

THE REFERENCES FOR LIFE

IT is now a fact established beyond dispute that the psychic health of children requires the nourishment found in fairy tales. The fairy tale dramatizes the polarities of good and evil by embodying them in wondrous beings who go through terrible trials and struggles and emerge victorious. These stories spur the capacity to dream, making it possible to suppose that sometimes dreams come true. They violate everyday reality according to mysterious rules that are accepted because they suggest that there is another world where willing is the same as doing and where longing is fulfilled.

The need for these exercises of the imagination is obvious enough. No human—child or grown-up—can act out a vision unless he has one. The power to make images in the mind must be developed first. Without that power nothing happens. Imaginings are the child's way of learning to use abstractions. Abstractions, as we know, shut out, but they also make known. The price of having this knowledge is that it is surrounded by ignorance. The fairy tale teaches the child that it is possible to get to knowledge which is good. Later on, life teaches the limitations on knowing and getting, and we call the ability to cope with limitations maturity. Maturity—or wisdom—is the art of translating the mysterious rules of the world of free imagining into the rigorous laws of life on earth.

Do adults have fairy tales? Well, they have Utopian romances, which are an adult form of dreaming in behalf of the future. As in fairy tales, the rules by which wonderful things are made to happen in Utopia are not well revealed. The writers, alas, don't know these rules, although sometimes they seem to make very shrewd guesses.

In *Nowhere Was Somewhere*, Arthur Morgan proposes that all utopias are based on some sort of high achievement in the past—Peru under the Incas, for example—presenting persuasive evidence for this idea. But his discussion of the characteristics and uses of utopias, and the reasons why they invariably fall short in application seem the most valuable part of the book. The capacity to imagine an ideal—an essential human quality, for what would we be without it?—is at the root of all utopian thinking. Morgan says:

When a man makes a garden or builds a house or a city, he begins to express a design of orderly arrangement—to make his work conform to a preconceived pattern. Almost every single item in our vast and complex American civilization was first a design in some man's mind before it was worked out in reality. The quality of our civilization is the quality of those designs. .

Every intelligent and active-minded person is to some degree a utopian. In our leisure moments we try to picture to ourselves the political, social and technical conditions under which we should like to live, and, at least in some small degree, we try to realize those conditions. The process of uncritical trying of this and that to see whether it will work is better than completely inert conservatism, at least as regards simple circumstances. However, in complex situations the wrong ways may so vastly outnumber the right ones, that the prospect of success by unsystematic, impulsive experiment may be very, very remote. The results of that type of experiment are chiefly waste of resources, disillusionment, and the discrediting of creative effort.

Morgan practices the sort of social psychology which all utopian planners would do well to study. While he shows that without utopian inspiration humans wouldn't amount to much, the problem is whether or not we can live with the arrangements it leads to. We don't, for one thing, want the authoritarian system that the

ants have worked out, beautifully "successful" though it may seem.

In an anthill there is apparently no rebellion or internal discord. The prevailing type of social organization is completely recognized and accepted. In human society no such fixed pattern exists. Fortunately men are still free to explore the vast ranges of possible social organization and to work out new designs as human experience and insight increase, or as conditions of living change.

Can there be utopian plans which don't bind the future to some rigid destiny? How do you get both order and freedom in a complex, technological society? Is this combination simply impossible for us, as we now try to put them together? Schumacher thought so, and he wrote *Small Is Beautiful* to suggest the right conditions for having both.

Morgan continues:

Much of the discord, grief and conflict in the world today is the result, not of men's inability to achieve social aims, but of the absence of agreement concerning social aims on which to unite their efforts. When we observe how far from agreement on a social program those men are who are ablest in the field of government and social organization, we realize that it is not yet time for any single type of government to be fixed on society. The existence of disagreement and conflict, and the lack of unity of inner impulse toward achieving an ideal design, are not necessarily a hopeless or even an undesirable condition. Such discord indicates that society is in active evolution and is feeling its way toward larger and better patterns. We are as yet in the dim morning twilight of social science. Premature unity might result in fixing on society an unnecessarily imperfect type.

As himself a utopian, Morgan uses an interesting blend of methods. He has his principles and his dreams, but when it gets down to what we ought to do *now*, he speaks mainly of motives and processes, of transition activities, not of goals. The goals are there, but he keeps them quite abstract to avoid materialization and distortion. We don't yet know or accept the rules for such goals. These are concluding ideas:

The expression "creative vision" may seem a contradiction of terms; yet it is the quality of some

men to see that which never has been but which can be within the framework of reality and would add to the quality of living. Such creative vision may become an active cause of events, without which they would not occur. At their best utopians have that gift.

