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CHANGES ON THE WAY

ACCORDING to APPEN, a coalition of more than 250 groups known as the Asia-Pacific People's Environmental Network, the Indian government has announced its intention to go ahead with the Tehri Dam, which, if completed, will be the second largest dam in Asia. The object of the dam is the generation of electricity—some 2000 megawatts, which would be enough to supply much of the state of Uttar Pradesh. Tehri is a town of some 12,000 population located in the foothills of the Himalayas near the confluence of the Bhagirathi and the Bhilangana rivers, tributaries of the Ganges fed by Himalayan snow.

While the dam was first proposed in 1949, it was reported in 1969 that there was a geological fault 15 metres wide along the bed of the dam site, and for this and other reasons the undertaking was delayed. The Indian Department of the Environment rejected the project because of its threat to the fragile ecosystem of the Himalaya, but this was ignored by the Government of India, probably because of an offer of 300 million rubles by the Soviets, much of which would go to the construction of the Tehri Dam. The cost of the dam in U.S. dollars has been estimated at $1.4 billion. The plan calls for the construction of a 260-metre rock-filled dam a kilometre from the town. The lake resulting from the dam would submerge not only the town but also 72 satellite villages, displacing about 9,000 families (70,000 people) from their ancestral lands. Alternative living space for these people is planned in a new township further up the slopes.

The APPEN report says:

> Serious objections were raised about its construction on ecological, geological, and humanitarian grounds, with the main protest being against seismological dangers. Tehri, in mid-Himalaya, has frequently experienced earthquakes of varying magnitudes in the past. Before 1971 there were one or two earthquakes per year. In 1974 there were five, and seven occurred in 1975.

In 1980 opponents of the project filed a writ against it in the Supreme Court, on geological, seismological, technical, environmental, social, economic, and humanitarian grounds. Then, in 1983, after the ill effects of the Aswan Dam in Egypt were made known, the local inhabitants of Tehri passed resolutions against the dam and 10,000 signatures were obtained on a petition to the Government. The World Wildlife Fund of India joined with the Indian National Trust for Art and Cultural Heritage to support the people. In its final report the Working Group against the dam said:

> In the six years since May 1980, little, if anything, has been done to respond effectively to the human and environmental aspects. The emphasis has been on technological infallibility and a tendency to consider environmental considerations of secondary significance, though short-term prosperity with a degraded environment would be counter-productive.

There are still other objections listed in the APPEN report:

> A prominent geologist, Dr. S.P. Nautiyal, has warned that the sedimentation rate of the Tehri reservoir is likely to be so high that it may silt up completely in 40 years, instead of the 100 years anticipated by the original project report for the dam. Such rapid sedimentation is often the result of the fragile geological structure of the upstream hills.
>
> The Anti-Tehri Dam Struggle Committee is concerned that the dam's reservoir could itself induce an earthquake a position that has been endorsed by Harsh K. Gupta, Director of Earth Science Institute at Trivandrum and leader of India's Antarctica expedition. Such reservoir-induced earthquakes have occurred at a number of sites throughout the world. . . .
>
> A considerable amount of construction was undertaken on the site when cracks were noticed in some of the buildings. The area is now reportedly being examined by the Geological Survey of India. Mr. Saklani, a Chipko activist, said: "We are not sure what will happen there tomorrow. . . . the lives of people are being played with like a game. No good will come of this.". . .

> Please address polite, reasoned letters to Mr. Rajiv Gandhi, Prime Minister, The PM Secretariat, South Block, New Delhi 110011, India.

Readers who write are also requested to send copies of their letters to Sahabat Alam Malaysia (SAM), 43 Salween Road, 10050 Penang, Malaysia.

One thing to note about this report is that Asia is acquiring a voice of its own. We who live in the West sometimes fail to realize that the rest of the world is growing up—for good or ill—in our terms, and that countries—especially of the Pacific Rim—which were still "primitive" fifty or twenty-five years ago are taking their place among the industrial producers of the world, and are also gaining high literacy and developing their own conception of rights. Already the roads, notably in California, are crowded with Japanese-made motor vehicles which we are unable to duplicate in either quality or price. And now Korean products are appearing in the market. Meanwhile the United States, spending so much more than it is able on military armament, is rapidly falling behind as a competitor in the world market.

