

CHANGES IN OUR THINKING

THESE are days in which uncertainties and wonderings are taking the place of the firm opinions that have guided modern thinking for a century or more. Here we plan to take notice of recent evidence of this great change. First, then, there is the article, "Did the Universe Just Happen?" by Robert Wright in the *Atlantic* for last April. Wright examines the theories of Edward Fredkin, an unconventional thinker of whom the *Atlantic* writer says:

Fredkin works in a twilight zone of modern science—the interface of computer science and physics. Here two concepts that traditionally have ranked among science's most fundamental—matter and energy—keep bumping into a third: information. The exact relationship among the three is a question without a clear answer, a question vague enough, and basic enough, to have inspired a wide variety of opinions. Some scientists have settled for modest and sober answers. Information, they will tell you, is just one of the many forms of matter and energy, it is embodied in things like a computer's electrons and a brain's neural firings, things like newsprint and radio waves, and that is that. Others talk in grander terms, suggesting that information deserves full equality with matter and energy, that it should join them in some sort of scientific trinity, that these three things are the main ingredients of reality.

Fredkin goes further still. According to his theory of digital physics, information is *more* fundamental than matter and energy. He believes that atoms, electrons, and quarks consist ultimately of bits—binary units of information, like those that are the currency of computation in a personal computer or a pocket calculator. And he believes that the behavior of those bits, and thus of the entire universe, is governed by a single programming rule. This rule Fredkin says, is something fairly simple, something vastly less arcane than the mathematical constructs that conventional physicists use to explain the dynamics of physical reality. Yet through ceaseless repetition—by tirelessly taking information it has just transformed and transforming it further—it has generated pervasive complexity. Fredkin calls this rule, with discernible reverence, "the cause and prime mover of everything."

Distinguished scientists listen with attention to what Fredkin says:

Among the scientists who don't dismiss Fredkin's theory of digital physics out of hand is Marvin Minsky, a computer scientist and polymath at MIT, whose renown approaches cultic proportions in some circles. Minsky calls Fredkin "Einstein-like" in his ability to find deep principles through simple intellectual excursions. If it is true that most physicists think Fredkin is off the wall, Minsky told me, it is also true that "most physicists are the ones who don't invent new theories"; they go about their work with tunnel vision, never questioning the dogma of the day. When it comes to the kind of basic reformulation of thought proposed by Fredkin, "there's no point in talking to anyone but a Feynman or an Einstein or a Pauli," Minsky says. "The rest are just Republicans and Democrats." I talked with Richard Feynman, a Nobel laureate at the California Institute of Technology, before his death, in February. Feynman considered Fredkin a brilliant and consistently original though sometimes incautious, thinker. If anyone is going to come up with a new and fruitful way of looking at physics, Feynman said, Fredkin will.

Notwithstanding their moral support, though, neither Feynman nor Minsky was ever convinced that the universe is a computer. They were endorsing Fredkin's mind, not this particular manifestation of it.

Why, asks Wright, does Fredkin "refuse to do the expedient thing—leave out the part about the universe actually *being* a computer?"

One reason is that he considers reprehensible the failure of Newton, and of all physicists since, to back up their descriptions of nature with explanations. He is amazed to find "perfectly rational scientists" believe in "a form of mysticism: that things just happen because they happen." The best physics, Fredkin seems to believe is metaphysics. . . .

"Every astrophysical phenomenon that's going on is always assumed to be just accident," he says. "To me, this is a fairly arrogant position, in that intelligence—and computation, which includes intelligence, in my view—is a much more universal thing than people think. It's hard for me to believe

that everything out there is just an accident. . . . I don't believe in Christianity or Judaism or anything like that, okay? I'm not an atheist, I'm not an agnostic, I'm just in a simple state. I don't know what there is or might be. But what I can say is that it seems likely to me that in this particular universe we have is a consequence of something I would call intelligent."

It is evident here that we have worn out the negations which began with the scientific attack on theology hundreds of years ago, and that today it is at least possible to regard the universe as an expression of intelligence without falling back on any irrational claims of past religious belief. Revolutions in thought move slowly, as Thomas S. Kuhn made clear in his *The Structure of Scientific Revolutions*, yet, little by little, they do take place, until something like a new orthodoxy is established. It is fair to say, then, that we are moving away from the old orthodoxy, in which the events of the physical world were regarded as all products of chance, and as Fredkin argues, both intelligence and meaning, in no way requiring a theological explanation, are at the root of whatever development is going on. One need not accept Fredkin's belief that the universe is basically a computer to recognize the force of his arguments. This is clear from what Wright says:

