sponsors, and the institute as a whole. We are placed in one-to-one encounters with our mentors; this is rare in traditional higher education. The hours we work, the information we research, and the work we do in the field are all a part of these personal relationships. And we have the opportunity to pursue our own areas of interest within our research.

A final consideration is the simple opportunity to be present and involved with The New Alchemy Institute. From eating fresh out-of-season greens and vegetables to meeting and interacting with some of the innovators and thinkers of the alternative movement, the extracurricular experiences are many and varied. Conferences, lectures, gardening (for instruction and for eating), field trips, readings, and socializing with Alchemists and fellow volunteers are part of the extra bounty.

These terms roughly define the position of a volunteer. This is the basic experience common to us all at the farm. And yet this is only the foundation for each individual's experience. The substance of each apprenticeship is as varied as the personalities involved. Some of us work full time, some part time. Some are here as a part of their academic program, others have blown in on winds of discontent. Some have specific research directions, others are gaining broad exposure to the huge range of opportunities. Some have related skills and experiences to apply to the ongoing work here, others are acquiring new skills and information to apply to efforts beyond New Alchemy. Some of us have families here with us, others are

single. Some of us are inclined to the theoretical and ideological, while others emphasize the practical and the concrete. And yet nearly every personal facet finds an avenue of expression. Truly, our experiences here reflect the character and goals of each of us.

Volunteers have a wide range of expectations when they arrive here and their experience to date indicates that those expectations are met and shattered throughout their time here.

John Q.

I came to New Alchemy out of a need to explore and discover. Feeling isolated and confused, I was challenging my own inherited axioms and the social structures that expressed them. My intuition and personal experience presented intellectual options, directions that ran counter to the values and ways with which I had grown up and that were currently dominating the culture in which I was immersed. I remained firm in my belief that positive, life-affirming, ecological, and humane alternatives were viable and it was possible to replace the wasteful, destructive cycles of our society. But my blindered search revealed no avenues, no options. Because my alignment with an alternative culture movement came solely from an internal intellectual grappling, it was not clear to me that many other people were searching for ways to create a sustainable future. It took some readings of William Irwin Thompson's work and a radio program about The New Alchemy Institute to bring me in touch with some alternative activities. From this little input, I knew that I was coming to New Alchemy.

Armed with a hardy idealism and buoyed by the knowledge that there was a place that was actually putting alternatives into physical form, I delivered myself to the Cape Cod institute, determined to “fit in.” I had no idea that there was a volunteer program, nor what input I might have in the research. All that was clear was that New Alchemy was proceeding in directions I believed in and to which I wanted to contribute.

My limited background with citrus and avocado trees in Israel seemed to match a need expressed by Earle Barnhart for a yearlong volunteer (the maximum time allowed) to help in the tree crops program. I am now halfway through this program, picking up skills and information daily, while working in the field and in research. I offer this brief

account of my own experience only as one example of the many different experiences and backgrounds of apprentices at The New Alchemy Institute. Each volunteer who comes has her/his own story to tell. The diversity of backgrounds, goals, and directions of New Alchemy apprentices seems as continuous as the flow of folks coming to exchange time, labor, and caring for information, skills, and sharing.

... we formed our Volunteer's Group out of a basic New Alchemy principle of self-reliance. We wanted to increase the vitality of our experience; we wanted more and we created it.

Mick G.

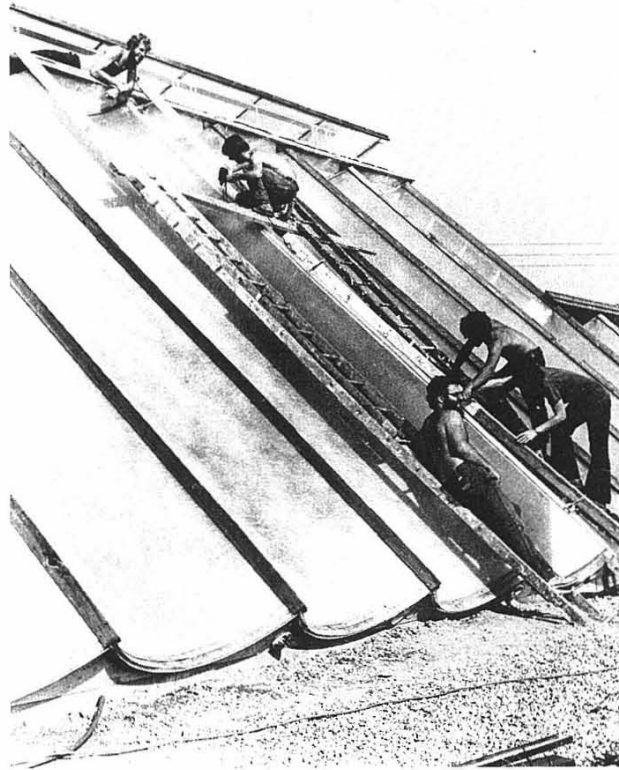
The diversity of the individuals in the fall 1979 group became evident in our early, limited contact. Working on different areas at the farm and pursuing different lifestyles away from the farm, communication and sharing were at a premium. And yet it became clear early in our collective tenure as apprentices that we did have some common goals. We all sought a context greater than our own minds to contemplate the issues raised at the farm within the general movement in which we found ourselves. We all felt a desire to get together socially, to take time to chat, to share our daily activities and the general progress in the fields in

which we were working. And finally, we had a very pointed admonition from our predecessors: to pull together, to communicate, and to support each other.

Some of the volunteers from the previous summer had had some difficult times through that bustling, demanding season—insufficient contact with their sponsors and a heavy work routine without the desired information exchange. This summer group also recognized that a regular meeting of volunteers would be useful both for socializing and information exchange.

This is how meetings began. There were nine or ten of us in the fall and all but two were new. For the structure, we chose the traditional New Alchemy potluck supper. For the function, we chose to study together, in greater depth, the various areas of research at the farm. Since then speakers have been invited from the core group of the New Alchemists as well as other people knowledgeable about alternative lifestyles, philosophies, and technologies.

Our regular meetings, our organization, and our earnestness all combine to create a special place for volunteers at New Alchemy. It is a foundation, newly evolved for apprentices here, that can offer support and depth to the demanding and rewarding life of a New Alchemy apprentice.



Hilde Maringay

Valentine Season: Riverdale

*It's Night
Upon the River
Mid-February
Venus shines
Out of the wintry Sky
From the distance
The Palisades
Loom starkly
Over the world
Such a night
Sends the mind
Back into
Those billion years
It took
To frame all this
The ancient Red Oak
Itself a newcomer
Here by the imbedded rock
With its long glacier striations
It's all here
Too overwhelming
For human endurance
Were it not
For radiant memories
Of the Willows
Seen earlier today
Yellowing
In the late
Evening Sunlight.*

Thomas Berry February 1980



The stage is bare now. We are between theories. We are in the last period of the fossil fuel era—and the so-called nuclear era is already aborting.

What we miss is something as simple as a vision of how we will live in the future.

No one sees the future; we have no clear images—as a culture, as a nation, as the Western world.

When the stage is empty there is unprecedented opportunity.

When the stage of the future is unoccupied, when there is not one strong vision of which we are all in the process of working out, we don't have to fight against either the established vision or the rebels. There is no enemy. The empty stage is the rarest of opportunities. Then build a future, make it work, and let the world steal it.

Tyrone Cashman

Reprinted with permission from *Rain* magazine, November, 1977.