One expression of the voice of Asia is found in these; two related features, APPEN and SAM, originating in Malaysia. A recent SAM release considers the importance of the bicycle and warns against its displacement by motor cars. This release begins:

> The bicycle is the most popular and important vehicle in the rural areas of the Third World. In Kenya, Malawi, and other African countries, the bicycle provides one of the main means of transport for the small farmers. In Indonesia, a survey concluded that from an economic point of view, the most significant use of the bicycle is probably the haulage of two to four sacks of harvest or fodder from the fields to the village. In Tanzania rural health workers use bicycles to visit the sick.
>
> Yet most Third World governments and international aid agencies scorn the bike. Town transport planning rarely thinks of producing bicycle facilities. Just as urban developers destroyed whole communities and forced people to live in high rise flats they did not want, so traffic planners redesigned towns on grandiose and ultimately inhuman lines. Segregated shopping centers, industrial estates and residential areas were linked to large ring roads . . . designed for cars to use at maximum speed. Meanwhile the non-motorized majority looked with dismay as life for them became increasingly difficult and dangerous. Cyclists were forced to contend with lines of heavy traffic and found themselves pushed aside. . . .

There is much to be said in behalf of the bicycle. The SAM report continues:

> Cycling is one of the safest of all modes of transport. The only real element of danger comes from the problems posed by motor traffic. The bicycle produces no fumes and holds no threat to other road users. Purchase and maintenance costs are minimal and years of cheap travel follow. . . .
>
> In Indian cities millions travel to work every day by bicycle. A United Nations survey on transport in India concluded that "the bicycle is the nearest thing to a mass vehicle with one being owned by approximately one in four." There are approximately 400 million bicycles in China at the last count. But this two-wheel workhorse of the Chinese masses is at present being challenged by a new road hog—the four-wheel vehicle. Hundreds of thousands of vehicles have been imported since 1982, almost all from Japan. Traffic accidents were up by a huge 70% in 1984 caused mainly by truck drivers.
>
> On the reverse trend, recent news reports indicate that New Yorkers fed up with mile-long traffic jams are beginning to enjoy the greater freedom of the bicycle. An astonishing 76 million in the U.S. have bikes.

How, one wonders, can the people of the Third World be persuaded not to follow the example of the West, to be satisfied with the slower, more peaceful rate of development that intermediate technology like the bicycle provides? Perhaps journalists like those who produce the APPEN and SAM reports will begin to point the way. But does one have to actually experience New York and Los Angeles traffic in order to realize what a terrible mistake it is to have too many cars?

Meanwhile, there are already examples of what can happen to working people as the result of applying Western methods of production in the Third World. For example, the production of palm oil in the plantations of Malaysia is already big business. But the workers on these plantations must cope with dangerous occupational and safety hazards. A SAM feature story relates:

> Ignorantly applying toxic chemicals like paraquat without protective apparel, weeders suffer skin rashes, vomiting, and headaches. Out in the field workers encounter snakes, scorpions, leaches, centipedes, and mosquitoes. When in the mills they have to withstand temperatures near boiling point in sterilizing chambers, leaving them utterly exhausted. . . . Because of poor education they are easily manipulated. Exploitation is the rule rather than the exception. The cycle of poverty prevents them from having any choice but to continue living, working, and eventually dying in the plantations.

This workforce of about 100,000 men "have made Malaysia rank as the largest producer of crude palm oil—60 per cent of world production." It is used to make cooking oil, margarine, soap, and other goods.

The hazards of production are great:

> Consider the harvester, tough-muscled, he with the long pole to which is attached a sickle-shaped knife. The objects that he fears most are not the snakes, scorpions, centipedes, leaches, and mosquitoes . . . but the bunches of oil palm fruits and the leaves he has to bring down with the knife.
>
> A bunch has between 500 to 1600 fruits (each the size of a marble) and weighs anything up to ten kilograms. In between the fruits are the dreaded thorny spikes, about 60 cm long, which can inflict painful injuries. The leaves have long sharp thorns and can easily penetrate the canvas shoes worn by the harvesters. . . .
>
> A study made during the period between 1979-81 showed that out of an average of 378 harvesters, 285 suffered from various oil palm injuries annually. . . . According to a survey carried out by a medical officer in 1983, the injuries usually turned septic or acutely inflamed painful swellings in the ankle and the foot. . . .
>
> Some of the most dangerous toxic chemicals are used in the estates to destroy weeds. Management thinks nothing of distributing paraquat and Gramazone to the workers for clearing creepers, shrubs, and weeds. Unaware of the hazards, workers use their bare hands to mix the chemicals and because of lack of water don't wash their hands before meals.
>
> At the mill where the fruits are converted into oil, a sterilization process takes place in huge cylindrical tanks which works like a pressure cooker. As steam is injected a loud noise is given out. Sterilization goes on for a period of 70 minutes and for most of the time the workers have to withstand the high temperature in the chamber. Wearing only rubber boots they have to walk in water near boiling point. Some workers cover themselves with gunny sacks as protection from the steam. They have been known to faint because of the hot air they breathe and excessive perspiration. Burns and blisters are common.