Who has it today? A lot of people, since this is a time when creative vision is needed above all. Visionaries of the sort Morgan is thinking of would include Schumacher, John Todd, Amory Lovins, Barry Commoner, and Karl Hess, to name only a few. What might get more such utopians to work? Morgan says:

Whatever stirs men deeply tends to result in pictures of a good society. When, a short time before the discovery of America, the Turks overran Greece and drove Greek scholars to Italy, there was a burst of utopian thinking and undertaking in Italian cities. Columbus inspired utopias by opening the doors of what had seemed a closed world. When the Tudors broke up the ancient land system of England, other pictures of a good society appeared. The Industrial Revolution, one of the great disturbances of history, stimulated the appearance of utopias at an unprecedented rate. Whenever circumstances press especially hard upon men, unless their spirits are completely broken they persist in picturing a good world that for the present is denied them. When men cease to produce utopias it will be because they are all dead, in spirit, if not in body—or else because life is so good that they cannot imagine it to be better. . . .

No greater service can be done to men than to contribute to the correction, refinement, and enlargement of the designs of life they live by. Efforts to do this by means of pictures of ideal societies, called utopias, rank high among effective means to that end. It is not the immediate application of such a picture to a particular society that is the measure of their greatest usefulness, but the fact that they exist as bases for measuring what has been done and as suggestions of what might be.

Myths, fairy tales, and utopias are one way of getting at the role of ideals in human life. An ideal, it seems, while not itself "practical," is the very foundation of all good things that are practical. It is the noumenal or metaphysical reality behind the physical. Put another way, it is the moral energy behind all our efforts at coping. Without it humans would lapse into lives wholly

controlled by instinct. We would, perhaps, become ants.

How can we convince ourselves that the ideal is real and has priority in our thinking and acting? That our dialogue and all communication is basically in terms of ideal forms, ideal conceptions, ideal objectives? Here a passage by Louis Halle (in *Men and Nations*) is to the point. He begins by asking what is a straight line, and shows that a straight line exists only in the imagination. All constructions suffer from imperfection. We *think* in terms of the ideal. As Halle says, the idea "assumes the fundamental role in the human mind."

It is more "real" for the mind than the visible phenomenon. It comes first, since it was what we were trying to represent when we put pencil to paper. It also comes last, for when we look at what has been set on the paper our mind of its own accord eliminates as defects to be disregarded the width of the line and its irregularities of direction. Our mind translates the visible, replacing it with the idea, which was the model by which the shape of the visible was determined. Therefore the idea, in the end as in the beginning, has the more vivid reality. The material phenomenon is only an imperfect imitation of it.

While nothing is perfect in the material world, we learn about the material world and how it works by working with ideal perfections, and then seeing how to get approximations of what we want by dealing practically with the imperfections we encounter. We are, in short, both idealists and realists. We have to be both. As Halle puts it:

Imperfection characterizes everything in the concrete world, thereby paradoxically associating the concrete world with the world of perfection, demonstrating the prior existence of the world of perfection. For how can imperfection be, except in terms of perfection? It is only by falling short of a standard of perfection in the mind that anything can be imperfect. In the very act of saying that a line is not perfectly straight we proclaim the existence of an idea, of the perfectly straight line that can have no material

embodiment. It follows that the world of ideas is fundamental.

So children, whose realist component is undeveloped, prefer their imaginings to the facts of life. They see little reason, as yet, to get the two together, and they know from the inside that their dreams and imaginings are the most important. We might say that the intelligence we most value—which makes evolution possible—is the maturing understanding which is able to convert chaos into cosmos, using ideals as references for action. The Greeks called it *Logos*, the Indians *Brahma*.

There is no way of thinking fruitfully except as *logoi* who are giving sense to the world, by referring to the ideal behind the concrete and imperfect. Whenever humans think seriously about how their knowledge grows, this idea comes to the surface. There is this, for example, by Noam Chomsky on how linguists proceed:

The notion of language itself is on a very high level of abstraction. In fact, each individual employs a number of linguistic systems in speaking. How can one describe such an amalgam? Linguists have generally, and quite properly, proceeded in terms of an idealization: Let us assume, they say, the notion of a homogeneous linguistic community. Even if they don't admit it, that is what they do. It is the sole means of proceeding rationally, so it seems to me. You study ideal systems, then afterwards you can ask yourself in what manner these ideal systems are represented and interact in real individuals.

Opposition to idealization is simply objection to rationality; it amounts to nothing more than an insistence that we shall not have meaningful intellectual work. Phenomena that are complicated enough to be worth studying generally involve the interaction of several systems. Therefore you *must* abstract some object of study, you must eliminate those factors which are not pertinent. At least if you want to conduct an investigation which is not trivial. In the natural sciences this isn't even discussed, it is self-evident. In the human sciences people continue to question it. That is unfortunate. When you work within some idealization, perhaps you overlook something which is terribly important. That is a contingency of rational inquiry that has always been understood. One must not be too worried about it.