Reaching Out

Robert Sardinsky

In May 1978, New Alchemy celebrated Sun Day, an international day of recognition and festivities on behalf of a solar future. Over a thousand people visited New Alchemy that day, half of them students from local schools. I showed two elementary classes and one high school class around the farm. My first two tours were with a group of first and third graders who were as excited as Mexican jumping beans, curious about almost everything and full of thought-provoking questions (at least from their perspective). I was challenged to explain all that we were doing at New Alchemy in a simplified, yet thorough way. We played, talked, touched, and sang together. New Alchemy took on a completely different perspective for me as I saw it through their eyes. My energy level skyrocketed, and my spirit danced with the kites flying high overhead. I was hooked. Later that day my experience with the high school class was very different. They were a gum-chewing, radio-toting, disinterested and apathetic bunch, no fun at all. What had occurred in the process of growing up? This passage in Rachel Carson's *The Sense of Wonder* gave me some insight into what had happened.

A child's world is fresh and new and beautiful, full of wonder and excitement. It is our misfortune that for most of us that clear-eyed vision, that true instinct for what is beautiful and awe-inspiring, is dimmed and even lost before we reach adulthood. If I had influence with the Good Fairy who is supposed to preside over the christening of all children, I should ask that her gift to each child be a sense of wonder so indestructible that it would last throughout life, as an unailing antidote against the boredom and disenchantments of later years, the sterile preoccupation with things that are artificial, the alienation from the sources of our strength.*

Socialization and schooling was smothering young people's "sense of wonder." Thinking back to my youth I could sympathize with the high school students I had worked with. School had a stifling impact on my development, as did my best friend at home, the television set. Somehow my own deeply ingrained sense of wonder had endured. The beauties, mysteries, and excitement of my childhood experiences in the wilderness gave me this inner strength. My own negative schooling

*Rachel Carson. 1965. *The Sense of Wonder*. N.Y.: Harper & Row.



Hide Mangay

experiences combined with my initial exposure to working with young people at New Alchemy motivated me to search for more humane approaches to educating young people that foster an appreciation and respect for all life on earth. Our Sun Day celebration sparked many requests for tours from school groups. There was clearly a strong interest and need for us to begin catering to young people.

In the fall of 1978, I began building the foundations for a New Alchemy school group education program. It was decided to set it up as a one-year pilot project to determine its long-term feasibility. We wanted to know if the farm could be used as a classroom for school groups without their interfering with people's work and whether the program could sustain itself financially. My first year's experience working with school groups at New Alchemy was very successful and we decided to adopt the program.

Over three thousand students, preschool pupils through graduate students, have participated in our educational programs during the past two years representing public and private schools throughout New England. The tremendous diversity in age, residence, and socioeconomic background of these students gave us an opportunity to try many different approaches to educating young people about living lightly on the earth. Such immensely challenging work has been both energizing and exhausting. In the half to full day we spend with each group, we attempt to open up each person's eyes and mind to the destructive, nonsustainable nature of human sustenance today and to ecologically sound means of building a solar-based society for tomorrow. Our twelve-acre farm/classroom offers an ideal environment in which to carry out this exploration. I begin each program by trying to find out where the group is "coming from" and where they "are at." To communicate with them effectively, I need to know what their interests are to best explain how New Alchemy's work applies to their own lives. I often use noncompetitive, representational games to break the ice and to build a community spirit through cooperative group play. I often turn again to these games later in the day to communicate concepts of ecology and energy that are otherwise difficult to conceptualize. Games like the "Web of Life," "Lap Sit," and "Knots" help develop an appreciation and understanding of the interdependence of life. We build "People Pyramids" while discussing the pyramidal structure and energetics of food chains, and use the "People Pass" for a working definition of energy.

I liked how you put the net over the plants so the birds and animals couldn't get them. It was better than killing the birds and animals.

The fertilizer they used was fish and leaves. They don't use the stuff you get in the store because it contains chemicals that kill the soil after a long period of time.

Inside the Ark our group did a play. The play was about two people and their realizing that wind power is a better source of energy than electricity, money-wise and energy-wise.

I liked New Alchemy and the things there like the ark and the dome and the solar structures. Because you are trying to make the world a better place to live.

When I went into the Ark and the door was kept open for a second I thought it was a waste of energy, then I thought the sun's power will never run out!

I thought it was interesting when you said to put our orange and banana peels in the bucket and this year I'm going to make a compost pile.

I liked having lunch in the dome and learning how you can work a garden with only natural stuff. I think it is really neat the way you can get energy from the sun, store it and grow all those nice vegetables and pretty flowers.

One theory that I found to be interesting and important was that nothing was done w/o an understanding of its effect on the environment.

Like most people I take our natural resources for granted.

The important thing they are doing at New Alchemy is looking to nature as a guide.

As I begin a farm tour, my role progresses from that of greeter to that of artist/interpreter. I try to weave the purposes of and meanings behind the various appropriate technologies demonstrated at the farm into a cohesive picture. The greatest challenge for me involves putting New Alchemy's work into perspective. An understanding of why we are doing what we are doing is essential to seeing the gardens, windmills, aquaculture ponds, and bio-shelters. Without this emphasis, the day would be little more than a "show and tell," as most of the students that visit us are far removed from their life-support networks. Distant farmers, miners, manufacturers, and utility companies provide their needs. Few of them realize the devastating consequences of modern technology or how ultimately dependent they are upon the health of the natural world for their well being.

At each stop on our journey through the farm, we explore the relationship between meeting human needs and maintaining a healthy ecological balance. We play, experiment, eat together, perform skits, paint murals, and engage in group discussion. All are encouraged to use their senses as much as possible. We feel the steaming-hot compost pile and slimy worms, smell the fragrant herbs and vegetables, watch the fish and bees, and taste

The compost pile was interesting in the way that the sticks and junk turned to fertilizer.

I did not feel saturated with facts as I usually do after a day at a museum. Everything was part of an integrated system and what you didn't absorb when touring the garden you were given again in the Ark, but from a different perspective.

If the whole world visited New Alchemy then we could make the earth a better place to live.

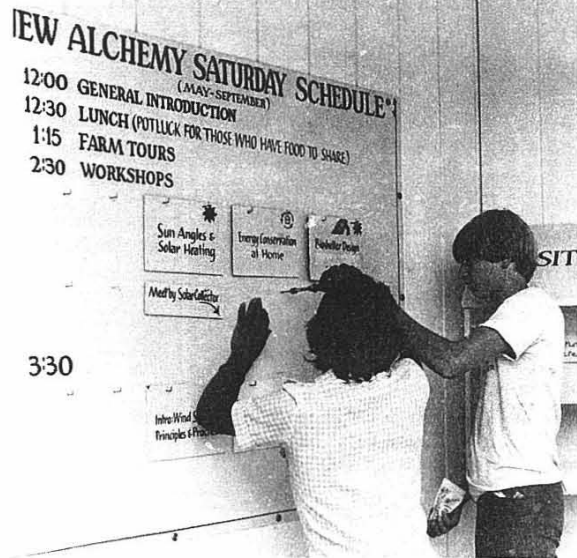
I really like the way you never waste anything, not even waste.

I think you conserve a lot, that's great. If all the people in the world were like you and conserved so much and used the sun for energy the world would be so much nicer.