Those who wonder why workers submit to such conditions need to consider the overwhelming importance of having a job in Malaysia. SAM has proposed a comprehensive law relating to occupational health and safety, requiring employers to take the necessary steps to protect the health of the workers and supply them with protective gear. At present, SAM says, the worker has no idea that the harmful conditions to which he is exposed would be removed by a good managerial staff.

Another feature article, this one prepared by APPEN, deals with transnational corporations which operate almost everywhere in Asia. They pose as benign bearers of progress and development, causing people to believe that "only foreign technology can provide for their needs," which makes them dependent.

> With their superior science and technology, transnational corporations (TNCs) act as independent agents accountable to no nation in the traditional sense. In the Third World their effects have been devastating. Their dominating influence has led to the depletion and destruction of forests, pollution of the seas, loss of mineral wealth, expulsion of farmers from their lands, and exploitation of the workers. Their control over commerce and finance has stifled the development of cultural and economic activities, and reined in the advancement of the people.

The transnational corporation first appeared in the late 1960s. Equipped, it is said, with expert scientific minds, up-to-date information, and ample financial resources, it is capable of producing almost anything. While in its home country, which may be the United States, the TNC may be obliged to act under some legal control and restriction, but in the Third World it shows no respect for the laws of the host country. "Once deeply entrenched, the TNC can decidedly affect the national economy. It determines what people should like and what they should reject. It may even endanger national security."

> The abuse of power by the TNCs came under the scrutiny of the United Nations for the first time in the early 1970s when the Chilean President, Salvador Allende, in an address at the UN General Assembly on Dec. 4, 1972 accused two TNCs, the International Telegraph and Telephone Company (ITT) and the Kennecott Copper Corporation of interfering in Chilean political life and later attempting to overthrow his government.

The UN caused an inquiry into "The Impact of Multi-National Corporations on Development and International Relations." The report, made in May 1974, was that while interventions such as those made by ITT were uncommon, TNCs had in a number of cases "actively promoted political intervention in the domestic affairs of host countries." The APPEN report holds that TNCs "must be analyzed within the context of imperialism," giving their presence in the Philippines as an example.

> They have virtual monopoly in the production of cars, pharmaceuticals, and manufacture of rubber. They control food manufacturing, petroleum, refining, and insurance. Through various legal measures, they have full control over vast tracts of land for mining, logging, export fruit-growing and other agribusiness. Even the seas are exploited for tuna fishing and trawling activities.
>
> In the rural areas, villagers are suddenly told to leave their homes to make way for hydroelectric dams and other big constructions. Farmers discover too late that TNCs, instead of helping them, were deceiving them all along. . . .
>
> In Malaysia, Japan's TNC, Mitsubishi Chemical Co., and others (including a local firm in which Mitsubishi owns a 35% interest) opened a small plant near the small town of Papan, Perak. Asian Rare Earth Company extracted compounds for electronic equipment from local Monazite ore. Radioactive thorium wastes were dumped in the open, close to the plant, in plastic bags that easily broke. When it became known that radioactive wastes were being wantonly discarded by an affiliate of a Japanese company, a public furor erupted both in Malaysia and Japan where a coalition of citizens' groups denounced the Mitsubishi Chemical Co.
>
> TNCs are nothing new in Sri Lanka. Shell and Unilever were there long before the current issue in respect of that kind of business organization came to the fore. Their presence was felt along with Standard Oil, Caltex, Bata, and British-American Tobacco. In the period between 1950 and 1970, when most countries in Asia were invaded by American and Japanese capital, Sri Lanka nationalized oil distribution and insurance. The strategy adopted in foreign exchange difficulties compelled the TNCs to comply with strict exchange regulations.

South Korea, we learn, set wages low in order to attract TNCs. Labor movements by employees of TNCs were prohibited. They cannot now organize without special permission from the Labor Office. While U.S.-controlled TNCs sometimes may make special compensation for layoffs, some Japanese TNCs not only do not give such benefits but have been known to return to Japan without settling their debts to banks in Korea.