Fredkin doubts that his ideas will achieve widespread acceptance anytime soon. He believes that most physicists are so deeply immersed in their kind of mathematics, and so uncomprehending of computation, as to be incapable of grasping the truth. Imagine, he says, that a twentieth-century time traveler visited Italy in the early seventeenth century and tried to reformulate Galileo's ideas in terms of calculus. Although it would be a vastly more powerful language of description than the old one, conveying its importance to the average scientist would be nearly impossible. There are times when Fredkin breaks through the language barrier, but they are few and far between. He can sell one person on one idea, another on another, but nobody seems to get the big picture. It's like a painting of a horse in a meadow, he says. "Everyone else only looks at it with a microscope, and they say, 'Aha, over here I see a little brown pigment. And over here I see a little green pigment.' Okay. Well, I see a horse."

A book published last year, *Structures of Consciousness* by Georg Feuerstein (Integral Publishing, 1987), gives further evidence of the liberation of the modern mind. Feuerstein's book is a study of "The Genius of Jean Gebser—an Introduction and Critique." Gebser was born in the Polish town of Poznan, then part of Prussia, in 1905. While expected to enter a banking career, he embraced literature instead, and wrote poetry for a journal which he and a friend established. He also became a part-time student at Humboldt University; then, in 1929, he exiled himself from Germany, as did thousands of writers and artists in the years to come. He finally settled in southern France, changing his first name, Hans, to the French Jean. Later he went to Spain, where he soon learned Spanish and became the friend of Spanish poets, including Federico Garcia Lorca. He came to regard the present century as a time of crisis, and Feuerstein says of him that, like a medical doctor, he sought to define the healing process. As Feuerstein puts it:

Gebser's work is performing a similar service relative to the health, or rather ill-health, of our ailing civilization. In his *Ever-Present Origin* [his major work] he puts forward what may be called the "psycho-structural reasons" for the breakdown in our civilization's immune system. But he does more than that. He also delineates how we, as individuals and as a nascent world-community, may participate in our own recovery to wholeness and health. And it is a matter of participation and of personal and institutional responsibility.

To begin with, it is a matter of being willing to ask the Big Questions of life—the great existential questions that perturb us whenever we are confronted with the frailty and finitude of our lives: Who am I? Whence do I come? Whither do I go? How shall I live? . . .

Not only does he not shy away from posing the Big Questions, his entire work directly challenges the reader to follow suit. He also does not hesitate to furnish his own answers, and his answers are penetrating and pertinent, often even wise.

The pattern of Gebser's inquiry is to study the forms of consciousness, as experienced historically. Giving us this pattern, Feuerstein has

chapters on archaic consciousness, magical consciousness, mythical consciousness, mental consciousness and rational consciousness. Finally there is a study of what is called "The Emergent Consciousness," taking place in the present. We shall give attention to this section since the earlier chapters are obscure and hard to understand, and sometimes seem strained to relate these earlier forms of the structure of consciousness to historical periods such as the time of the Neanderthals and the Cro-Magnons. This seems highly speculative to us. But when we come to the part of the book devoted to spiritual awareness and the transcendence of the ego, there seems much of value in the text. Feuerstein says, for example:

There is a great reticence in academic circles about matters spiritual. The word "spiritual" is generally tabooed, as is its thematics. Largely, I think this has to do with a particular interpretation of the term "spiritual," which is widely taken to refer to the kind of pseudo-religious orientation witnessed since the 1960s in the West and associated with what theologian Harvey Cox calls the "new Orientalism."

Apart from this more immediate historical cause, there is another, deeper reason for the fluster in academic circles relative to the word "spiritual" and its thematics. . . . It lies undoubtedly in the structure of consciousness that animates most of the education industry, including our so-called higher learning. I am referring of course to the rational structure of consciousness with its inherent proclivity toward extreme dualism, its neurotic obsession with finality and certainty in knowledge, and its concomitant fear of the irrational or what *appears* to be irrational. . .

The adjective "spiritual" is manifestly derived from the Latin noun *spiritus* which, like the Greek *psyche*, originally meant simply "breath," that is, the force of life, to which archaic and even magical humanity appears to have been in a far less complicated relationship than our present-day civilization. Later, the term "spirit"—in German *Geist*—came to be deprived of its sensory quality, its concreteness, and its *Sitz im Leben* and was turned into a quasi-metaphysical substance. It is no longer referred to the experienceable, living numinous power, but more to a something that was separate from, though still essential to, the human being.