New Alchemy has the best gourds!

some of the garden fruits and vegetables. After the tour, groups with special interests may participate in one of a number of the more focused workshops that build on what has been seen. We have given workshops to students from elementary school through college age on computer modeling of ecosystem dynamics, food politics/vegetarianism, solar greenhouse design, integrated pest control management in bioshelters, "living lightly" on the earth, and appropriate technologies in third world countries. Whenever possible, a hands-on job such as planting trees, building a compost pile, raising a windmill, preparing a vegetarian feast, or assisting in a fish harvest is included. By the end of their time with us we hope to have given the students a greater sense of their interdependence with the natural world and an increased awareness of the impact of their own lives on it.

Most of all we want them to leave realizing that there are healthy, sustainable means of providing for humanity's needs and feeling that they as individuals can make an important contribution in helping bring this about.



Hilda Maingay

My work with school groups has given me a sense of hope for the future. Looking at their art, I have seen the perceptions of reality of many young people dramatically restructured at New Alchemy. In the short time we spend together most of them are able to grasp the essence of what we are doing, why we are doing it, and what it means to them.

I never thought the sun could do so much.

I was thinking on the way back I would like to make a fish farm this is my dream. Also I was thinking that if you can feed thirteen people for a year in green vegetables if they could do that in India people would not die from famine.

Thank you very much for the tour of NIA. I enjoyed my visit very much. Especially the dome because it didn't take any electricity to heat it which proves that solar energy works. The ark I really liked, because of the way you raised the fish with energy from the sun.



Hilde Maingay

Another Earth Gypsy

Tyrone Cashman

Tyrone Cashman chose the title for his article that follows in reminiscence of one that appeared in our first journal. It was about earth gypsies and was by Laura and David Engstrom. Earth gypsy was a rather romantic term that John Todd had coined for those of us who chose to be wanderers for a while, taking with them, as part of them, the ideas and dreams of all of us. At first Laura found the term amusing but later confessed to finding it evocative of the time of her traveling with David.

We have almost all been earth gypsies at one time or another. John Todd's idea for the Margaret Mead, a great sailing bioshelter that would be a sort of ecological Hope Ship, carries the idea a step further.

Of those who have written of their experiences for this Journal, Ty has settled in California, where he has worked for Governor Brown, and has been president of the American Wind Energy Associa-

tion. As for David and Laura, their period of wandering has given way to a more settled period of parenthood, a task they share equally. David is still with New Alchemy. His meticulous analysis of water chemistry is indispensable to the National Science Foundation sponsored aquaculture research. In whatever other time he can find, he is an artist, working in precious metals and stones. Laura, in training to become a midwife, is bringing her gentle nature into the service of returning childbirth to the woman-defined, woman-controlled, and joyous experience it is again becoming.

In the article that follows, Ty apprises the movement of events since his time at New Alchemy, interweaving them with his own experiences, beginning with the time when he was nomadic—an earth gypsy.

N.J.T.



Hilde Maingay

I put down my ancient copy of the first *Journal of The New Alchemists*. I sit on the edge of the West, in a house clinging to a cliff above the surf of the Pacific just north of San Francisco. Red-tailed hawks, buzzards, and kestrels soar and hunt around my cliff dwelling. Gulls in ragged flocks do barrel rolls in the spiraling winter storm winds. Fog flows inland in summer, coastward in winter. The sun heats the all-glass house by day and the star-flecked universe draws at it by night with an infinite hunger for heat. We sleep summer and winter in an open-doored cabin higher up the slope. Wrapped in fog and sea sounds.

As Laura said in 1973 in that first journal, "Earth gypsies we were called (in the previous *New Alchemy Newsletter*) and at the time I had to smile at the ultra-romanticism of it all. Yet now as I feel my way back to these days on the road the inevitable nostalgia makes the term seem appropriate after all."

I guess I relate strongly to this note, written at the moment in space-time when I became a New Alchemist. Looking back, over recent years I felt very much like a gypsy.

I too set out from New Alchemy in a VW van in the spring of 1977 to cross the continent, heading away from home on a voyage with no long-term destination.

I had only the first step mapped out. I had been invited to Green Gulch Farm on the northern California coast to design and help build a water-

pumping windmill for garden irrigation. It was during the great California drought. I was a missionary, a traveling Alchemist, sharing in other gardens the skills, the vision, and the techniques we had wrestled with on Cape Cod. It was an appropriate work. Although we had up to that time hosted tens of thousands of visitors to our Cape Cod farm, the Prince Edward Island Ark, and Costa Rican Center, we had no outreach program to plant the seeds in other places. I was not sure that was what I was doing. But I was preparing to plant a New Alchemy sailing on other soil.

When New Alchemy was young, the world was far from what we wanted it to be. Our act was a shot in the dark, a stab into a future we wanted and cared for enough for us to do an absurd thing—try to build it.

In the late sixties there were thousands of young people protesting the world as it was. It was Important Work. But we saw another important work to be done: quietly, creatively to nurse the seedlings of a *new* world.

When the Green Gulch Sailing was up and we had set it free to do its work, I wandered again. I wandered to the East Coast, Long Island briefly, and New York City, to the midwest to connect with the clan, and back to California. Sim Van der Ryn, the founder of the state of California's Office of Appropriate Technology, had seen the windmill and asked if I might want to work for him in state government.

I was still ranging the world, an earth gypsy haunted and inspired by the New Alchemy vision: we can create a new world in place of the one we have recently inherited, a world more true to natural systems, gentler, greener, and longer lived, based on an energy and agriculture that will sustain our grandchildren as it sustains us.

I drove through the coastal hills by the Pacific trying to articulate this vision in the context of a whole continent that was leading a whole world along its technological path. It was the fall of 1977. Looking into the future I suddenly realized that it was blank. By the side of the road overlooking valley and sea I put my typewriter on the plywood bed in the back of the van and tried to describe what the emptiness must mean.

I recalled a course many years ago with Margaret Mead; a phrase of hers had struck me then: "We are between theories in anthropology now." Again I recalled an early image, as a theater major at St. Louis University, sitting before an empty stage with a spotlight lighting the bareness. Bateson's "random space" essential to all creativity; Lao Tsu's empty bowl and wheel hub; the void of the Zen Masters. The power of the emptiness of that bare stage has stayed with me.

Out of these images, the vision of our unique historical place came home to me. As it emerged I remembered Dick Gregory's comment during the Vietnam War: "If our democracy was what we claim it to be, we wouldn't have to force it on people with rifles. They would steal it for themselves."

I went to work for the state of California as a member of Sim's Office of Appropriate Technology. There I met young men and women from various parts of the country most of whom had come from small alternative groups: *Tilth* magazine, Ecotope, Turkey Run Farm outside Washington, Institute for Local Self Reliance, United Farm Workers Union, *Co-Evolution Quarterly*, Fallones. It was an odd assortment for a governmental office. Our mandate was to serve the other state agencies helping to implement energy-saving architecture and equipment, to be critics, designers, and proponents. We were to help as we could within this vast structure to show the way for small-scale, environmentally benign systems.

We were another culture. The traditional system tried to eject us with an immune reaction. Both our idealism and our unfamiliarity with how things get done in great bureaucracies got in our way. But we slogged on. And things began to happen. A passively heated and cooled office building was built. A first-cut design for a mixed-use, energy- and water-conserving neighborhood for downtown Sacramento was developed. The Water Resources Control Board was influenced. Drought-tolerant gardens were created in Sacramento. Solar heating training programs were initiated. On-site sewage systems were proposed and implemented. Large tax credits for solar and wind energy systems were passed. Another way of doing things had begun to be recognized in the mainstream of California culture.