> One of the cases concerned the Japanese-owned Korea Electronic Cabinet, which did not pay wages for three months in 1979. . . . The Japanese directors returned to Japan where they mailed their letters of resignation, leaving no one in Korea responsible for payment of salaries. . . .
>
> The sordid methods practiced by the TNC's in the rural and urban sectors of the Third World have to be contained or eliminated. The UN has formed a Research Center for Transnationals to evolve a series of codes of conduct. The idea behind it is to develop a General Agreement on TNCs in the same way as there is a General Agreement on Tariffs and Trade (GATT) so that an agreement might be enforceable by appropriate machinery.
>
> In the last decade public interest groups have gathered strength to provide a countervailing power to that of the TNCs. New citizens' networks have emerged such as Health Action International, Pesticides Action Network, International Baby Food Action Network, Bhopal Action Network, and others. The power is the new alliance of a wide variety of social action groups—consumer, development, environmental, women, workers, and researchers. To combat TNCs' growing menace, North and South have cooperated in global unity that is unprecedented in the history of citizens' movements.

We have assembled this material, all of it from releases by SAM and APPEN, in order to show the changes that are taking place in the East and the new voices that are being heard.

REVIEW
THE LIVING EARTH

WE have been reading in *Gaia—A Way of Knowing*, edited by William Irwin Thompson, published last year by the Lindisfarne Press, at $10.95 in paperback. Including the editor, there are nine contributors, among them James Lovelock, Gregory Bateson, John Todd, and Francisco Varela. The content of the book is brilliant, in fact so brilliant that we soon began to wonder if modern intellectuality had not reached a point in its development where it was outwitting itself, to say nothing of the poor reader. What seems to be happening, in the examination of present problems, is the elaboration of a method by the writer to the extent in which the elements of the method become more important than the problem, so abstract and hard to follow for the reader that he must go over the text three or four times simply in order to know what the writer means. For the reader, this gets discouraging. Yet it is evident that the *writer* knows what he is doing and saying and is well aware of its complexity. Yet all the contributors focus on real problems and sometimes say important and valuable things.

James Lovelock tells how he came to be engaged in his present line of research. He and a colleague were hired by NASA to investigate the possibility of life on Mars, since NASA wanted reasons for exploring the red planet, but they concluded that Mars was "probably lifeless," a view that did not please NASA at all, so that Lovelock was soon unemployed. Commenting, he said:

> When I returned to England in 1966, the thought kept recurring: How is it that the Earth keeps so constant an atmospheric composition when it is made up of highly reactive gases? Still more puzzling was the question of how such an unstable atmosphere could be perfectly suited in composition for life. It was then that I began to wonder if it could be that the air is not just an environment for life but is also a part of life itself.

He discussed this with a neighbor, the novelist, William Golding, who suggested the name Gaia, the name of the goddess which the Greeks had applied to the earth, and this became the word Lovelock used "for the hypothetical system which regulates this planet." His idea is that the conditions which seem hospitable to life are a part of life. He says:

> The evidence that Lynn Margulis and I and others have gathered over the years establishes almost beyond doubt that the Earth is a biological construction. All of the compartments of the Earth's surface are kept at a steady state far removed from the expectations of chemistry, through the expenditure of energy by the biosphere.

John Todd begins his contribution with a recollection of a conversation with E.F. Schumacher on the island of Bali, where they had come to attend an appropriate technology congress.

> As the sun fell, Fritz spoke of how trees were the most powerful of transformative tools and their planting and tending a fundamental act. For him trees were the starting point for creating social and biological equity among peoples and regions of the earth.
>
> Our conversation together inspired some ideas which follow. I owe E.F. Schumacher a debt for helping me see economics as if people and nature mattered. Subsequently I have come to believe that a new sustainable economic order can be established with ecologically based enterprises. Further, the conceptual bases of these enterprises are similar when applied in rich industrial nations or in poorer tropical countries. If this thesis is correct, applied ecology has the intrinsic potential to dissolve old divisions between north and south, industrial and agrarian, and rich and poor. This is so because ecological knowledge can be applied universally and, equally importantly, it can often be directly substituted for capital and for non-renewable resources. In the same sense that Fritz Schumacher spoke of trees, it has the ability to increase equity on a global scale.

John Todd uses the work done at the New Alchemy Institute on Cape Cod to illustrate:

> When I first began working with ecological concepts that might serve humanity at the New Alchemy Institute, my associates and I started with a

question, "Can nature be the basis of design and are there ecological models to prove this?"

We started with food and agreed that the contemporary mechanistic agricultural model would in the long run fail to feed the planet. We looked for other models to guide us. The larger workings of nature provided us with dues. We sought out several places where nature is extremely bountiful and made a shopping list of the attributes particularly unique to those places. As patterns gradually emerged, this effort proved directly fruitful. We also sought out places which, under the guiding hand of humans, have been bountiful for millennia. This was significant because humans normally destroy their biological capital. We wanted to learn what stable cultures know about caring for their lands.

