

HOW SHALL WE DEFINE "KNOWLEDGE"?

THE small amount of reading in Thomas Paine required for last week's lead article, in which Paine largely figured, can be a somewhat chastening experience. For it leads to the realization that the common tongue has not the vigor and universality that it once had—at least, in Paine's hands. Modern culture is an invaded and subdivided realm, too much controlled by the principalities and powers of science and the language of the academies. The common speech tends to be hardly more than the political rhetoric of the times, which by design makes little demand upon the reader, and affords him little in return. We lack, in other words, a full-bodied vocabulary of humanistic discourse, enriched by frequent and multiple use, and continually enlivened by widespread public dialogue.

There are of course a few distinguished individuals who accomplish a great deal with what language we have. To name a few, there are among the living such writers as Lewis Mumford and Robert M. Hutchins; and those who were with us until recently include Ortega y Gasset and Joseph Wood Krutch. One needs to be literate, but no sort of specialist, to understand and appreciate the work of these men. They impose no jargon of a narrow professionalism on their readers; what they know of science, they know as *amateurs*, and this they have assimilated into the common speech. One could even say that they avoid "science," if this means the reduction of the elements of their subject-matter to abstractions or generalizations which lack the impact of immediate experience. They would rather say "love," "generosity," and "sympathy" than make a reference to affective values, and they are not averse to speaking now and then in unmistakably moral terms. We came across a passage in Montaigne recently (in the essay on "Books") which illustrates the capacity of ordinary language

to deal with what seem the implied assumptions of behaviorist psychology. Recalling an evaluation he had made of an Italian historian of his own time, Francesco Guicciardini, Montaigne says that he over-wrote to the point of wearying the reader, then adds:

I have also remarked this, that in judging so many persons and actions, so many motives and intentions, he never puts anything down to the score of virtue, religion or conscience as though these qualities were utterly extinct in the world, and, however fine any action may appear in itself, he always discovers for it some wicked motive or some hope of gain. It is impossible to imagine that, among the infinite number of actions that he criticizes, there was not occasionally one which was prompted by reason. Corruption can never infect men so universally but that some will escape the contagion. That makes me suspect that a certain measure of wickedness was to his liking; and it may perhaps be that he judged others by himself.

This was the fault Montaigne found with one sixteenth-century historian; today Michael Polanyi points out that contemporary social scientists, as an entire profession, give support "to the doctrine which denies that human ideas can be an independent power in public affairs." This is an instance of the invasion of humanist discourse by the limiting conceptions of specialists and the impoverishment of language by their jargon. (See "The Message of the Hungarian Revolution," Polanyi, in *The Anatomy of Knowledge*, edited by Marjorie Grene, University of Massachusetts Press, 1969.)

A distinction made by Ortega in *The Mission of the University* (Princeton University Press, 1944) is vital to an understanding of this problem. Toward the end of this book he shows the clear difference between science and culture. Science, he says, is a particular discipline which has an effect on culture, and may be in part adopted by

culture, but it is far from being the same as culture. He begins with a definition:

. . . culture is the system of vital ideas which each age possesses; better yet, it is the system of ideas by which the age lives. There is no denying the fact that man invariably lives according to some definite ideas which constitute the very foundation of his way of life. These ideas which I have called "vital," meaning ideas by which an age conducts its life, are no more nor less than the repertory of our *active* convictions as to the nature of our world and our fellow creatures, convictions as to the hierarchy of the values of things—which are more to be esteemed, and which less.

Culture, then, indeed, is made up of the answers to the questions formulated by John Schaar (quoted in MANAS two weeks ago), which are, as he says:

Who am I as an individual? Who am I as a member of this society? Who am I as a man, a member of humanity? Each of the three questions contains within itself a host of questions, and the way a man formulates and responds to them composes the center and structure of his values.

If the importance of these questions is displaced by other considerations; if people are distracted from asking and attempting to answer them, culture wastes and becomes passive. Nor is there any such thing as final answers to these questions. The life of civilization and the energy of literature depend upon keeping them forever alive and open, and primary for individual human inquiry. If we make only careless or hearsay answers to these questions, life will deal with us harshly, for it will find us forever unprepared. Finally, to place these questions in the hands of experts, expecting them to provide answers, is quite as foolish and dangerous as entrusting the salvation of our immortal souls to the authority and guidance of a caste of priests.