And this is our task. I feel that New Alchemy remains as a tuning fork, setting a tone of holistic food and energy systems on a small scale. That tuning fork needs to continue to be heard; that research must continue to develop.

Here we are now in the 1980s. Our original vision of running low on oil and the possibilities of armed conflict over what is our present world's life blood, is on the horizon. We saw this ten years ago. We gave our nerve and sinew to getting tooled up, to preparing another path down which a nation and a world could go instead of seeing only the narrower options of war, national emergency, and martial law.

We saw that by the time the nation perceived its own energy bind it would be too late unless there had been those who had seen it early and prepared the path. The time for strong labor was

early. Either we would make it or we wouldn't. We didn't know.

And here we are. Did we do it, we along with the other individuals, small groups and associations from coast to coast? I think we've come close. I think the original courage and audacity to attempt such a transformation of culture has paid off more than could have been expected.

Just look at the core alternative food and energy complex: homes-solar-wind-gardens. We know that America is a nation of TV watchers. It is our number-one recreational pastime. But now the second most common off-work pastime is gardening. The Gallup organization found in 1979 that out of 78 million American households, 68 million watch TV and 61 million practice some sort of horticulture. Of these, 33 million raise food—carrots, cabbage, cantaloupe, etc.—in backyards or community gardens. Food gardening is practiced by more people than vacationing, fishing, home workshop using, bicycling, jogging, bowling, photography, and on and on. As we've always said at New Alchemy, knowing how to garden is the best skill-base for holistic self-reliant food and energy systems.

We cannot credit New Alchemy, nor all the alternative organizations put together, for the spread of gardening, but it is a very encouraging sign for the future that the American people are already practicing the key skill that the addition of more commonland space and solar greenhousing can turn into decentralized, partial support systems. Even the economics are already good. The total retail value of produce from American gardens was \$13 billion. The average cost per garden was \$19. The average dollar yield per garden was \$367.

The most widely available home energy resource is conservation. Then come solar and wind. Many states have introduced programs to encourage the use of solar and wind energy. The federal government has passed tax credits for this kind of equipment. These credits are being increased. Two major pieces of federal legislation have dictated that the nation's major utilities must offer energy audits to their customers and arrange for financing of solar and wind energy equipment, if, after the audit, the family decides they would like to use these renewable resources. In addition, utilities now *must* buy power from small power producers who use renewable resources, and must pay reasonable rates for that power. This greatly aids the economics of the household wind energy system, since the utility will now act as a storage battery.

In 1974 at New Alchemy I would not have expected changes this radical in so few years. And I have no doubt, after my peregrinations as an earth gypsy, that New Alchemy, standing as a tuning fork, sending out this pure note into the world

around, has had a lot to do with this. That note has been heard in Congress, often to the consternation of the Department of Energy. Nearly everywhere I go the name of New Alchemy is known and respected, and often generates that spark of life and enthusiasm that even a small beginning that brings hope can elicit. These tiny notes we've

been humming in different spots around the nation are resonating.

But now is the new era. Shortages are upon us. Swords are rattling. Let us take heart again, take another deep breath and join with all those who have heard and will carry forward the refounding of America.



Bill McNaughton

New Alchemy and Ecodevelopment in Costa Rica

William O. McLarney

Who knows where the work of writing begins? Certainly not at the precisely definable moment when pen first touches paper, but earlier, in some process of thought or perception. This piece may have begun one evening as I lay in the hammock on the elevated porch of our house in Gandoca, Costa Rica.* The rhythmic sound of the Caribbean surf, often wild, or even menacing when heard

from the beach, seems peaceful and reassuring from just a few yards inland. It merges with other familiar sounds of nature—the song of the *paraque* (a sort of tropical whippoorwill), the sarcastic voice of the night heron that raids our fish ponds, the electric call of the toad *Bufo marinus*. The sounds integrate with the visual images—silhouettes of the feathery coconut frond, the almond tree with its branches “stacked” in layers, the proud new and tattered old banana leaves, the bamboo with its own whispering sound and its constantly dropping leaves, which spin or oscillate like coins sinking in water. The exotic, yet tranquil, mood of such hours touches all our time here.

*The New Alchemy Institute has a small sister organization in Costa Rica. Founded by Bill McLarney with the official and working title of NAISA, it is conducting small-scale, local experiments in aquaculture, agriculture, and tree crops. NAISA's primary motivation is to be useful to the people of its community and protective of the resources of the area, particularly the forests.

Or this piece of writing may have been conceived a few hundred yards from the hammock, on the beach, where Susan and I discovered the first small globs of crude oil that appeared for a while along the coast between Puerto Viejo and Gandoca Bar, and maybe farther. It was a small "spill" of unknown origin, and the only discernible victims have been our tempers, as we cleaned our shoes. But it is a reminder that we are not so isolated as we might like to think and that delightful as meditation in the hammock may be, it is not my work.

An hour and a half by foot from where the hammock hangs, in the magnificent virgin forest that covers half of our new inland farm, one does not hear the sea. But if one listens carefully, one can hear bulldozers at work destroying natural forest, harvestable cacao, and, perhaps most significantly, Costa Rican topsoil in hope of financial profit. That sound is another reminder.

These reminders are not pleasant, but they serve to put our daily efforts in a context; the importance of what we are attempting to do becomes clear. We are attempting to work together with our *campesino* neighbors in the faith that the environmental problems we have been trained to see and worry about and the survival problems they confront daily have a common solution. They said, "*Donda no hay problemas, no hay vida. El gusto de la vida es resolver problemas.*" (Where there are no problems, there is no life. The fun of life is in solving problems.) I hope some of that attitude will emerge in this article, that it will help inspire some other worrywart conservationist or developer to see a particular problem in a greater context and small solutions merging in a greater solution.

The article will draw on my piece on Latin America in the fifth *Journal of the New Alchemists*. In that piece, I expressed some concern that Latin American *campesinos* could become "totally alienated from the ecology movement." I am pleased to report that, in our part of Costa Rica at least, the opposite has happened—*campesinos* are becoming more sensitive to ecology issues. Elsewhere I see the appropriate technology movement starting to reach the *campesino*. And a recent visit to Nicaragua suggested that a government more oriented to public welfare on a broad basis will also be a more ecologically sensitive government. But that is a larger context.

In my previous article I also invoked the single issue that has most concerned revolutionaries, reformers, and reactionaries in Latin America—land distribution. Here, making reference to a portion of Costa Rica that I shall define as "Coastal Talamanca,"¹ I shall examine present and possible future patterns of land tenure and use and their probable effects on ecological and social conditions.

For our purposes, Coastal Talamanca may be divided into three parts of roughly equal size. The Sixaola River valley, to which the Bribris fled after their conquest by Spaniards and Mosquito Indians, is, or was, the most fertile land in Coastal Talamanca. The last conquest of the Bribris saw them driven from the Sixaola valley by the United Fruit Company. Today the Indians live in the mountains, and various offshoots of the conquering multinational still control all but the lowermost portion of the valley.

A second portion of flatland, mostly along the coast but extending up the Sixaola valley to Mata de Limón, is almost entirely in the hands of small farmers. The nearer reaches of the hills separating the coastal plain from the river valley are also in the hands of *campesinos*, but the more remote portions are in large blocks owned for the most part by absentees. By virtue of their inaccessibility they have remained in natural forest.