More recently, under the impact of positivism and as part of the complex process of secularization, the concept itself lost its appeal. Consequently the word fell into desuetude and even disrepute, certainly in the "enlightened" domain of science-inspired thinking. The related term "psyche" suffered a similar fate so that, not too long ago, the stricter form of behaviorism could correctly have been labelled as a psychology without psyche. To the positivist, who looks to the hard, predictive sciences for salvation, "spirit" and "psyche" signify little more than the air it takes to vibrate the vocal chords in order to produce the two words.

Neither Gebser nor Feuerstein are content to leave things the way they are in respect to these terms.

It is true enough that over the centuries the terms "spirit" and "psyche" have acquired an aura of connotations that is definitely in need of conceptual purification. Some have therefore felt that it might be better to leave them under the debris of past history, and that any attempt at resuscitation is doomed to failure because they pertain to a different world-view or, as one might argue in Gebserian terminology, even to a different structure of consciousness. Nevertheless I feel that both are still useful terms. Gebser, who is more acutely sensitive to language and conceptual images than most, happily retains both "spirit" and "psyche" in his review of past civilizational efforts, but also in his preview of the possibilities that lie ahead of us. Besides, both terms are still very much alive in the "popular" universe of discourse, notwithstanding the painstaking, if misguided, "demythologizing" labor of scholars and scientists over the past nine decades or more.

However, in using the term "spiritual" I do not wish to infuse it either with the animistic significance it once had or with the metaphysical-antipodean significance which it still largely retains in religious and theological contexts. Rather, by "spiritual" I mean any value, thought, attitude, impulse, mood, disposition, bodily comportment, or action which refers to, or is expressive of, the native human orientation of self-transcendence. . . . it is the radical gesture of self-transcendence to the point of transcendence of the total mechanism of the "egoification" of consciousness that is, to the "awakening" to that which, from the self's or ego's frog-in-the-wall perspective, always appear to be "higher," "larger," "deeper," "apart," or other. The mystical traditions of the world speak of this as the consummate achievement of enlightenment, God-

realization, the awakening to the Buddha-nature, the birth of Christ in the soul, and so forth.

This is what I mean by authentic spirituality: the realization of the *totum* . . . and the conscious reorientation of one's entire existence in the light of that realization. . . . I should like to point to Gebser's quasi-definition of the term "spiritual" in a rare talk given by him in English during his India visit in 1961. He states: ". . . the term 'spiritual' should be understood to mean that region, which, from the human point of view, is closest to *Atman*, on the other hand, it is by no means to refer to the psychic-irrational and intellectual-rational possibilities of man."

There are times, in reading Gebser, that he sounds like a Christian. Feuerstein comments:

Does Gebser express here the belief that in the future all of humanity will convert to Christianity? Clearly not. We must read this in the light of Gebser's unorthodox, urbane version of Christianity, which includes, for instance, acceptance of the process of reincarnation. . . . In entertaining this *credo*, Gebser finds himself in the illustrious company of such philosophical geniuses as Plato, Plotinus, Nietzsche, Hume, and McTaggart who have all deemed reincarnation a reasonable explanation for whatever evidence there may be.

We conclude quotation from Feuerstein's work by saying that Gebser died in 1973.

We have one more publication to consider—*Heavy Drinking—The Myth of Alcoholism as a Disease*, by Herbert Fingarette, published this year by the University of California Press. Fingarette teaches at the University of California and for many years has devoted himself to the study of mental illness, alcoholism, and addiction. He wrote this book to explode the widely held belief that alcoholism is a disease which makes those it afflicts literally unable to stop drinking. He collects and presents evidence gathered over many years to show that drinkers are able to stop drinking and are not in the grip of a fatal disease. This contention, in its way, is a rejection of the mechanistic fate that the drinker loses all his will power. Prof. Fingarette, who writes well, begins his book:

Another book on alcoholism? Why? Oddly enough, and despite the many books on the topic,

there is an important untold story: Almost everything that the American public believes to be the scientific truth about alcoholism is false.

The facts are an open secret. That is, they are quite familiar to scientists and leading researchers in a variety of fields who read the major journals and books addressed to professionals. Indeed, the relevant scientific literature spans several decades of research that roundly contradicts popular beliefs and suggests an entirely new perspective on alcoholism and heavy drinking.

And yet the public—including many counselors and paraprofessionals working in treatment centers—remains in the dark, still holding, and encouraged to hold, beliefs that are forty years out of date. . . .

What is the "classic disease concept of alcoholism"? First proposed in the late 1930s, it goes like this. Alcoholism is a specific disease to which some people are vulnerable. Those who are vulnerable develop the disease if they take up drinking. From apparently normal social drinking, they progress to drinking ever greater amounts, to private and secret drinking, to developing an increased tolerance to liquor, and to experiencing withdrawal distress if drinking is interrupted; they begin to have blackouts (morning-after amnesia) and they forget the previous day's drinking bout. Most crucially those afflicted by the disease *inevitably* progress to uncontrolled drinking because the disease produces a distinctive disability—"loss of control," a loss of "the power of choice in the matter of drinking." Then, as the saying goes: One drink, one drunk. . . .