They found a farm near Banding in central Java which fad maintained or increased its fertility over centuries. It was a hillside farm vulnerable to erosion, which was guarded against by the planting of trees on the slope. Water came from an aqueduct halfway up the slope, from farm higher up.

Upon entering the farm it was, within a short distance intentionally polluted first by passing it directly under slatted livestock barns and then under the household latrine.

Although it might appear shocking at first glance, the livestock and household sewage was then utilized in a clever way. The solids were "digested" by a few fish whose sole function was to provide primary waste treatment. The nutrient-laden sewage was then aerated and exposed to light by passing over a low waterfall. Secondary and tertiary treatment were agricultural. The sewage was used to irrigate and fertilize vegetable crops in raised beds. The nutrient-rich water flowed down the channels and dispersed laterally into the soil to feed the root crops. It is important to note that the secondary sewage was not applied directly to the crops but to the soil. The water emerged from the raised bed crop garden with nutrients removed and at least in an equivalent condition to our tertiary treatment. It then flowed into a system that requires pure water, namely, a small hatchery for baby fish. Here in the hatchery pond the young fish began the enrichment cycle again by slightly fertilizing the water with their wastes. This triggered the growth of algae and microscopic animals that helped feed the young fish. This biota was also carried along with the current to add nutrients and feeds to the larger fish cultured in grow-out ponds below. These highly enriched grow-out ponds fertilized the rice paddies that were just downstream. The rapidly growing rice used up the nutrients and purified the water before releasing it again to a community pond in the basin below.

The intriguing thing about the farm was that it was a complete agricultural microcosm. There was a balance not seen in Western farming. The trees, soils, vegetable crops livestock, water, and fish were all linked to create a whole symbiotic system in which no one element was allowed to dominate.

The Javanese farm was indeed a model, and the reader of how the people at New Alchemy used its methods will easily see how its lessons were applied. John Todd concludes:

Soils are dying around the world. Deforestation, over-grazing, fire, and erosion are the primary villains. To understand the importance of soils, and how we are enjoined with them, we need to realize that soils are alive, metaorganisms comprised of myriads of different kinds of living creatures. When they are exposed to sunlight, blowing winds, and mineralization, they become increasingly lifeless and porous, losing their ability to retain rainwater near the surface. Most of the world's spreading deserts follow in the wake of soils become more porous and devoid of rich microscopic life.

Perhaps one of the single greatest challenges facing humanity is the restoration and re-creation of soils. They need to be given back their organic matter, humus, and moisture-retaining qualities. Without healthy soils human economies cannot be sustained for long.

Todd ends his paper, which was the annual lecture of the Schumacher Society in 1985, by saying:

I am aware that ours is a world of violence, hunger, environmental degradation, and inequities. For most of us points of action and intervention on behalf of the planet and ourselves may be hard to find. But I believe this will change if our economies become ecological. Work and stewardship will be one. An ecological economic order has the intrinsic potential to allow each culture to explore the new frontier in its own way so that some of the old divisions between peoples and places can be reduced. Fritz Schumacher worked for greater equity and justice, and so must we.

One thing more might be added from John Todd's article, having to do with the sources of ecological knowledge on which the New Alchemists have been able to draw. As he says:

> In fact, our ecological technologies all borrow their design features from a blend of ecosystem knowledge, materials science, and the wisdom of the Javanese farmer or the skills of the ancient Mayans of Central America, who with their chinampa or "floating" agriculture fed densely settled cities. One such technology is the aquatic farming module. The development of this technology began under my direction at the New Alchemy Institute in 1974.

They raised fish for eating by this means. Species used were African tilapia, Chinese carps, North American catfish, and trout. While the dense population of fish raised in this way resulted in waste nutrients, these can be handled by growing plankton and algae and by using the waste water for vegetable crops which "take up the nutrients before they reach toxic levels." The roots function as "living filters purifying the water."

There is much of value in Todd's contribution to this book and in some of the other papers.

COMMENTARY
THE SOCIAL VITAMINS

THE missing factor in our civilization—if we can presume to call it a civilization—is well described by Arthur Morgan on page 8 of this issue. Morgan's insight into how real communities are formed—with, you could say, the vitamins necessary to a good society—is rare indeed. Yet looking at the numerous social failures of the modern world, it is plain enough that Morgan is right, that the qualities spread by the example of the woman he describes are indeed the essentials that are commonly missing in modern life.