The history of the fruit company lands since the ouster of the Indians has been one of intermittent agricultural activity and abandonment, with occasional episodes of violence. The valley has not seen the last of violence; in 1980 a group of *precaristas* (squatters) invaded company land near Margarita, erected makeshift houses and had to be forcibly expelled. This promises to be just the first of a series of confrontations.

What is the value of *La Compañía's* 11,000 hectares to present-day Costa Rica? No one had ever tried to claim that the dominant crops (traditionally bananas and now African oil palm) contribute directly to the nourishment of Costa Ricans. Formerly it could be said that some employment was provided, though it was often tantamount to enslavement.² (In the 1950s the United Fruit Company realized more profits in Central America from sales to its workers at its commissaries than from sale of its products.) Today the operation is much less labor intensive than before, and such stoop labor as exists goes to poverty-stricken Panamanian Indians, who will work for less than Costa Ricans. The arguments usually made for the continued presence of the fruit companies in Costa

¹"Talamanca," a Bribrí Indian term meaning "place of blood," inspired by the aboriginal inhabitants' early contacts with European "civilization" and given added weight by the behavior of the fruit companies in the early part of this century, is variously applied in current usage. Politically, it implies the *cantón* (county) of Talamanca, a component of Limón province. In popular use, it is often restricted to the Talamanca mountains and valley, inhabited primarily by Bribrí and Cabecar Indians. My usage of "Coastal Talamanca" roughly indicates that portion of Costa Rica bounded by the Rio Estrella, a line drawn from Pandora to Bribrí, the Rio Sixaola, and the Caribbean Sea.

² If you read Spanish, the classic fictionalized account of life on a fruit company farm in Coastal Talamanca is Carlos Luis Fallas's *Mamita Yunai*. 1978. San José, Costa Rica: Librería Lehmann, 222 pp.

Rica are couched in terms of "balance of payments" or "foreign exchange." These arguments have been attacked many times as apologies for economic colonialism; perhaps the best case is made by Galeano.³

For my part, I would like to submit that in the long run the current fruit company project will prove to be an economic liability for Costa Rica. To understand why I believe this, one must know a bit of the history of the region, and one really should see modern fruit company agriculture. I shall try to convey the essence of it.

I leave Mata de Limón on foot, headed to Sixaola, which happens to be the location of the nearest phone. Just across Quebrada Mata de Limón I pass a battered orange metal sign that declares, "Chiriqui Land Company." At that point I enter abandoned company cacao lands. The shade trees customarily planted with cacao have grown tall; the understory is filled in. Howler monkeys bellow from the treetops. The whole incredible array of tropical birds, insects, and flowering trees is on display.

Mature cacao farms are not only productive and attractive agricultural land, they are a seminatural environment that conserves soil, moderates climate, and supports a great diversity of other plants and wildlife. These abandoned cacao lands are a joy to walk through. With the investment of a certain amount of hand labor they could be made productive; they could produce an export crop, provide employment, be harvested for wood and food crops and protect the land for generations to come. But someone has determined (I suppose) that bananas and African palm oil will be even more "profitable" in the short run. And I can hear the bulldozers.

Soon I enter the desert. The bulldozers are at work removing cacao trees, overstory, understory—every living thing. Only a few of the largest trees are left for the chain saw and the ax. Smash! At a place called Bananera one of the last survivors, a lovely old *nispero*, bedecked with orchids, comes crashing down on a still-livable house, formerly the home of an ancient lady, Doña Nena, who dealt in herbal remedies.

A few hardwood trees are set aside, but most of the vegetation is pushed into windrows. The process inevitably results in scraping away most of the topsoil, especially where the terrain is uneven. When it rains the creeks run full and red, especially since the bulldozer operators pay no heed to the Costa Rican law that prohibits cutting any tree

within fifty meters of a watercourse. Further drainage is achieved by ditches; where it is more convenient, the natural watercourses are straightened.

As I walk on in the broiling desert sun, a howler monkey calls his defiance from the edge of the woods. Tonight, when I return, the tree in which he sits will be gone; when the weather is dry, the bulldozers work from dawn to dusk. Between me and the forest there is literally not a living leaf of vegetation to be seen, just hot, dry earth.

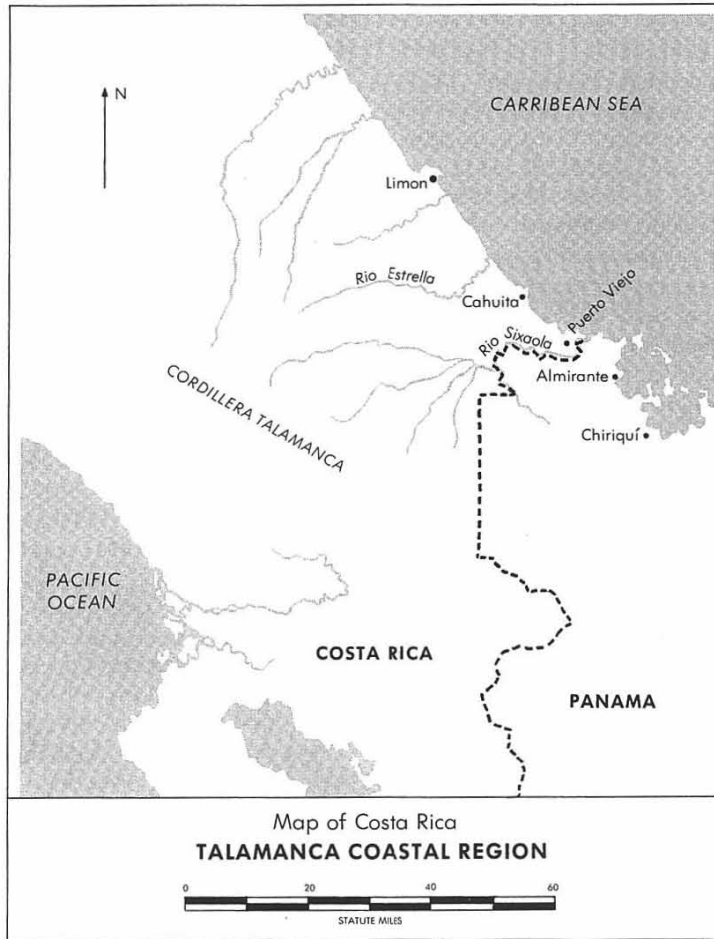
A little farther on, I enter a zone that had been cleared earlier. Seedlings of African oil palm have already been set out in monotonous files. Miraculously, a fair growth of grass is sprouting from the subsoil between the palm rows. Juan Lopez, the 12-year-old son of neighbors in Mata de Limón, has enterprisingly driven his father's small herd of cattle into this temporary "pasture." Perhaps later it will be eliminated with herbicide.

Still later, I enter a more established agricultural zone, planted to bananas. Taller monotony, punctuated by mountains of perfectly edible but "substandard" bananas, rejected to rot in the sun or be recycled by vultures.

As of this writing (April 1980) the destruction has stopped; rumor has it that it will resume when the profits start rolling in. For now perhaps three-fourths of the company lands remain in one or another form of second growth and abandonment. From a *campesino* viewpoint, mass invasion seems logical—to let the land stand as it is, with second growth gradually choking out the untended cacao, seems a waste. To "develop" it company style may prove to be a greater waste.