One has to face this problem and try to deal with it, to accommodate oneself to it. It is inevitable. (*Language and Responsibility*.)

(Chomsky would probably say that the Zen Buddhists worry too much about it, and they would say he doesn't worry enough. The main thing, however, seems the recognition that rationality—the capacity of the intellect—is a weapon sharp on both edges. By making knowledge it also makes ignorance.)

The idea that there are two worlds, not one; that the visible world around us is somehow the shadow of another world is a conception of distinguished ancestry. Sir Thomas Browne wrote in *Religio Medici*:

Thus is man the great and true *amphibium*, whose nature is disposed to live not only like other creatures in divers elements, but in divided and distinguished worlds: for though there be but one world to sense, there are two to reason; the one visible, the other invisible. . . . Desert not thy title to a divine particle and union with invisibles. . . . Let intellectual tubes give thee a glance of things, which visive organs reach not. Have a glimpse of incomprehensibles, and thoughts of things which thoughts but tenderly touch. . . . Behold thyself by inward optics and the crystalline of thy soul. . . . Conscience only, that can see without light, sits in the Areopagy and dark tribunal of our hearts surveying our thoughts and condemning their obliquities.

A contemporary, Wendell Berry, feels under the same necessity:

Neither the ideal nor the real is perceivable alone. The ideal is apparent and meaningful only in relation to the real, the real only in relation to the ideal. Each is the measure and corrective of the other. Where there is no accurate sense of the real world, idealism evaporates in the rhetoric of self-righteousness and self-justification. Where there is no disciplined idealism the sense of the real is invaded by sentimentality or morbidity and by fraudulent discriminations.

There are of course distinctions of meaning in all this which we have not taken the trouble to note, but it doesn't seem to matter very much. The important thing is the fact of the polarity—the ideal and the concrete, and the dependency of the

excellences in human life upon the relation between the two. All the great prophets understood this well, and some of the imperfect ones, too; indeed, the chief consolation for the pain and vicissitudes of the human condition is that quite imperfect humans are able to have wonderful flashes of insight from the ideal world, Hannah Arendt found such a passage in Nietzsche on the necessity of the ideal world and amplified it in an essay written shortly before she died. Speaking of the "Death of God," she wrote:

What has come to an end is the basic distinction between the sensual and the supersensual, together with the notion, at least, as old as Parmenides, that whatever is not given to the senses—God or Being or the First Principles and Causes (*archai*) or the Ideas—is more real, more truthful, more meaningful than what appears, that it is not just *beyond* sense perception but above the world of the senses. What is "dead" is not only the localization of such "eternal truths" but the distinction itself. Meanwhile, in increasingly strident voices the few defenders of metaphysics have warned us of the danger of nihilism inherent in this development; and although they themselves seldom invoke it, they have an important argument in their favor: it is indeed true that once the supersensual realm is discarded, its opposite, the world of appearances as understood for so many centuries, is also annihilated. The sensual, as understood by the positivists, cannot survive the death of the supersensual. No one knew this better than Nietzsche who, with his poetic and metaphoric description of the assassination of God in *Zarathustra*, has caused so much confusion in these matters. In a significant passage in *The Twilight of Idols*, he clarifies what the word *God* means in *Zarathustra*. It was merely a symbol for the suprasensual realm as understood by metaphysics; he now uses instead of *God* the word *true world* and says "We have abolished the true world. What has remained? The apparent one perhaps? Oh no! With the true world we have also abolished the apparent one."

Nietzsche and doubtless Hannah Arendt would say that we are now experiencing some of the processes of that abolition. Without the instruction that comes from the ideal world, we have lost a sense of proportion in dealing with the visible world, which is going into precipitous

decline by reason of what amounts to systematic mismanagement. Gone is a sense of limit, the intuition of restraint and balance, and ecological, social, and individual moral disorder is the result.

What, then, *is* the true world that we have lost sight of? There are numberless—not so much "definitions" as accounts of the experiencing of it. Each one's lens for looking upward or within has a different focus. Yet its service to the individual remains more or less the same. Thoreau wrote of this with a quiet penetration:

We are not wholly involved in nature. I may be either the drift-wood in the stream, or Indra in the sky looking down on it. I *may* be affected by a theatrical exhibition; on the other hand I *may not* be affected by an actual event which appears to concern me very much more. I only know myself as a human entity; the scene, so to speak, of thoughts and affections; and as sensible of a certain doubleness by which I can stand as remote from myself as from another.