And yet, *no* leading research authorities accept the classic disease concept.

Fingarette's book assembles the research which has led to rejection of the "disease" concept. In general, he shows that the drinker is still in charge of his life and can stop drinking heavily if he decides to. A billion-dollar treatment industry, it has been said, has grown up around the claim that alcoholism is a disease. In short, Prof. Fingarette has returned responsibility to the individual, who, he says, is not the victim of a disease but is able to drink, or not to drink, as he chooses. Conditions, in short, do not make us what we are. We make ourselves.

REVIEW

VALUABLE THINKING

THIS week we give attention to the Winter 1988 edition of the Planet Drum Review, *Raise the Stakes*, published twice a year from P.O. Box 31251, San Francisco, Calif. 94131. The entire contents of this issue are extremely interesting, dealing as they do with the possibilities of the bioregional approach to cultural and social change. The first article is "Cities within Nature" by Beryl Magilavy, in which she says:

Seventy-five per cent of North Americans now live in cities. . . . Do we live in harmony with the natural world? Do we share a common vision? Do our cities represent the highest levels our culture can achieve? This is hardly what appears in the poetry of modern industrial nations. We see lifeplaces in decline—with populations often alienated from society and lacking coherent social goals.

This social atomization is evidenced by our unthinking treatment of the biosphere. Legacies of ozone destruction, watertable pollution, toxic contamination and extinction of species testify to our ever-expanding population and the misconception that natural systems other than our own are expendable. . . .

Population expansion and industrial technology have enabled our species to disrupt the design of the entire web of life, endangering ourselves and the future of all life on earth. We have come to a point at which the interest of the whole earth must be made the interest of each one of us every day. We must consciously realize that we are a part of the natural systems in which we live, and start redesigning our lives with the long-term good of our lifeplaces in mind.

Each person must do this. By eating, driving, buying commodities and ridding ourselves of wastes, we are already actors in this drama. Ignoring the implications of our actions is a political act in itself. It is going to take an enormous expansion of popular ecological consciousness to change the fixed, wasteful patterns of most cities. . . .

The growing number of city-dwellers who have become aware that we are inextricably part of a greater natural whole can help create the social forms which will generate positive change and begin to wake up others.

This intertwined process can be called the "rehabitation" of the regions in which our cities are located. . . .

We city-dwellers need to find out, in terms of natural systems, *where we are*. We know the museums, how about the native plants? We have all the freeway routes in our heads; why not get to know the water-courses? Our local histories represent an irreplaceable store of native and settler wisdom about the areas in which we live. Knowing them establishes a sense of continuity that edges the mind toward the long-range care-taking instead of short-term gain. Rehabitation can be done on a walk through "unimproved" ground with a guidebook from the public library, a drive that traces the path of tapwater to its source, a chat with the grocer about local growers.

The other side of the rehabitation process is more social and cooperative. Right now cities are the black holes of energy resources, the water web, the raw materials of the world. As a society, we don't know any other way to do it. We have to get together and find those ways.

In his account of the presence of nature in English cities, David Goode begins with the dramatic growth of cities in recent years.

The first city of one million was Peking in about 1800. By 1980, there were 23 cities with a million inhabitants. Over the lifetime of my father, born at the beginning of this century and still alive today, the population of the urban areas of the world has grown to the point where it now exceeds the total world population when he was born.

Yet cities have grown so fast that here and there are spots of wilderness that have been overlooked.

Take London, for example. There are many fragments of countryside caught within the bounds of the capital. There are beautiful bluebell woods, pieces of the original ancient woodland of England, caught within the outer suburbs. Similarly, right next to a new town development there is a wood with a host of wild daffodils in it. The original wildflowers of those ancient woodlands provide a great contrast to the imposing apartment buildings nearby. Elsewhere in London there are other natural gems of marshland, heath and bog amongst the urban sprawl.