There is much in what I have described to invoke tears, frustration, or anger. The people of Gandoca and Mata de Limón are concerned that deforestation will exacerbate the cycle of flood and drought, already presumed to be worsening because of deforestation in the Talamanca valley and a dike, built by the fruit company, that extends along the Panamanian side of the Rio Sixaola from Guabito to California and tends to deflect floodwaters to the Costa Rican side. They are also worried that in the future company use of pesticides and herbicides could adversely affect their own crops, natural environments, or health. The environmentalist must be moved by the destruction of wildlife and natural vegetation at a scale and pace that should not be accessible to humans. The landless peasant sees the abandoned seventy-five percent and dreams of occupation. The aesthete need only contrast the abandoned cacao land or the farms of Mata de Limón and Gandoca with the monotony of company agriculture. The nutritionist might point out that African palm oil is one of the least desirable cooking oils and that company

³ Eduardo Galeano. 1973. *Open Veins of Latin America: Five Centuries of the Pillage of a Continent*. Translated by Cedric Belfrage. New York and London: Monthly Review Press, 313 pp.



bananas are destined for overfed *gringos*. Any person with a moral sense would protest the apparent impunity of the fruit companies before Costa Rican law and the waste of edible bananas in a poor country. Any thinking person should deplore the lopsided emphasis on short-term profits that permits the destruction of an ecologically benign agriculture (cacao) in favor of a depleting one (monoculture of bananas or African oil palm).

But for me the greatest outrage is the destruction of topsoil. This case need not be presented on aesthetic, legal, or moral grounds, though it could be. It can be argued in purely economic terms. A concept that is scarcely original but needs to be invoked is that topsoil is capital. Granted that as in business one *can* replace lost capital; so one can sometimes restore topsoil. But even a conservative estimate of the amounts of time, energy, and money necessary to accomplish some sort of restoration should dictate that topsoil be guarded even more zealously than financial capital, especially in the tropics, where even on virgin land the topsoil layer is dangerously thin.

The largely uneducated and sometimes illiterate *campesinos* of Gandoca and Mata de Limón would not commit such folly. Are we to suppose, then, that they are possessed of a degree of ecological comprehension unattained by company agronomists? Unlikely. Certainly among the company's staff are some who know something about topsoil; certainly they understand better than the *campesino* the long-range risk of trying to maintain crops with chemical fertilizers. One simply must believe that a decision has been made to sacrifice much of the productivity of the Sixaola valley in the long run to achieve financial profits in the short run.

Such a policy has precedent. The present company lands have previously been abandoned for long periods due to various combinations of disease, exhausted soils, and labor problems that made banana operations uneconomical. That this history is being allowed to repeat itself is evidence of the lack of concern by certain powers that be for real human needs (nutrition, soil conservation, environmental health, and stability), and of the economic bind in which countries like Costa Rica

find themselves. Judged on their own terms, the banana and oil palm projects may turn out to be profitable; the same lands returned a profit in the thirties. But where are the cost sheets showing that profit balanced against the virtual lack of production on the same land for periods of twenty-five years or more? Has any economist attempted to allow for the probable eventual demise of the project and to put a value on the topsoil that is being lost? Has anyone ventured to compare the boom-and-bust economy of the early fruit company days to what might have been achieved by a stable agriculture, perhaps cacao based, over the same period of years? What about the social costs of the *peón* system compared to the family farms of which Costa Rica is so proud?

What can be done about this misuse of land? Not much, it seems, in the short run. Perhaps with legal help some sort of injunction could be obtained against clearcutting water courses. Perhaps our ecologist friends will help us monitor chemical pollution in the regions bordering the company lands. But these are popguns against cannons.

The prospect is this: the project will yield a certain amount of benefit to Costa Rica for an indeterminate number of years, which benefit will be at least partly offset by ecological and social problems created by the project. Eventually, Costa Rica will be left with one of her best pieces of agricultural land virtually useless. Granted, it may be possible to "restore" such land to a degree; the cost at that time will almost certainly exceed any short-term economic gain to the country as a whole. And the Costa Rican people will have that much less chance to secure their own nutrition; they will be that much more dependent on outside aid and investment, and the cycle will continue.

Even if we discount the aboriginal inhabitants, the history of small farming in Coastal Talamanca is longer than that of the companies; it has also been more stable. In communities like Cahuita and Puerto Viejo, farms go back seventy years in the same family. During this time, the land has remained productive, if not yielding cash crops then producing locally needed foods.

The dominant agriculture, from Peshurst to Gandoca, is cacao. Although cacao is an export crop, offering no nutritional benefits to the Costa Rican people, it has the considerable advantage of being eminently manageable by the small farmer. Furthermore, cacao farming as conventionally practiced produces an environment very analogous to that of the natural forest. For those unfamiliar with cacao, let me elaborate. Cacao is planted in fairly dense stands, with the trees three to four meters apart. The trees, which can survive up to ninety years, spread to provide nearly total shade,

and produce a continual "mulch" of fair-sized leaves. Cacao is said to do best with about forty percent shade above it, so it is customary when starting a cacao farm to leave other desirable trees in place, or to plant lumber or food trees. The end result is close enough to the natural forest that according to local wisdom the soil in an established cacao farm is equivalent to virgin forest soil.

Cacao has served the inhabitants of Coastal Talamanca well, enabling them to enjoy a standard of living somewhat above that of the *campesinos* in other parts of Costa Rica. More important, it has enabled local farmers to maintain soil fertility and pass their lands on in the family.

But for almost as long as there has been cacao farming in Coastal Talamanca, farmers have worried about the economic and ecological hazards of a monoculture. This concern became more than conjectural in December 1978, when the first cases of the fungus disease moniliasis were reported from Fortuna, in the Estrella valley above Peshurst. In October 1979 the disease was discovered in Mata de Limón; it can now be said to be ubiquitous in the zone. Moniliasis does not kill the tree, but renders the fruit worthless for chocolate production.

The local farmers' cooperative, Coopetalamanca, has provided expert advice and technical assistance, and through a combination of physical and chemical control, losses may be minimized. Nevertheless, a "best case" projection for most farmers is a twenty-five percent drop in production, that with greatly increased intensity of management. The problem is exacerbated by the fact that some farmers, unable or unwilling to maintain the necessary vigilance, have left their cacao in a state of semiabandonment, thus providing foci of infection for neighboring farms. (By far the greatest expanse of neglected cacao is of course the fruit company's.) Some farmers are already talking of selling out. The next few years will determine whether cacao will continue to play a major role in the life of Coastal Talamanca.

Even before the advent of moniliasis, it was clear that part of the key to the future lay in diversification. One of the forms of diversification most frequently discussed has been a more formal approach to interplanting hardwood trees with cacao. NAISA has devoted some energy to this project, but characteristically certain of our neighbors are ahead of us. The most commonly planted hardwood tree is laurel (*Cordia Alliodora*), the most popular local wood for construction, but various farmers are also working with *manú* (*Guarea hoffmaniano*), which yields posts that may last fifty years in the ground; *cedro real* (*Cedrela fossilis*), second to laurel as a construction wood; *jenizaro* (*Pithecolobium saman*), a high-quality cabinet wood; *melina* (*Gmelina*

arborea), a rapid grower imported from Africa, *cedro amargo* (*Cedrela mexicana*), and *cativo* (*Prioria copaifera*), particularly suited to low, wet places.