However intense my experience, I am conscious of the presence and criticism of a part of me, which, as it were, is not a part of me, but a spectator, sharing no experience, but taking note of it; and that is no more I than it is you. When the play, it may be the tragedy, of life, is over, the spectator goes his way. It was a kind of fiction, a work of the imagination only, so far as he was concerned. This doubleness may easily make us poor neighbors, and friends, sometimes. (*Walden*)

Socrates spoke of this doubleness as the dialogue one holds with oneself, the fruit of which we experience as conscience, and which Hannah Arendt identified as "the ability to tell right from wrong, beautiful from ugly." She added: "And this indeed may prevent catastrophes, at least for myself, in the rare moments when the chips are down." All humans have this doubleness, which allows access to both worlds. Flawed humans as well as the virtuous have it, which accounts for the very uneven characters of some individuals of manifest genius, and for the occasional moral splendors of quite ordinary folk. In it, almost certainly, lies some great secret of the mystery of our being.

REVIEW

MORE ABOUT KOHR

How do you turn people around in their thinking? Tom Paine is one example of success. In *Common Sense* he went back of all the arguments about independence for the colonies and asked his readers to decide whether or not they were grown-up people able to fend for themselves. They thought about what he said and independence began to make sense. Later that year the Declaration of Independence was adopted by the delegates to the Continental Congress.

Well, there are other ways to do it. E. F. Schumacher spoke to the moral hungers of human beings, then explained why it is not only right but practically necessary to think morally about economics. He said these things at a time when it was becoming evident that amoral thinking is bad not only for the common interest but also for self-interest. He knew all the complicated technical arguments and could trot them out when necessary, but he managed without them most of the time. He didn't believe in forcing either claims or people, not because he was timid or soft-headed, but because he felt (or knew) that in human behavior the only lasting gains are the voluntary ones. He never sounded desperate or anxious, although he gave plenty of matter-of-fact warnings. He saw that step-by-step progress was appropriate progress and he appealed to the human community to make a *beginning* in changing its economic relationships. He talked to people, never institutions. He turned a great many people around in their thinking. Or rather, by doing the thinking he provoked they turned themselves around.

We now have another book by Leopold Kohr, the man Schumacher called "a friend and teacher from whom I have learned more than from anyone else." And of whom Ivan Illich has said, "I was embarrassed to find the values of smallness, multi-centeredness, effective decentralization, de-professionalization,

deceleration and autonomous structuring which our generation has been 'discovering,' had been just as clearly and much more humorously formulated by Kohr, before we understood what he was teaching."

The most interesting thing about Mr. Kohr is that it is practically impossible to think of him as an *economist*. He is too civilized, too entertaining. He writes as an amiable companion who instructs without instructing. His analogies stick in the mind and you want to tell other people about them. This book we have, *Development without Aid*, is not a new book. It was published in 1973 by Christopher Davies (London) and reviewed in *MANAS* in 1974. This is no reason for not reviewing it again in the edition now made available by Schocken (\$19.95), with an appreciative foreword by Kenneth Kaunda, President of Zambia. Every time you look at a book by Kohr, no matter where you turn, something fresh, engaging, and persuasive turns up.

In Zambia Kenneth Kaunda has been practicing what Kohr recommends—Development without Aid. He says:

So much expert advice being given to underdeveloped countries today has the effect of helping to solve one aspect of the problem under consideration whilst creating a number of others which are worse than the original, and in our own experience in Zambia not only has this frequently happened, but I am struck by the number of occasions on which we have achieved excellent results in defiance of expert advice which has been rendered!

In this volume Professor Kohr has succeeded in throwing a flood of light on many problems which up till now underdeveloped countries have found intractable. In our Zambian parlance, he may well be called the first Humanist Professor of Economics, for his work is concerned with human societies rather than such arid abstractions as "economic man" and his goal is always not simply quantitative multiplication, important as that may be, but what he himself repeatedly calls the *summum bonum*—the good life.

What is Prof. Kohr's counsel to the developing nations? Avoid, he says, the ever-expanding costs of bigness, the "tax" on all production which widely ranging transport imposes. Keep the economic units small—

And by saving the tremendous waste of integration, communication, and transportation costs attached to the price of everything in far-flung international economies, it would make possible the rapid achievement of a high standard of living at low cost rather than the slow achievement of a not so high standard of living at high cost, as is inevitable when development is geared to transport-devouring large-scale integration right from the beginning.