Some of these places in London have gained the affection of the people who live nearby. Goode writes about one of them:

There is another place in London which is very special to me. It is a good example of something that is unintentionally wild which has caused people to change their minds about nature conservation in cities. It formed a very important precedent and has been quoted many times in Britain—a place called Gunnersbury Triangle. This is a tiny fragment of woodland in west London which was the subject of a public enquiry a couple of years ago. British Rail and a development company proposed to develop warehousing on the land. There were already warehouses on one side and they wanted to extend that warehousing over the rest of that site. The local people said "No! This is important to us." A lot of people who travel on the tube trains into London every day pass the wood and they said "No! This is something special—this is the only bit of nature that we see." And when it came to a public enquiry, they had a couple of hundred people crammed into an evening meeting in the town hall, saying, "This is very important. You can't build a warehouse there. We want to keep it as it is." This was despite the fact that it was a "landlocked" site that very few people ever got onto. But it was an important inspiration to them, and they wanted to keep it. . . . the enquiry showed conclusively that the place was important for nature conservation. The inspector came down firmly on the side of nature conservation. He said it was very important locally, and it was the local people who won that case.

At the moment, there are 20 nature reserves being designated similar to the one in London as a result of the same kind of pressures.

In his conclusion David Goode tells about a natural area that has been created next to King's Cross Station in the center of London.

There is a little patch that was a rubbish dump and a derelict coal yard. When I joined the GLC (Greater London Council) I was told, "This is going to be an ecology park and it's your job to do it." So we created an entirely new environment with spinneys, of willow trees, reed beds and a large pond. We built a nature study center too and the whole place has been a great success. Local people drop around on a summer evening and hundreds of school children use it regularly for pond dipping and studying nature.

One lady told me that it was the first really beautiful thing they had in that part of London.

In the artist's drawing of what it was going to be like he put a heron on the edge of the marsh and I said, "Well, that's a bit of artistic license. We'll never get herons in there." But we did. In the first winter, the herons started to come in the evening to roost there. The children would stay to watch the first heron arrive. It was a great moment. The heron put his own stamp of approval on the scheme. We had done it just right. So it is actually working as a haven for wildlife, even right bang in the middle of London. And it's quite remarkable what can be achieved.

An article by David Morris gives examples of things which practically nobody would think of without someone like David Morris to point them out. He says, for example:

One of the enduring legacies of the environmental movement is that it has managed to begin to move the *price* of doing things to the *cost* of doing things. The price is what an individual pays; the cost is what the community pays.

Let me give you a specific example, of price versus cost. Rock salt is used to de-ice roadways. Its price is very cheap: one to two cents a pound. There is at least one alternative to rock salt, made out of plant matter: calcium-magnesium acetate. It can be produced at present for about 20 cents a pound—10 to 20 times more than rock salt. That's its price. However, rock salt has some problems. It corrodes the underbody of cars, and in New York City, Consolidated Edison has found that it causes a great many problems in the electric supply system which runs through the sewers.

Sewer water, carrying dissolved rock salt, can corrode insulation and lay bare wires. A neoprene gas can be generated and if a spark occurs, the explosion can send manhole covers flying. By one estimate Consolidated Edison spends \$75 million to repair damage caused by rock salt. That's part of the cost of rock salt. Another cost is polluted groundwater and the devastation of vegetation. New York State has made an informal estimate that the actual, internal cost of rock salt is 80 cents a pound. Which de-icer do you buy?

The individual is unaware of this cost. It is the responsibility of the community to make price and cost similar.

David Morris has another example—bananas. Should we continue to import them from central America or should we try to raise them ourselves?

Surely local self-reliance does not mean raising our own bananas in the United States when the climate is so much more favorable in Guatemala.

It may be cheaper to import those bananas, once again, depending on what the price is versus the cost. Bananas that come from Central America come from countries that do not permit unions, are produced by companies that do not pay any taxes, and are grown by production methods that have no environmental regulations. I submit if you calculated the number of dollars that have been spent by the United States in military intervention in Central America, and divided that by the number of bananas that are imported into the United States, you would find that it's very costly to import bananas rather than to grow them yourself.

This is a sample of the kind of thinking that reading *Raise the Stakes* may oblige you to do. One receives *Raise the Stakes* by becoming a member of the Planet Drum Foundation—per year, \$15.00.

COMMENTARY

DIFFERENT KINDS OF IGNORANCE

THERE'S not much the average reader can do about the kind of change in thinking that is described at the beginning of this week's lead article—concerned with the virtual genius of Edward Fredkin. Yet this man is important to know about by reason of the changes that are going on in the thinking of some physicists, on which we are likely to depend. On the other hand, it seems good news to learn that a man as bright as Fredkin has become convinced that the universe we live in "is a consequence of something I would call intelligent." And this, as our writer says, makes it evident that "we have worn out the negations which began with the scientific attack on theology hundreds of years ago." Fredkin himself believes in no theology, but on the other hand he's neither an atheist nor an agnostic, but one who insists on making sense out of the universe, even though he finds it difficult, we are told, to get anyone else to agree with him.