Continuing his discussion of the meaning of culture, Ortega says:

It is not in our hands, whether to possess such a repertory of convictions or not. It is a matter of inescapable necessity, an ingredient essential to every human life, of whatever sort it may be. The reality

we are wont to refer to as "human life," your life and the next fellow's, is something quite remote from biology, the science of organisms. Biology, like any other science, is no more than one occupation to which some men devote their "life." The basic and truest meaning of the word *life* is not biological but biographical: and that is the meaning it has always had in the language of the people. It means the totality of what we do and what we are—that formidable business, which every man must exercise on his own, of maintaining a place in the scheme of things and steering a course among the beings of the world.

This is a distinction which has become blurred in recent years. Chroniclers of the "progress" of science, and sometimes biologists themselves, write about the exploits of biologists as though they were now the arbiters of the future of mankind—as though the rest of us had hardly a choice in the matter—as though what they mean when they say "life" is the same as what *we* mean. It isn't, of course. Culture, when it has some maturity, takes from science what it finds useful and leaves the rest to the specialists. The usefulness of science must relate to some essentially *human* purpose; it is not measured by the awesome manipulative power some biologist may believe he will soon possess. As Ortega puts it:

There are entire portions of science which are not culture, but pure scientific technique. And vice versa, culture requires that we possess a complete concept of the world and of man; it is not for culture to stop, with science, at the point where the methods of absolute theoretic rigor happen to end. Life cannot wait until the sciences may have explained the universe scientifically. We cannot put off living until we are ready. The most salient characteristic of life is its coerciveness: it is always urgent, "here and now" without any possible postponement. Life is fired at us point-blank. And culture, which is but its interpretation, cannot wait any more than can life itself.

This sharpens the distinction between culture and the sciences. Science is not something by which we live. If the physicist had to live by the ideas of his science, you may rest assured that he would not be so finicky as to wait for some other investigator to complete his research a century later. He would

renounce hope of a complete scientific solution, and fill in, with approximate or probable anticipations, what the rigorous corpus of physical doctrine lacks at present, and in part, will always lack.

The internal conduct of science is not a *vital* concern; that of culture is. Science is indifferent to the exigencies of our life, and follows its own necessities. Accordingly, science grows constantly more diversified and specialized without limit, and is never completed. But culture is subservient to our life here and now, and is required to be, at every instant, a complete, unified, coherent system—the plan of life, the path leading through the forest of existence.

What then does Ortega propose? In the book we have been quoting he attacks the problem of general education. In connection with science, he advocates that scientists and teachers of science give much more attention than they have in the past to making what they have found out *communicable*. And since mathematics is for the most part the language of the sciences, he suggests that there be reforms in the way it is taught:

Mathematicians exaggerate a bit the difficulties of their subject. It is an extensive one but, after all, it is always expressible in definite terms to anyone who "knows beans." If it appears so incomprehensible today, it is because the necessary energy has not been applied to the simplifying of its teaching. This affords me an opportunity to proclaim for the first time and with due solemnity, that if we fail to cultivate this sort of intellectual effort—effort not addressed to descriptive analysis, after the usual manner of research, but to the task of simplifying, and synthesizing the quintessence of science, without sacrifice of its quality or substantialness—then the future of science will itself be disastrous.

It is imperative that the present dispersion and complication of scientific labors be counterbalanced by the complementary kind of scientific activity, striving toward the concentration and consolidation of knowledge. We need to develop a special type of talent, for the special function of synthesizing. The destiny of science is at stake.

Ortega goes on to speak of the need for the humanization and integration of scientific knowledge. Since his time, there have been substantial advances in the teaching of

mathematics, and beginnings are now being made toward the humanization of science. Michael Polanyi is a pioneer in this, pointing out that the practice of science cannot be regarded as "value-free" (see *Science, Faith and Society*), and the physicists themselves, after the horror of the atom bomb, began a reform among themselves with publication of the *Bulletin of the Atomic Scientists*. Then, following the lead of Rachel Carson, a number of investigators in the life sciences, often joined by geophysicists and others, have created a broad spectrum of humanizing effort under the name of ecological reform.