All ages are involved in hardwood planting, from teenagers to senior members of the community. Matute, at 62, has chosen to plant *manú*, which may take thirty years to produce a harvestable tree. He says he does so for his children, and because the aspect of agriculture he most enjoys is watching the young plants. This is the attitude of husbandry, which, if nourished and encouraged, will preserve and develop the lowland tropics as no corporate or governmental effort can.

Hardwood cultivation, while it may contribute to the economic development and stability of Coastal Talamanca, is ultimately a labor of love. Now that the theoretical perils of monoculture have become real, there is a need for more immediate solutions to economic problems. These solutions can take three forms:

1. Development of alternative cash crops.
2. Development of means of transport and processing for products that are available but presently unmarketable.
3. Greater emphasis on individual and regional self-sufficiency in food production.

Hardwood trees represent the most long-term solution conceivable to the cash-crop problem. Many of our neighbors are working at the opposite extreme, with quick-yielding annual food crops. Exploration of intermediate options is the subject of a proposal submitted to the Dutch government by NAISA and Coopetalamanca. We have taken the position that a "solution" that yields profits in the short run while degrading the land in the long run is no solution at all. The great majority of local farmers concur. For instance, conversion of cacao land to cattle pasture might be economically advantageous in the short run, but as Costa Rican *campesinos* elsewhere have learned from bitter experience, it would create poverty in the long run. We speak of ecology and conservation; our neighbors worry about their children. It comes down to the same thing.

In the more remote communities of Coastal Talamanca such as ours, the possibilities of economic diversification are sharply limited by the difficulty of transport. (We estimate that 500,000 oranges rot on the ground annually in Gandoca and Mata de Limón.) The conventional approach to this problem is to construct farm-to-market roads, a subject that will be taken up later in this article. A less conventional approach taken by the community development association of Mata de Limón and Gandoca with the help of NAISA was to secure a grant from Catholic Relief Services to

construct a motor launch to serve the coastal communities. Construction of this launch has suffered a series of setbacks, partly due to the shortage of suitable wood, but it may yet assume an important role. A partial solution to the transport problem could be effected by establishment of processing facilities for perishable products in a central location like Puerto Viejo. The NAISA-Coopetalamanca proposal includes funds to begin this work.

In the short run, with the decline of cacao the most critical task becomes subsistence. This challenge is being met more successfully in Gandoca and Mata de Limón, the newest and poorest of the Coastal Talamanca communities, than in the established cacao towns farther up the coast, where young landowners in particular are more apt to think of selling out than of growing food or seeking alternatives. "They've been too rich too long," laugh the farmers of our community as they plant a few more beans or a field of pineapples, or dig a fish pond.

NAISA's original *raison d'être* in Coastal Talamanca was to aid and participate in ecologically oriented development, hence the cash crop diversification proposal, the aquaculture project, the struggle to construct the launch. These efforts will continue, but we and our neighbors see that no matter how much success we achieve in development projects, the future of the coast depends on what happens in the forested and sparsely populated hill lands. That in turn depends on the development strategies adopted by the national government and the fruit company. And so we have had to acknowledge another facet in the struggle for ecological development and modify our work strategy accordingly.

Much of that portion of the hill land that belongs to *campesinos* is untouched or lightly used. Where it has been cleared, it is a reflection neither of physical need nor pecuniary greed but of Costa Rican law. In Costa Rica, as in most Latin American countries, ownership of land is established by "improvement." (The alternative is an expensive process involving surveyors and lawyers, which *campesinos* simply cannot afford.) "Improvement" implies visible modification of the natural environment. Thus deforestation becomes virtually a prerequisite for security of tenure. In the more remote communities boundary lines are drawn and maintained on a basis of neighborly respect reinforced by community pressure; the need for "improvement" is less. But as frontier regions open up, community control breaks down and the pressure on the *campesino* to deforest land, even though he has no immediate plans to use it, increases. The other great impetus for deforestation is, of course, the cash value of lumber.

Until a couple of years ago, neither factor was of great moment in Coastal Talamanca. But the re-entry of the fruit company has altered the equation. Among the projects undertaken in the wake of the reactivation of agribusiness in the Sixaola valley was the construction of a highway from Bribri to the Panamanian border at Sixaola. With the completion of this highway, Coastal Talamanca is now linked with the Panamanian port of Almirante and with Limón, San José and the rest of Central and North America. In 1970, to travel by land from San José to Sixaola required taking a train to Limón, passing the night there, catching another train to Peshurst, crossing the Rio Estrella in a canoe, catching a bus to Bribri and finally boarding a third, sporadically scheduled and exasperatingly slow train to the border. Today the journey can be accomplished in six hours by car or in a single day by bus.

One of the first tangible results of opening up the new road was the utter deforestation of the hills between Puerto Viejo and Bribri; a beautiful piece of countryside was converted into a series of sterile and unstable slopes.

Naturally, in the wake of the new road those communities not yet served by roads began to petition for them. Manzanillo asked for a road from Puerto Viejo. The first response was to project a "tourist" road along the beach, which would have destroyed many of the coconut plantations of that area and cut the people off from their own beaches. Manzanillo people would prefer a service road, not a tourist road, passing well in back of their houses.

Gandoca and Mata de Limón are actively supporting the construction of just such a road on the site of the footpath connecting these communities

with the existing highway. This could be done easily and without disturbing a square meter of natural or agricultural land.

At present the "official" plan, as far as anyone can learn, seems to be to concede Manzanillo's wishes for a road back from the sea, but to extend this road on into Gandoca and Mata de Limón, although the land in between is virtually uninhabited and no one is greatly concerned to be able to travel by highway between Gandoca and Manzanillo. (People I have talked with in San José insist this is "important." No one in the communities that would be affected expresses any desire for it.) The only "reason" for the road is to provide an alternate route between Sixaola and Puerto Viejo. Unless one looks at the forest, that is. Presumably the forest is also a factor in the road now being pushed through from Margarita to Punta Uva, despite the lack of even one house or farm in that stretch.

Are these roads inevitable? And if they are, will they inevitably lead to deforestation on a massive scale? Theoretically, deforestation can be prevented, since the Forest Service of the Costa Rican Ministry of Agriculture has the power to issue or deny permits for timber sales. In the past year they have let it be known that they do not wish to issue permits to cut and sell timber in the Coastal Talamanca region. Despite the lack of enforcement personnel, the *campesinos* have honored this prohibition; of some hundred landholders in our area, I know of two who have participated in illegal cutting.

Yet timber contractors are active in the region, and lumber is being sold, in some cases through the fruit company. The company has built a sawmill near Mata de Limón and a timber contractor



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was recently seen in Gandoca asking about possible sawmill sites in places remote from any road and at least three miles from the nearest tree that could legally be cut. It is fairly obvious that some of the large landholders nearby are either illegally obtaining permits or cutting in defiance of the government.

The ecological threat thus posed is immense; we are talking about no less than every last inch of watershed for all the Coastal Talamanca communities from Cahuita to Gandoca. We are also speaking of a considerable wildlife and aesthetic resource. For instance, the swamp behind Manzanillo and Punta Mona is, according to Dr. Joseph Tosi of the Tropical Science Center in San José, an *orey* (*Campnosperma panamensis*) swamp—the only one of its kind in Central America and perhaps the last haunt of tapirs in southeastern Costa Rica. The Rio Gandoca may be the only major spawning ground for tarpon in Costa Rica; not too long ago manatees were seen there.