Still, he makes us feel more comfortable: something more than mere chance has brought us to where we are today.

The article by David Morris quoted from *Raise the Stakes* on page 8 is also concerned with ignorance, but of another sort. We use rock salt to de-ice roadways because the socio-economic structure of our society is so complex that only after years of experience did we discover the various effects which salt has that run up the cost to much more than a cent or two a pound. David Morris makes it plain that there is a better, even cheaper, way to de-ice the highways than using rock salt, but we probably won't believe what Con Edison tells us—it's too big a company and we will be suspicious of them.

Of course, if we had smaller communities we would have smaller problems and better ways of determining costs. We would probably have a better understanding of where we ought to buy

our bananas, too, if our decision-makers worked for little countries like those of Central America.

We might look also at the confusions described by Joseph Wood Krutch in this week's "Children." Why do we have an officer of a state commission who protests hotly against having a young deer in a state park, because, he said, "making pets of wild animals creates a prejudice against hunting."

These are apparently some of the problems of having a big country. When you have a big country, big business becomes the main power in the land, and then we have problems we hardly know about except for the information given us by writers like Joseph Wood Krutch.

We have a great deal of ignorance to overcome—not just the kind of ignorance which makes it difficult to understand men like Edward Fredkin, but the ignorance which comes from isolating ourselves in the complexities of a big society, where, because we adjust ourselves to its limiting conditions, we do not have normal contact with our responsibilities, leaving these responsibilities to be simplified and redefined by morally indifferent bureaucrats.

It is time to consider seriously the alternatives proposed by the bioregionalists.

The bioregionalists are people who think about the world they live in terms of the health of their actual surroundings. They are *planted* in the world, not just thrown into it, like trash. After you have read about them, what they are doing and what they say, you begin to see how valuable and important they are.

CHILDREN

. . . and Ourselves

TRIBUTE TO THE COCKROACH

NOT only in academic life are limitations worn as though they were badges of honor, but here, at least, people ought to know better. Interesting evidence of this is provided by Joseph Wood Krutch in *The Great Chain of Life* (Houghton Mifflin, 1957), in the chapter, "Reverence for Life," in which he says:

Very recently I had occasion to spend a week on the campus of one of the oldest and most respected of the smaller liberal arts colleges of the eastern seaboard. It was one that prides itself on its exclusive concern with liberal rather than professional education. A benefactor gave it some years ago a beautiful wooded tract adjoining the campus which is lavishly planted with native and exotic flowering trees and shrubs. When no student or teacher with whom I had been brought into contact could tell me the name of an especially striking tree, I sought out the head of the botany department, who was also its only member.

He smiled rather complacently and gave this reply to my question: "Haven't the least idea. I am a cytologist and I don't suppose I could recognize a dozen plants by sight." The secrets of the cells are a vastly complicated and important subject. But should they be the one and only thing connected with plant life which a student seeking a liberal education is given the opportunity to learn?

There now proceeds a civilized discussion of this question:

That a similar situation does not always prevail I know from observation, but when it does not that is usually simply because the teacher employed happens to have a broader interest, not because those in charge of the curriculum are convinced that some knowledge of the natural world is a part of a liberal education. Biology as commonly taught is not a humane subject: it is simply an elementary preparation for the trade of the specialist.

Mr. Krutch is now well launched:

To proceed from the dissection of earthworms to the dissection of cats—both supplied to hundreds of schools and colleges by the large biological supply

houses—is not necessarily to learn reverence for life or to develop any of the various kinds of "feeling for nature" which many of the old naturalists believed to be the essential thing. To expect such courses to do anything of the sort is as sensible as it would be to expect an apprenticed embalmer to emerge with a greater love and respect for his fellow man. And an increased love or respect for living creatures is one of the last things many college courses in biology would propose to themselves.

While we plan to quote more from Mr. Krutch, this is enough to show what is meant by a civilized human being. How many of us need the help of an essayist like Krutch in order to start thinking like a human being? The world we live in is filled with inhumane habits and ways of doing things—things we ought to object to and refuse to take part in from the word go.

This makes such men as Krutch—and today men like Wendell Berry—rather valuable. Krutch goes on:

"Nature study" is often relegated to the lower levels and sometimes thought of as being really appropriate only to the kindergarten. Even in the elementary grades the tendency to devote more attention to dead animals than to living ones sometimes makes its appearance. In a very "progressive" school I have seen teen-agers introduced to the old dreary business of dissecting earthworms; and there are worse things than that when bungling, pointless experiments upon living animals are encouraged. The catalogue of a leading biological supply house boasts of the wide increase in the use of "nutrition experiments" (grandly so-called) in schools. It offers eight different deficiency diets together with the living animals whose malnutrition, when they are fed any one of these diets, may be observed by the curious. Very recently the head of the National Cancer Institute urged high school teachers to teach their pupils how to produce cancer in mice by the transplantation of tumors and in chicks by the injections of enzymes.