One might say, then, that *knowledge* is reliable information that can be put to work in the service of all men, and which can be communicated in comprehensible ways so that people everywhere can become more self-reliant and self-sufficient. Knowledge which creates special castes of highly trained specialists who cannot or will not tell what they know works in exactly the opposite direction. It leads to such horrors as nuclear weapons, the skills of mass manipulation, and, finally, destroys the possibility of a self-governing society. Why should this sort of learning be honored by the name of "knowledge"? It is rather a form of Faustian self-delusion.

This is the essential criticism made by Ivan Illich of the technological society and of the sort of commodities and educational system which result from the uncontrolled development of technological skills. This sort of "progress" warps and materializes the meaning of the good life while making its practical benefits all but inaccessible to the vast majority of the population of the world. Again, why should the modes of thinking which bring this about be called "knowledge"?

A scholarly work on bilingualism recently pointed out the effects of the export of the products of technology by the United States. The shiny, plastic output of modern industrialism often generates the contempt of people in non-

industrialized lands for their own traditional forms of production. If machines are sent to such peoples, to help them become more "advanced," using and operating the machines may require an elementary grasp of the English language. But these peoples do not then learn a civilized English—it is rather a mechanic's and huckster's English, and it is this which will eventually replace the traditional forms of speech embodying the folk wisdom, the moral insight, and the literary culture of their country. In time the native language is neglected and dies, or is starved and vulgarized. Then come the Western antiquarians, eager to compile collections of the songs and legends of these people, so that their cultural riches will not be "lost" to mankind. But they have already been lost! As Coomaraswamy has observed, what requires museums and collectors of "folk" literature to be preserved is no longer alive—no more than dead butterflies pinned to boards.

Small nuclei of reform and some new beginnings are discernible here and there, sparked by rare individuals, but what about the feelings of ordinary people? The obvious comment will concern the revolt of the young, which gets most of the attention in the press, although this is probably due to the fact that what the young do, being in the main impulsive and grounded in strong emotions, has the greatest visibility. Commenting on this broad trend to an interviewer from the *UCLA Monthly* (October), Theodore Roszak, author of *The Making of a Counter Culture*, spoke of a dramatic change which came in the late 1950's and early sixties:

The dissenting fringe of society finally moved into the middle class *mainstream*, primarily mainstream *youth*. Today you find this search for new values in just about every aspect of youth culture, from their clothes to their music to their underground newspapers. And there are many kids, along with adults, who are striking off in very bold and brave experiments in alternative living—from various kinds of group therapy to urban and rural communes. Still others are working at it individually, trying to simplify their life by voluntarily lowering their levels of consumption and by learning to make their living

at some type of small business or handicraft. What I see developing is something of a second society or second economy, independent of the technocratic order.

Asked if anything like "patriotism" is involved, Roszak replied:

Yes. But it will be a pacifistic patriotism that goes beyond nationalism—even beyond the brotherhood of man—all the way to an allegiance to the totality of nature. What we see developing, then, is a sense of community with all living things, a dedication to a survival of the foxes and the wolves and the buffalo. It's fundamentally a very ancient perception, and it may sound mystical. But it has very real social consequences, because it involves a non-exploitive economics. . . .

Political institutions will be among the *last* things to feel counter-cultural change. The technocracy cannot be overthrown by votes any more than it can be overthrown by violence. The technocracy can only be *displaced*, by people gradually becoming independent of the industrial social order.

Here the important thing to note may be that a deep, intuitive feeling of the unity of all life is at the root of the change Mr. Roszak speaks of. It has its shallow, sentimental expressions along with other uninstructed phases of the rebellion of the young, but there seems to be a wholesome moral core within this movement, expressive of both organic and spiritual longings which are not likely to be either contained or perverted. And out of all this may be expected to grow another sort of language and literature, although generations may be occupied in bringing it to maturity.

It will be, no doubt, a language in which "reverence for life" is an implicitly acknowledged reality. This is a way of saying that a sense of the brotherhood of life is the uniting principle that holds all things together in common relationships, and which makes understanding of one order of life by another possible. In short, for us it makes *knowledge* possible. This is the ethical theme that we find running through Ortega, that is behind Illich's contentions for education which respects all men and the capacity of individuals to choose

what they want to know. It is the foundation of the ardor behind the movement for "participatory democracy," which is basically a declaration of the right to individual growth of every member of the social community. A principle of this sort can be the ground of unification of knowledge and even, perhaps, of the sciences.