This argument has common-sense development:

Even the United States could never have developed so fast had not the country's economy in its early development stages been split into countless uncultured isolated local pioneer societies advancing separately rather than in unison. Thomas Balogh, the eminent Oxford economist, has well expressed the developmental unwisdom of unification when he warned a Britain anxious to join the Common Market against the pitfall of such a union. The economy of Scotland, he stressed, was thrown back at least 150 years as a result of her union with England; of Ireland by 200; Wales has not overcome the shock yet. It took Hungary until 1932 to overcome the retarding effect of her leap backward into economic union with Austria in 1867. And Calabria, long united with Italy, and Brittany, long united with France, are underdeveloped to this day. . . .

Having ascribed the economic retardation of Scotland Ireland, Wales, etc., to their union with England, the otherwise radical Lord Balogh has not yet become so radical as to suggest, in logical extension of his argument, curing their retardation by cutting them away from a United Kingdom which, according to his own testimony, was such an obstacle to their development.

The down-to-earth argument continues:

The principal "drawback" of self-sufficient localism is that it must forego a lot of status-conferring high-cost international amenities. In many places houses could not be built in concrete or supplied with plumbing imported from Chicago. But what is wrong with native stone or wood? Is there anything more beautiful and lasting than the stone

houses built 500 years ago by medieval peasants in the Cotswolds, or the mountain houses built of sturdy wood in the stormlashed altitudes of Switzerland? And what about plumbing, this high-priced symbol of modern living standards? There was excellent stone and marble plumbing in self-sufficient Mycenae 3,000 years ago, and I myself only a few summers ago built in a day's much enjoyed labour a drainage system out of hollowed wood gathered from the grounds which looks better to me than the expert-estimated \$200.00 alternative in modern piping which would have required a fundraising journey to an international assistance association.

After reading this man for a while you begin to get the idea that it's all right to use common sense in economics. His main project seems to be to free the reader of his awed reliance on expertise. He does this by using humor and freewheeling analysis which skips around, sometimes citing evidence a hundred or a couple of thousand years old. This gets us out from under the weight of modern authority. Prof. Kohr dispenses the kind of decentralizing influence that has to come first—before many other sensible and good things can be made to happen. He teaches readers to honor their own intelligence.

Arguing against the dependence of developing countries on foreign trade, Prof. Kohr remarks:

After all, there was a time when all Americans were foreigners. When they opened up the country, they established a government of foreigners, by foreigners, for foreigners. And the foreigner-oriented agricultural and trading pattern prevailed even after independence.

This cast, indeed, the early United States into a different mould from that which determined the economies of the more self-sufficiently developed inner directed European countries. But after it had performed its great initial function of opening up an as yet empty continent in its vague outlines, America's foreign-oriented market, trading, and investment pattern was considered by contemporary opinion no longer a blessing fostering progress but a curse nurturing distortion, imbalance, economic dependence, retardation, and exploitation. This is why Charles Henry Carey, the greatest of her early

economists, advocated for the partially developed United States of his time very much what I advocate for countries finding themselves in the same position in *ours*. That is to say, he did not propose the undoing of what has already been done (as I do not propose it either), but the build-up of the undone part of the American economy along radically different lines: away from its expensive foreign-investment backed, lopsided market dependence in the direction of cost-saving efficiency. Making a distinction (without a difference?) between *commerce* (interchange within a community), which he hailed, and *trade* (interchange between communities), which he condemned on the ground that the latter's far-flung transportation is "the first and heaviest tax to be paid by land and labour," he demanded, unlike his contemporary counterparts, not foreign assistance but protective isolation from external involvements. And instead of savings of scale resulting from regional specialization, he offered as his development target the concentrated establishment of all the complementary economic activities within the narrow geographic confines of what I have called the village state, causing "the loom and the anvil to take their place by the side of the plough and the harrow."

In furtherance of this point, the author points to the self-sufficiency of the Amish, who have no unemployment in their communities, no poverty, and no juvenile delinquency, and were even able to persuade the United States to exempt them from paying social security taxes. "Is it," Prof. Kohr asks, "really such an absurdity to suggest to impecunious underdeveloped countries to engage Amish and Mennonite consultants to teach them how to produce, rather than Harvard and MIT missionaries to teach them how to trade, integrate, make friends in Washington, and influence foreign investors?"

COMMENTARY **TWO-WORLD PHYSICS?**

MATERIAL written years ago by Pierre Duhem, distinguished French physicist, mathematician, and thinker, and printed in an article in *Science* for April 23, 1954, shows that at least some physical thinkers share in the conception that there are two worlds—the evident physical one and an ideal or "metaphysical" universe. Duhem wrote of modern physics:

Concerning the very nature of things, or the realities hidden under the phenomena we are studying, a theory conceived on the plan we have just drawn teaches us absolutely nothing.