How shall they be supplied? The example of informed and conscientious parents in regard to diet is pertinent here. Two or three generations ago there was little general knowledge of what children (and adults) ought to eat. This was not so very important until the manufacturers of food products began to put on the market items cleverly designed to appeal to taste, but wholly disregarding the actual needs of the human body. Then, as the years went by, responsible physicians began to recommend foods with the proper vitamins, and little by little thoughtful parents took their suggestions. Today mothers are amply supplied with sound information concerning the right diet for both children and adults, so that the ills of previous generations have been radically reduced. This you could say, is a form of cultural growth, in which the knowledge developed by those who have gained an understanding of nutrition has gradually become common property.

We are now confronted by a similar need on a much larger scale—to learn the requirements of intelligent and mutually beneficial community life. The urgency of this need is slowly becoming apparent. We need to begin to think of the welfare of our neighbors, our countrymen, and the peoples of other lands with the same concern and regard that we give to the diet that we provide for our children. We need to recognize that, for a variety of reasons, it is becoming more and more difficult to assure the existence of good food, clean air, pure water, and a general environment that does not jeopardize the health of everyone.

We now learn form organizations such as APPEN (see lead article) what the inhabitants of the Third World are up against, and from writers like John Todd (see Review) the kind of study and practice on which the health of the future world depends. There are few such writers today, which makes their work increasingly important. They write about what must become the cultural growth of the future. Without this growth, they point out, there is little possibility of survival for the human race. The situation is exactly as John Todd put it in his conclusion:

> I am aware that ours is a world of violence, hunger, environmental degradation, and inequities. For most of us points of action and intervention on behalf of the planet and ourselves may be hard to find. But I believe this will change if our economies become ecological. Work and stewardship will be one. An ecological economic order has the intrinsic potential to allow each culture to explore the new frontier in its own way so that some of the old divisions between peoples and places can be reduced. Fritz Schumacher worked for greater equity and justice, and so must we.

CHILDREN
. . . and Ourselves
THOUGHTS ON EDUCATION

JIM MUNGER, who was been a teacher for many years, has written a series of brief papers commenting on the schools of the present, in one of them speaking of the work of Sizer (1984) and Adler (1982). He says:

> These studies focus on the essential need for literacy, numeracy, and preparation for citizenship as the keystone of our school systems. The development of character and acquisition of thinking skills are also integral to their concept of schooling. The importance of the learner and the teacher are emphasized in the traditional triangular framework of teacher, student, and curriculum and a new respect for the efforts made by the teacher and student alike is urged. These studies are perhaps the most effective voices of educational revision that have surfaced in America in recent years, and they have the potential to bring about real change, particularly in high schools.

Munger, however, thinks more attention should be given to the curriculum.

> The strengths and weaknesses of its curriculum reflect the inherent values of the school, which in turn create the value systems and ethics of the students. The well-studied "hidden agendas" of schooling need to be replaced with a new and conscious intent. This sense of purpose must meet not only the individual needs for literacy, numeracy and preparation for citizenship but also addresses the larger concerns of local communities in specific and of humanity as a whole.

This raises a question that Munger does not consider directly. If, as with all public education, the government is in charge, how will it become possible for teachers to speak seriously of the welfare of humanity? Today governments seem largely the most dangerous enemies that humanity has, and it is ludicrous to expect teachers to make this clear to high school students so long as they are paid by the government. Recruiters for the army and the navy now go into the high schools and there have already been court fights by advocates of conscientious objection to gain the right to speak to students about alternatives to military service.

There are also educators who recognize the need to point out the dangers of industrialism, the hazards to the environment in agricultural chemicals, and the indifference of most manufacturers to the pollution of which they may be guilty. Here, again, real educators have difficulty in gaining a voice in the schools in order to point out such problems. However, Munger does say:

> The new awareness of the fragility of life on our planet and the growing threats of destruction from fouling our own nest through environmental or political mayhem, give education a new mandate. Somehow through our educational processes, people must come to understand that their choices and their actions have unique and significant effects on the environment around them an environment that is an inclusive whole system. We consider ourselves an intelligent species, capable of adaptation due to our cranial capacity, yet we have not learned how to protect ourselves from ourselves. We always seem to be one step away from our mistakes and unable to undo the damage.

But the first step in undoing the damage lies in following the counsel of Gandhi and taking education out of the hands of government. It would mean trusting educators and teachers instead of politicians and political administrators and obliging the latter to find some other way of making a living. Are we ready to do this? Are we able to accept the responsibilities involved?