Is it sentimental to ask whether anyone not preparing for the serious study of anatomy is likely to be any the better for the dissecting of a cat, or whether anyone, no matter what career he may be preparing for, is any the better for having starved a rat or induced cancer in a mouse? However completely experiments up to and including vivisection may have justified themselves, is there any

possible excuse for repeating them merely by way of a spectacle?

By now it is as well known that a rat will sicken and die without certain minerals and vitamins as it is that he will die if given no food at all. Would anyone learn anything by poking out eyes in order to prove that without them animals can't see? Or, for that matter, from undertaking to find out for himself whether or not it is really true that even Jews can bleed? Yet to deprive animals of protein is hardly more instructive. Taught by such methods, biology not only fails to promote reverence for life but encourages the tendency to blaspheme it. Instead of increasing empathy it destroys it. Instead of enlarging our sympathy it hardens the heart.

Krutch has now laid the ground for his larger point:

The grand question remains whether most people actually *want* hearts to be tenderer or harder. Do we want a civilization that will move toward some more intimate relation with the natural world, or do we want one that will continue to detach and isolate itself from both a dependence upon and a sympathy with that community of which we were originally a part? Do we want a physical environment more and more exclusively man-made and an intellectual, emotional, and aesthetic life which has renounced as completely as possible its interest in everything inherited from the long centuries during which we were, willy-nilly, dependent upon what the natural world supplied? Do we want cities completely sterilized and mechanized; do we want art that imitates exclusively the man-made rather than the natural?

He answers:

There is a sizable minority which has asked itself these questions and answered them with an unqualified "Yes." There is another minority, perhaps almost as large, which answers them with an equally definite "No." But the large majority has never faced these questions in any general form, though it is nearly everywhere drifting without protest toward a pragmatic affirmative.

Next he inspects the confusion of our opinions:

What, for example, are the national and various state conservation and wildlife departments for? Are they to preserve wildlife or to provide game for hunters to kill? If for the latter, then is the

justification the beneficial effects of sport or is it the contribution to the general economic prosperity made by the arms industry? When there is a conflict, what comes first?

It would be difficult to get from many organizations a clear-cut statement and I have been told of at least one instance where an officer of a state commission protested hotly against the exhibition in a state park of a young deer which children were allowed to pet because, so he said, making pets of wild animals creates a prejudice against hunting. And to leave no doubt concerning the ultimate reason for his attitude he is said to have added, "After all, guns and ammunition are big business."

Krutch ends this chapter with a successful attempt at humor:

The late David Fairchild, who was responsible for the introduction of so many useful and beautiful plants into the United States, tells the story of an army officer assigned to an office building in Miami during the First World War.

"I haven't got anything but human beings around me in that building where I spend my days. Aside from the floor and the ceiling, the doors and windows and desk and some chairs there isn't anything but people. The other evening when I was feeling particularly fed up with the monotony of the place, I went into the lavatory and as I was washing my hands a cockroach ran up the wall. 'Thank God for a cockroach!' I said to myself. 'I'm glad there is something alive besides human beings in this building'."

It may well be with such small consolations that the nature-lover of the not too distant future will be compelled to content himself. Cockroaches will not easily be exterminated.

FRONTIERS

Odds and Good and Bad Ends

WE learn from a report in *American Teacher* (March, 1988) that there is now an organization which gives textbooks to schools that need them. The organization is International Book Bank Inc., founded by Larry Koralik, who while on a visit to Jamaica discovered that the schoolchildren there have no books. He later found out that also lacking in books are 38 million children in 17 English-speaking countries. The report says:

He formed the International Book Bank to persuade teachers to save the 100 million books discarded by American schools each year. The Book Bank sorts through the books, making sure they are in good shape and appropriate for the country they'll be sent to.

"We have to realize that this is a gift from America," says Linda Kaye, Book Bank managing director, "and something bound up with electrical tape is not a good gesture." Needed most are readers, science books and math books, especially the newer math books that use the metric system, according to Linda Kaye. She adds that developing countries also want paperback novels, which the adults enjoy.

Usually, when you create a charity, you expect to thank the donors, Larry Koralik says, but in this case "the teachers have been thanking us." They say, "I've always felt bad about throwing these books out. Thank you for finding people who can use them." The teachers, Koralik says, are the biggest supporters of the Book Bank. He adds that many teachers travel and report on schools that need books. For information about the Book Bank, write to Linda Kaye, International Book Bank, Inc., Box 3 Palatine, Ill. 60078.