This was his way of saying that without a foundation in metaphysics the work of physicists remains little more than elite technology which accomplishes representation and classification, but not explanation. Ultimate reality, he said, is beyond the scope of physical science, although, he added, the latter might show in physical phenomena a kind of parallel with ideal structure. He continued, saying:

Physical theory never gives us the explanation of experimental laws; it never reveals realities hiding under sensible appearances; but the more complete it becomes, the more we apprehend that the logical order in which theory orders experimental laws is the reflection of an ontological order, the more we suspect that the relations it establishes among the data of perception correspond to real relations among things, and the more we feel that theory tends to be a natural classification.

Duhem, we see, is kin to Nietzsche (see page 7) in his thinking. As the French scientist said:

. . . the physicist is compelled to recognize that it would be unreasonable to work for the progress of physical theory if this theory were not the increasingly better defined and more precise reflection of a metaphysics, the belief in an order transcending physics is the sole justification of physical theory.

Here, of course, Duhem speaks as a philosopher, yet what he says parallels Chomsky's methodological declaration that rejection of

idealization "amounts to nothing more than an insistence that we shall not have meaningful intellectual work." (See page 2.)

Kepler, it may be recalled, regarded his discoveries as a recognition of "pure Ideas, or archetypal patterns of harmony . . . inherently present in those who are capable of apprehending them." These ideas, he added, are for humans the product of "a sort of instinctive intuition and innate in those individuals." (*Physics Today*, July, 1979, p.28.)

CHILDREN

. . . and Ourselves

IN QUEST OF COMPETENCE

IT is easy enough to get back to fundamentals in the matter of education. Practically any normal, reasonably intelligent child will take you there. The difficulty comes when you ask what you are then supposed to do.

Take for example a particular child—one we happen to know. He is twelve years old. He is strong, healthy, and active. He is bright, quick-witted, impulsive, and utterly bored by what he is supposed to learn in school. He lives for the day when he will be old enough to drive a car. Bikes are all right—he has a ten-speed—but his real interest is in anything with wheels that has non-renewable energy behind it. He has a very good teacher who likes him and is astonishingly patient with him. He respects her and wants to please her. He worries about what she thinks of him. And he worries about failing in school, but working at fractions, decimals, geography and the other stuff he is supposed to be learning, such as spelling and grammar, he regards as a meaningless intrusion on his life. The practical argument—that he will need to know these things just to get along in the world—finds him indifferent. Tomorrow is another day. The prod of fear has to overcome a stubborn reluctance before he will do any work at all. The only thing he does of his own motion is drawing pictures of cars and planes and the explosions made by men at war. He is getting better at this all the time, with happy transfers of his ability to ingenious decorations of occasional school reports. But if he gets behind in things like math he will have a terrible time. He cares and he doesn't care. The situation is scary. What does one do?

There must be millions of children like him—boys and girls. Why are they in this situation?

Let's look at the curriculum. What *should* he be learning? The things that his conscientious

teacher is trying to get into his head? Well, yes—in a way. The argument that he will need to know certain things—how to write (reading is no problem—he collects copies of *Mad* magazine) and how to figure—has its validity. But what this argument is really after is *competence*, not just knowing a few things taught in school. The skills are only the tools.

Five years ago, in an article here, Arthur Morgan pointed out that for long generations—all history—before the emergence of our technological society, what we might legitimately call a *general* education, which brings everyday competence, was accomplished by family and community life. It was absorbed more or less painlessly without any talk of "learning." But then, with the Enlightenment flowering of intellect, special branches of knowledge became important.

As Morgan says:

Reading and mathematics, for example, require designed and tested methods to ensure their being learned. As civilization became more complex, the advanced disciplines were increasingly transmitted by formal institutions, while common, practical skills were left to be acquired through the ordinary course of living. This somewhat haphazard pattern of development, mainly a proliferation of forms of education in special skills, has been influenced by authority, tradition, usage—with occasional breakthroughs of insight—producing an almost random medley of method and content, without consistent coverage of basic questions. By reason of the exclusive attention given to intellectual skills, a large part of human culture is ineffectually transmitted by unorganized social processes. Needed, therefore, is a fresh concept of education which encompasses the entire range of living, with particular attention to matters of human importance thus far neglected by organized education.

Morgan's analysis will certainly do for a start. If you look at the twelve-year-old's curriculum, you soon realize that what his teacher is trying to teach him is the first steps toward the patterns of thinking and work of the specialties. There is no initiation into the arts of competence for twelve-year-olds. The assumption is that he will some

day be some kind of specialist—either that, or become a day laborer that nobody has to bother with. He is to be trained for some specialty, not for life. And of course, there is some sense to this—you don't learn competence in life as a subject from school teachers—you learn it from life.