In another of his papers Munger considers the school as a community, saying:

> Before a school can respond to the challenge of crucial social environmental issues, it must create its own social and political structure. What makes a good school? Is there a common denominator among effective schools that can be quantified and passed on to others? I think so. A good school is, first and foremost, a good community—a community that is responsive to individual concerns, that is reliant on individual involvement and is co-created by all of the participants in the learning experience. Living and learning in this kind of community fosters personal growth and human values of commitment and

> concern for others. Hans Furth, an international educator. . . described development as giving up the familiar ways. of thinking and doing.

But this, again, will be possible only in schools which are free from outside supervision. As Munger says: "Ideally, the high school should be an intentional learning community where the persons involved are willing to explore the range of freedom and responsibility afforded by democratic process and attempt to meet their individual and collective goals through dialogue and consensus building."

But what if the vision of the educator or teacher goes beyond the expectation of parents? Bronson Alcott was a great teacher but his dream of how children should be taught was not shared by the parents of the children entrusted to his care. What, then, is duty for the teacher? For Alcott it became the necessity to close his school.

For problems of this sort there is only one workable solution—that parents become teachers of their own children. In the United States, thousands of parents, following the advice of John Holt, have undertaken to teach their own, and one need only read what these parents report to the newsletter, *Growing Without Schooling*, to learn how successful the parents can be, even though unsure of themselves at the beginning.

Returning to Jim Munger, in still another paper we find him saying:

> Many children grow up as citizens of the world, with incredible knowledge of the affairs of the entire planet. They are barraged by media with vast amounts of information, information that identifies the shape of their reality. They know of famine in Ethiopia, of missiles in West Germany, and of vigilantes in the subways of New York. This worldliness is exciting; it holds the promise of the creation of a worldwide society of cooperative human beings. But it misses the integral point of being human and fails to transfer to the child the organic knowledge that is essential for learning and life. Without a community, be it a city block, or rural county, within which a learner can experience the immediate effect of their knowledge and action, no real learning can take place. Abstraction, yes, general understanding yes, but not integral learning.
>
> Unfortunately, communities do not seem disposed toward incorporating their young people into community life. Perhaps they have been misled by a schooling process that seems to direct the individual out of the community and on to the university and then on to the job market, wherever that may be. Many communities drive out their, young people by making it impossible to compete economically for housing and jobs. It is often a conscious choice, dictated by financial gain, and perpetrated by the very parents of the children affected. How can a person develop a sense of his place in the world, when his place rejects his existence?
>
> It would be a fascinating experiment to see what would happen if a community embraced its adolescents and offered them the opportunity to be contributing members, not just within the confines of the school experience and the limited job market. . . . Communities that do not use the incredible resource of their children may not only lose their children, but may find they are no longer a community that has resiliency, creativity and the potential for positive growth and change.

Becoming the kind of community Jim Munger is talking about is a long process. How is it made to take place? For reply we go to Arthur Morgan's book, *The Long Road*. In the chapter called "Cases," he said:

> Many years ago I knew a woman who lived in a small town in very restricted circumstances. To provide her family with the bare necessities she took four or five young men and women students to board, furnishing room and meals for ten dollars a month. She did her own housework, cultivated the family garden, did the family washing with "boiler" and wash tub in the kitchen. In extremity she would go to the ragpickers, buy the most promising old clothes, rip them to pieces, wash them, and make clothes for her family. . . . As the years passed, a considerable number of boarders and roomers shared her crowded and primitive little house. . . . Though they came as a motley crew, diverse in personality, nationality, and background, there is a common thread of likeness in their later careers. A considerable number of them are cultural and ethical leaders in their communities, transmitting character and quality and individuality Living in that little home often resulted in marked change of character.

FRONTIERS

TREES AND SOIL

AS we reported quite a while ago, the TreePeople of Southern California have been sending, not food, but food trees, to the countries in Africa where hunger is a besetting ill. We now have news about the planting of these small trees, provided in *Seedling News*, issued by TreePeople six times a year. As you will see, the news is good.