The citizens of the coastal communities care about watersheds and wildlife. They care that development proceeds in a way that includes them and their children, rather than rendering their lifestyle unsustainable. They ask why the fruit company can clear every last vestige of vegetation from a streambank, when the *campesino* is restrained to leave the trees on either side. It is not that they question the wisdom of the forestry laws, but they do question the wisdom of a legislature that debates banning the importation of chainsaws while companies and contractors destroy expanses of virgin forest with bulldozers. All they ask is that, as the community development association of Mata de Limón and Gandoca put it in a letter to President Carazo, "*La ley debe que ser igual para todos.*" (The law should be the same for everyone.)

Who knows if the *campesinos* will triumph in the essentially political battle against the company, timber contractors, and large landholders. At least, you might say, they can act on their own convictions and preserve that portion of forested land that belongs to them. Not necessarily.

To illustrate the complexity of the problem, let me refer to NAISA's new property in Mata de Limón. Two years ago, we purchased 110 hectares, located directly behind Matute's farm, from a man well known in the community and resident in the neighboring village of San Miguel. Back in the good old days before roads he had made minimal "improvements," including clearing a portion for pasture, planting a few fruit trees, fencing a small piece, and constructing a makeshift house. Much of the land is still in virgin forest. Our plan was and is to leave that forest intact as a wildlife reserve for our own enjoyment and because it constitutes

a major watershed area for two creeks. We have the backing of the local community in this goal.

At the time of purchase NAISA had next to no money, so we planted a few more fruit trees and cleaned the *trochas* (paths cut through the forest and planted at intervals with a brilliant red plant known as *sangre de drago*, used to delineate boundaries, to indicate possession while awaiting funding of projects for the cleared portion of the farm.

In August 1979 Elena Matute noticed a group of strangers passing through the Matute farm on their way to our land. When her husband went to investigate, he found eleven men hard at work clearing part of the farm. They declared that the land was abandoned. Matute insisted it was not, that he himself had been planting trees there on behalf of NAISA. The upshot of the encounter was a long series of visits to the police station in Sixaola, phone calls to San José, and so forth. In the process both Jim Lynch and Matute were offered bribes to look the other way while the farm was lumbered. Our fruit trees were destroyed, fences cut, *trochas* cut through the farm, and so forth. We learned that a neighbor (the proverbial bad apple in the Mata de Limón barrel) was offering logistic support to the invaders, who were directed by a timber contractor. (He is now trying to get at the Manzanillo swamp.)

We were forced to hire a full-time caretaker, Rafael Mora Sosa, to live on site, though we can scarcely pay him. (Rafa has turned out to be a gem, the silver lining to the situation.) One day Rafa encountered our bad neighbor, the timber contractor, several people from the sawmill, and an agent for ITCO (more about ITCO in a minute) walking around the property, obviously sizing up the lumber potential. The ITCO man ordered Rafa to stop work. More phone calls, visits to lawyers, and so on and so on. Today, ten months later, the problem remains unresolved.

In a way, the community is fortunate that this happened to us first. Poor as NAISA is, we can at least afford to go to town to complain or talk to a lawyer. And regrettable though it may be, the fact is that we can open doors in San José that might be closed to the *campesino*. We have thus been able to help draw the predicament of our neighbors to the attention of the government and press. But victory is not certain. We are proceeding with titling our land, but the process could take years and cost over \$1,000. And even if we get our title, that offers no protection whatsoever to the rest of the community.

Should we and the community ultimately win this round against the timber contractors, we are faced with another threat in which, paradoxically, ITCO is involved. I say paradoxically because

ITCO (Instituto de Tierras y Colonización) was created to be the bureaucratic answer to *campesino* land titling problems. In theory, a *campesino* claiming a previously untitled piece of land can, by "improving" it and making payments to ITCO over a period of years, gain title to the land. In practice things have not worked so smoothly. In April 1979 hundreds of *campesinos* from all over Limón province demonstrated in front of the ITCO office in San José, demanding that something be done about titling their land.

The current problem in Coastal Talamanca stems from a lawsuit in another part of Costa Rica between ITCO and a speculator, in which the speculator won a judgment of something close to 20 million colones (\$2.3 million). Now the fact is that ITCO doesn't have that kind of money. So the plan is to pay the speculator in timber rights.

Any clear day you can see a small plane flying over Gandoca surveying the "improved" and "unimproved" land. The latter is to be delivered to the speculator. After he and the timber contractors have gotten their satisfaction the land is to be turned over to others. Some 300 hectares along the Rio Gandoca are slated to become a cattle ranch, with the backing of the industrial livestock division of the Ministry of Agriculture. Most of this land appears on ITCO maps as a "national reserve." No one in Gandoca has ever heard of such a reserve, and several families believe they own this land. Other pieces are to be carved up into lots by ITCO to help solve another of their pressing problems—the constant demand for land by "landless peasants," some of them legitimate refugees from places like Guanacaste or El Salvador, others merely small-scale speculators themselves. From the Cacles Indian Reserve to the Rio Sixaola, *campesinos* are waking up to find new *trochas* dividing up the land they have held and protected for years—over fifty years in some cases.

What is at stake in Coastal Talamanca is the fate of land, soils, families, ecosystems—in a word, the future. Among the participants in the drama now being played out, it is the *campesinos* who behave as if there were a future here. They have never heard the word *ecology*, but in their concern for forests, soils, and waters, and in their daily lives as farmers, they live ecology.

At the other extreme, the fruit company, insofar as it is involved in what happens in the forested hills of Coastal Talamanca, and the timber contractors and speculators are denying the future of

the zone. They know the consequences of their plans, but their job is to extract resources for sale and let the natives take care of themselves. If there is a future, for them it is somewhere else.

A friend at the University of Costa Rica, Dr. Alvaro Umaña, is giving a seminar on "ecology and world peace." He will find much of interest in Coastal Talamanca. To say that there is resentment by the *campesinos* who wish to live here in peace would be an understatement; there is already talk of violence. Whether or not violence comes to pass, and no matter its effect, the point is that the old colonial scenario is being re-enacted. By "colonial" I refer to extractive exploitation of resources for the benefit primarily of outsiders, without reference to nations or nationalities. If colonialism of resources is a form of aggression, then its opposite, which is ecological husbandry, is the pursuit of peace. In the light of recent events in the history of Central America, all concerned would do well to ponder this.

By the time this article appears in print, many critical events will have passed in Coastal Talamanca. The purpose of publication is not to rally support for our cause, but to point out something that has come to pass in Coastal Talamanca and will, if it has not already, in other Latin American rural zones. For lack of a better phrase, I will use the jargonesque term "consciousness raising." In my short time here, I have seen the ecological consciousness of the *campesino* rise greatly. The *campesino* has always lived close to nature, but he has suffered, along with the rest of us, from the notion that the only limitations on the degree to which nature can be manipulated are the limitations on our own power. But in the last few years, the *campesinos* have seen rainfall patterns altered by deforestation. They have seen soils depleted and ecosystems upset by chemical agriculture and cattle ranching. They have seen the frontier disappear before their eyes. They have watched creatures disappear that they took for granted and found they missed them. They have lived what you and I have gleaned from piles of data. In spite of the fact that *campesinos* have wielded little power compared to the affluent, mobile machine-wielding colonist, or perhaps because of it, they have seen their limitations sooner. The next step is to connect these observations with the political world; this is being done. So, even should we lose the battle of Coastal Talamanca, something will be gained for the future.