So the real problem is not with the schools or the teachers—who may be doing the best they can—but with the patterns of everyday modern life. They are not instructive. They prevent actual encounters with the realities of growing up in the world. There is no longer a "natural environment" for the child. There hasn't been for generations. Even farming no longer provides it except in a few cases. All this, of course, has been said many times.

Well, then, what would be "a fresh concept of education which encompasses the entire range of living"? In his books, Morgan argued for the regeneration of community life, where, as he knew from experience and study, real general education goes on all the time. Happily, there are pioneering individuals who are working for the re-establishment of community in many parts of the world.

What about the sciences? Can they be of any help?

Through the kindness of a reader, we have the preface to a book by a biologist (ethologist) which attempts to answer this question. It is *Life Strategies, Human Evolution, Environmental Design* (Springer-Verlag, New York, 1978) by Valerius Geist, who teaches at the University of Calgary, in Canada. In this Preface he fixes on health as the prime consideration for human society, and finds that the existing environment, largely the creation of various specialists, has developed with little deliberate guidance from an over-all conception of health. What is health? Prof. Geist identifies it as competence:

Note that the emphasis is not on numerical or demographic aspects but on the maintenance of competence, on the individual's ability to deal with

the social and physical milieu he is born into. However, competence is very closely related to an individual human being's environment, particularly during its long juvenile development. Thus, we must search for an environment that maximizes competence in individuals.

Then he says:

However, it is no simple matter to visualize a life style maximizing health, for there is no theory of health. When I began to concern myself with human adaptations, this discovery came as a rude surprise. I was teaching graduate students entering urbanism, architecture, and environmental science and who required an understanding of how to maximize health environmentally.

Prof. Geist discusses the difficulties, the first of which is that health, scientifically speaking, is an "interdisciplinary" question, which means that no one specialist can ever feel he knows enough to be sure of what he is doing or saying. Yet one must try. Another difficulty is the wealth of critical brilliance and the absence of definable goals. (Geist must mean "scientifically" definable goals, since there are dozens of utopian plans around.) He says:

What is lacking is a tangible vision of the desirable future, and criteria that tell us if and when we have reached that state. One aspect of a desirable future that transcends political views because it is so fundamental is health. What are the criteria that tell us that we are on the right road toward that goal?

It may appear that with so fundamental a question many would have given answers to it. A review of the pertinent literature shows differently. There is no shortage of books on man and the environment, nor on preventive medicine. However, the disciples of environmental health and preventive medicine are a collection—a very detailed, very well-organized collection of the crises generated by modern societies and how to deal with them. We have an account of the dangers we face in our artificial self-made environments. We learn what not to do, but not how to anticipate what not to do. There is no theoretical guidance. Preventive medicine and environmental health are essentially reactive and therefore highly relevant for the past and useful for the future insofar as the past repeats itself. It does not tell us how to live to maximize health, except by telling us what not to do.

At the end of this Preface Prof. Geist tells us of his "recognition that the fate of health was not at all in the hands of the medical profession, and the recognition that the social structure, phenotype, and health of individuals, in both animal and human societies, are a close consequence of their economic system."

Well, we started out with a twelve-year-old's problems, then moved to educational practice, and then to a biologist who is becoming a sociologist from urgent necessity. The comment from our reader, who sent us this Preface after reading the book gives these disparate materials some badly needed unity:

Geist describes some prescriptions for living (interestingly the same ones that E. F. Schumacher and others have described—he mentions Schumacher on his final page) that are soundly based in science. . . I conclude from this not that science fails to take certain things into account, but rather that science took a deliberately painstaking route (solving some very old perplexing problems on the way) and is arriving at the same spot as the philosopher.

FRONTIERS Indigenous Yankees

BACK in the early 1930s a famous Japanese novelist (Tanizaki) mused, as he warmed himself before an ugly Western-made stove, "how different everything would be if we in the Orient had developed our own science."

Suppose for instance we had developed our own physics and chemistry, would not the techniques and industries based on them have taken a different form, would not our myriads of everyday gadgets, our medicines, the products of our industrial art—would they not have served our national temper better than they do? . . .

If we had been left alone we might not be much further along now in a material way than we were five hundred years ago. Even now [1934] in the Indian and Chinese countryside life no doubt goes on much as it did when Buddha and Confucius were alive. But we would have gone in a direction that suited us. We would have gone ahead very slowly, and yet it is not impossible that we would one day have discovered our own substitute for the trolley, the radio, the airplane of today. They would have been no borrowed gadgets, they would have been tools of our culture, suited to us.