> Susan Becker returned in October from the latest African field trip to report 90-100% survival rates on apples, plums and apricots, which are the species making up the bulk of the 4000 fruit trees flown there last year. She visited every one of the original sites where our trees are thriving.
>
> "It is without doubt that both children and youth in the community here are in love with fruits." This extract from a letter written by the community leaders of Suji, Tanzania, pretty much sums up the enthusiasm in African villages for the progress of the trees.
>
> Three professors of horticulture specializing in deciduous fruit trees in the tropics were brought in to help evaluate the trees and conduct pruning and grafting workshops. Although there's much research on the subject, precious few field experiments have begun. TreePeople is being congratulated on its pioneering courage in this arena.
>
> Susan was joined in Ethiopia by Dr. Robert Rice of the University of Zimbabwe, in Kenya and Tanzania by Dr. D.C. Coston of Clemson University in South Carolina, and in Cameroun by Dr. Frank Dennis of Michigan State University. In each country, she and the horticulturist conducted seminars on fruit tree technology, and TreePeople's project, for high school and university students. And in the field, . . . they introduced a new technology to villagers, where by training the branches to grow at a 90 deg. angle, they can encourage budding along its length, thereby tripling their harvests!
>
> "Everybody wants more varieties of trees," she said. "They want more workshops on tree technology. They want to learn how to bottle, can and prepare fruit at home. They want to learn how to propagate. They couldn't be more enthusiastic about this project." The challenge is for TreePeople to raise the comparatively meager funds needed to support these field trips. January is harvest time and it's vital we're there to guide that process. Can you help? Please send your contribution to TreePeople, marked for Africa.

TreePeople's address is 12601 Mulholland Drive, Beverly Hills, Calif. 90210.

During the fall season there were many forest fires in California. Andy Lipkis, founder of TreePeople, says:

> When disaster strikes, it's often entirely a matter of attitude that determines whether an individual is a rescuer or a victim. . . . Instead of just watching our heritage turn to ashes as fires raged in Northern California, we, *as a community*, acted. TreePeople's call for help resulted in contributions of both time and money to help us plant seeds and prepare for the Springtime replanting trek to the forests. Because of that, we're meeting with Forest Service representatives, and recruiting and training new volunteers.

Andy speaks of the earthquake last fall:

> When the quake struck at 7:42 am on Oct. 1, we *as an organization*, were not called upon to act. But, through seven years of participation on the Neighborhood Self Help Committee of the Earthquake Preparedness Taskforce, I can see TreePeople's philosophy validated in the Quake research and planning process: when individuals cooperate with others and contribute energy, skills and desire, seemingly insurmountable challenges can be overcome, regardless of the problem. . . . We don't know how soon we'll be needed. Call TreePeople today to register as a disaster volunteer . . . for phones, food or fieldwork.

The number is (213) 273-8733.

* * *

In the *Los Angeles Times* for Nov. 26, 1987, Lee Dye tells the story of Don Lambert and his father, farmers near Cheney, Washington, who in the early 1950s set aside twenty-five acres of their 800-acre farm to experiment with the chemical techniques that in those days farmers were adopting. While the first year's harvest seemed promising, in the next year they had to add more chemicals for the same result. In the third they

just plowed the experimental acreage under and went back to organic techniques.

> And now, all these years later, as Don Lambert looks forward to the days when he knows he will have to turn his farm over to his son, Dan he has the scientific proof that he and his father made the right decision four decades ago.

According to a report in *Nature* magazine, "scientists have discovered that the Lamberts' decision to stay with organic farming instead of using commercial fertilizers has spared their land much of the erosion that threatens to die out the fertile soils that make this region so rich in agricultural production." As the *Times* writer says:

> It has taken a lot of hard work, including rotation of crops and physically weeding large areas, but Lambert's crop yield is only slightly less than some of the conventional farms in this area, and it is slightly more than others.
>
> The region, part of the Palouse River Basin, is one of the most productive farming areas in the United States, but its rolling hills and loose soil make it particularly susceptible to erosion, one of the greatest threats facing American farmers in wide regions of the country, especially the Midwest.
>
> That was one of the things that interested John P. Reganold, a soils management expert at Washington State University in nearby Pullman, when he began studying Lambert's farm.

He and other researchers wanted to know "whether the few farmers who have stayed with organic farming had gained anything from their hard labors."

> What they found startled them. The Lambert farm is eroding far less than adjacent, but equally well-managed, conventional farms. "The differences were dramatic.". . .
>
> The rich topsoil on the Lambert farm ranged around two feet in thickness. It was about six to 10 inches thinner on the adjacent farm, which switched over to the use of chemicals—now called conventional farming—around 1950.
>
> The finding, Reganold believes, is particularly important because it is based on side-by-side farms. One of them has been farmed organically ever since the soil was tilled for the first time in 1909, and the other has used chemicals extensively since they became available around four decades ago. He believes he has found a laboratory-quality setting where the history is known, the results can be determined and, in a sense, the future forecast.

This article goes on much longer, but the essential fact is that the erosion on the Lambert farm is around 3.3 tons per acre, while the neighboring farm loses nearly 13 tons per year. The figure for the Lambert farm is well below the "tolerance" level set by the U.S. Department of Agriculture. It certainly seems time for the Department to become an uncompromising advocate of organic farming.