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The news section of *Fellowship* for last March tells about the study, *Two Trillion Dollars in Seven Years*, which may be had for free from Defense Monitor, Center for Defense Information, 1500 Massachusetts Ave., NW, Washington, DC

20005. According to this report, our expenditure amounted to "the largest peacetime military budget in US history."

The report breaks down the Reagan years' military spending by the Departments of Defense and Energy into three categories that consume more than go per cent of that expenditure (1) preparations for nuclear war: \$427 billion; (2) preparations for conventional war in Europe: \$736 billion; (3) preparations for conventional war in Asia and the Persian Gulf: \$588 billion.

* * *

Also reported in *Fellowship* for March is the death of Abdul Ghaffar Khan, a Muslim disciple of Gandhi, at 98 years of age. He opposed British rule in India and partition of the subcontinent. "Khan spent a lifetime advocating nonviolence to achieve his political aims and spent some twenty-five years in British and Pakistani jails for doing so.

In the late 1920s, Khan established a nonviolence movement called—interchangeably—the Servants of God and the Red Shirts. Its adherents, initially drawn from the poor northwest frontier peasantry, swore on the Koran to follow the teachings of Islam and, if persecuted, to refrain from violent resistance. For almost two decades Khan and his Red Shirts—so called because of the bright scarlet color of their marching uniforms—walked thousands of miles throughout India urging Hindu and Muslim alike to practice civil disobedience and to join the political struggle for freedom.

The causes Khan supported included: the independence of India, a unified India as homeland for both Hindu and Muslim, and Pathan autonomy in the Pakistan created when India gained independence in 1947.

* * *

"Behavior modification" is the academic term used to describe the brainwashing techniques applied to the inmates of two federal prisons—a unit for men in Marion, Illinois, and a women's unit at Lexington, Kentucky. David Dellinger, a well known pacifist, writes about these places in *Fellowship* for March. He says:

So shocking are the techniques employed at Marion that in 1986 Amnesty International felt compelled to launch its first investigation of a US prison, doubly significant because Amnesty traditionally concerns itself more with human rights abuses in other countries than in the United States. Amnesty concluded that Marion violates the Standard Minimum Rules of the United Nations' Declaration on the Protection of All Persons from Being Subjected to Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment. The employment of similar techniques at the Lexington facility led the National Prison Project of the American Civil Liberties Union to investigate that facility last August, with similar findings.

The prison at Marion opened in 1963 to take the place of the controversial prison at Alcatraz. But closing Alcatraz did not mean that the Bureau of Prisons had changed its ways. Instead, it moved its crimes to Marion and added new ones, camouflaged as "modern" "scientific" penology. Despite official disclaimers, there has been more physical brutality at Marion than at Alcatraz and the prolonged periods of dehumanizing solitary confinement that had made Alcatraz infamous have been continued and used more routinely against a greater number of prisoners. The entire Marion "control unit" has been on continuous lockdown for more than four years: twenty-three hours a day of total isolation, with limited, no-contact visits, and guards forbidden to talk with prisoners.

The much smaller women's "control unit" at Lexington was opened in 1986. Ironically, it was modeled after Marion, despite the egregious failures of that institution in terms of the damage to inmates and the public protests aroused.

Where did the Bureau of Prisons learn the sophisticated new techniques of behavior modification it employed first at Marion, then at Lexington? In part, from Professor Edgar Schein of MIT, who spent five years doing research for the CIA on the brain-washing techniques used by North Korea and China against American POWs in the Korean war.

What, precisely, are the methods used on the prisoners? In a paper prepared for the Bureau of Prisons, he said that the prisoner is isolated in an "inflexible environment," creating a state of total dependency. He said in his paper:

Because most of [the prisoner's] supports are provided by those with whom close emotional ties exist, it is often necessary to break those emotional ties. This can be done . . . by removing the individual physically and preventing any communication with those he cares about. . . . I would like you to think of brainwashing not in terms of politics, ethics and morals, but in terms of the deliberate changing of behavior attitudes by a group of men who have relatively complete control over the environment in which the captive population lives.

An Amnesty investigator writes:

The Standard Minimum Rules . . . say unequivocally chains and irons shall not be used. Yet at Marion (they) are used routinely. The plaintiffs complained that whenever a prisoner left his cell for any reason, other than exercise or shower the administration required that he be handcuffed, waist shackled, and leg shackled. Inmates are, on occasion, handcuffed to their beds as well.

There are pages more of what is done to the inmates in these prisons.