In those days E. F. Schumacher was probably a student at Oxford University, or soon to be one, and had not yet recognized the disaster brought by Western technology to the still unindustrialized parts of the world. But the time was to come, after the war, when he saw the havoc that imitation of the West had caused in India, in Africa, and South America, and he began to explain to the world what he meant by intermediate technology.

Today, partly because of the pioneer work of Schumacher and some others, and partly because the practical sense of Junichero Tanizaki's dream is everywhere in the air, intermediate technology is making an appearance all over the world. In a round-up story in the *New York Times* (April 10) Boyce Rensberger speaks of "an extraordinary breed of inventors, scientists and engineers beginning to emerge in the Third World."

Although they have often discovered it independently many of these new leaders espouse the philosophy of the "appropriate technology" movement, an approach born in the industrialized world to meet people's material needs with simple, low-cost hardware and processes. . . . In the developing countries of the South, it is embraced not as a retreat from heavy industrialization but as a sensible, perhaps essential, step toward industrialization and durable economic progress.

Trying to adopt the ends and means of the "advanced" countries often led the developing countries "to social chaos with too few skilled technicians and a rural-to-urban migration that crippled food production and expanded unemployment." They also became *more* dependent on the West. The *Times* writer says:

A wiser alternative, many leaders now believe, is encouraging simpler smaller-scale technologies, designed locally and applied broadly. This approach, they feel, not only meets a country's grass roots needs but also builds pride in achievement and self-reliance that is often disastrously sapped by imported technology and technicians. . . . Many advocates of appropriate technology in the developing world do not necessarily see it as a stepping stone to Northern-style industrialization. They see technical cooperation among developing countries as the way in which poor nations can gain the economic independence and self-confidence to be able to produce their own form of economy and industry rather than importing foreign systems.

"The task of development," a spokesman said, "is not simply one of making a technological jump, but of creating and nurturing an internal innovative capacity." Rensberger's report is mainly of examples of this capacity, leading him to say that now, around the world, you can find many evidences of what Americans used to call "Yankee ingenuity."

Perhaps the best example of the movement is Los Gaviotas, an appropriate technology research and development center in the largely unsettled Llanos region of Colombia. Los Gaviotas, named for the fresh-water gulls that frequent streams in the 300,000-square-mile Llanos plains, was conceived about ten years ago by Paolo Lugari Castrillon, a 32-year-old community organizer.

He believed that the largely uninhabited region offered a better future for Colombia's exploding population than did continued migration to the cities or the further settlement of mountainsides, where erosion was a severe problem. Mr. Lugari felt that a research center established in the Llanos could develop ways of settling the region without disturbing its ecological balance. After six years of growth, Los Gaviotas now attends to the agricultural, medical, educational, transportation and supply needs of 100,000 settlers.

Los Gaviotas has designed and tested six new devices: a pedal-powered yucca grinder that does two months' work in a day, permitting Llanos farmers to raise and export the starchy root; an inexpensive windmill that pumps irrigation and drinking water in breezes of only 5 miles an hour, two kinds of low-cost water pumps, one hand-powered, the other electrical; the solar heater (made with burnt-out fluorescent tubes) that pasteurizes water, and the small steam-powered turbine.

In other places:

Technicians in Lesotho, in southern Africa, are developing ultra-low-cost housing construction materials and techniques. In the Philippines, engineers are producing farm machinery adapted for the farmer who has more land than he can work by hand but who cannot afford or make good use of conventionally sized farm machinery.

An agricultural research station in Zambia has developed a waterproof, insect- and rat-proof grain storage bin that will enable "the farmer to preserve the 20 to 40 per cent of his grain that is often lost to pests, a loss that may rob his family of adequate food." The stream-powered turbine mentioned above will generate one kilowatt of electricity for a farm family. "It costs \$150 and is designed to operate for five years without repair."

Meanwhile, in the United States, the same sort of inventiveness is being applied to development of alternative (renewable) energy sources. In articles and books and TV programs Barry Commoner describes the several forms of solar energy which are already technically feasible and economically sound: the photovoltaic cell, for one, which needs only some government help to come within a price range that people can afford.

He says that to produce alcohol to combine with gasoline to make gasohol—already sold at a profit in the Midwest—all that is needed is small stills that farmers can use to convert their grain to alcohol. He concludes:

Who would benefit from the solar transition? In my opinion, everybody except the electric utilities and the oil industry would gain. Consumers would benefit because the cost of energy would begin to flatten out. They would also benefit because they would no longer be subjected to the worst environmental consequences of uranium and coal. . . . Indeed, all industry would benefit from solar conversion because each plant would have its own grip on the source of energy.

Commoner's latest book, *The Politics of Energy*, would be a help to anyone who wants to spread good sense.