A new way of thinking about the sciences is certainly suggested by some of the recent, more sophisticated discussions of scientific method. For example, in the *Atlantic* for November, Gunther Stent examines the implications of Jacques Monod's *Chance and Necessity*. In this article it becomes plain that the rules for adding to scientific knowledge, as now conceived, make an impassable barrier to the idea that there is really a meaning or purpose in living processes.

What are living things? Monod's definition is that they have purposes; that they make their own forms; and that they reproduce their own kind. The factor of purpose is frustrating to scientists because, says Gunther Stent, "as Monod points out, attribution of purpose to any natural object involves us in a contradiction with what he calls the *principle of objectivity*." Stent continues:

For "the cornerstone of scientific method is the postulate that nature is objective. In other words, the systematic denial that 'true' knowledge can be got at in terms of final causes—that is to say, of 'purpose'." Thus while the purposive character of life is *prima facie* apparent, scientific objectivity obliges us to deny it. "This self-same contradiction is in fact the central problem of biology."

Mr. Stent, who teaches molecular biology at Berkeley, seems convinced that the meaning of "objectivity" will have to undergo reform, "since there is little use in continuing to push the limits of our knowledge further and further if the results have less and less meaning for man's psyche." He quotes Monod as wondering why the Chinese, at the height of their civilization, did not adopt the principle of objectivity, but is himself persuaded that the Chinese understood this idea and found it an inadequate tool. Instead, "China," he says, "turned toward Taoism, a kind of animism in

reverse that projects nature into man, rather than man into nature." This, he believes, "changed man's ancient quest from *domination over* to *harmony with* nature."

Thus, nature is part of our "subjectivity," and is itself fulfilled when the meaning of our lives is better understood. We do not suggest that propositions of this sort are unmistakably clear in their meaning, but that they serve to indicate the character of the vast tropism of the human spirit that is now beginning to find expression at every level of human life. A more universal language will surely be an accompaniment of this emergence.

REVIEW

DESERT EXPEDITION

SOME readers may remember the attention given, about a year ago in "Children . . . and Ourselves," to Ann Woodin's book, *Home Is the Desert*, in which she described life on the desert near Tucson, Arizona. Now we have another book by Mrs. Woodin, *In the Circle of the Sun* (Macmillan, 1971, \$7.95), which is the story of a year's wanderings over the deserts of India, Afghanistan, the Middle and Near East, and Africa. Along were her four sons, a young friend, and her husband, Bill Woodin, who is director of the Arizona-Sonora Desert Museum and interested in deserts in other parts of the world. The vehicle used for the trip, which covered some five thousand miles, was a Volkswagen Microbus. The boys were sixteen, fifteen, thirteen, and eleven, and the accompanying friend was seventeen. Experienced campers after many treks into the Arizona desert, the Woodins had no particular problems with nature; their difficulties, none of which became really serious—although they were briefly marooned in Algeria during the outbreak of the six-day war between Israel and Egypt, at a time of mounting anti-Americanism—came mostly from man.

This is a continuously delighting book. Mostly it is just fun to read, yet there are serious moments which the reader is likely to enjoy just as much. The author begins by giving practical advice to readers who may be spurred to go adventuring on the deserts of the world. Her notes on gear and coping with sand, wind and water-supply are all important, but the most indispensable equipment, the reader of this book may conclude, is a sense of humor, with which the Woodins seem richly endowed. On the practical side, getting clear directions about roads before you start out needs particular emphasis. And if you do require guidance enroute, ask truck and bus drivers in preference to local inhabitants. A person accidentally encountered along the way, who does not speak your language, is likely to want to

please you instead of understanding you. Signs or signals can be misleading. An experienced traveler warned: "For example, in India shaking your head from side to side means Yes, and in Iran when a man throws his head back and looks down his nose, he means No."

The Woodins started their trip across deserts at the Thar, in India, and worked their way westward, going through Pakistan, Afghanistan, Iran, Iraq, the Holy Lands, Arabia, and North Africa, finally reaching the Atlantic.

Without becoming sententious, Mrs. Woodin provides the reader with a sense of the enormous differences between Western culture and life in the densely populated East. These differences are not dwelt upon so much as things in themselves, but are regarded for the paradoxes they suggest. Of the Thar Desert, the author says:

Again we are aware of the complexities of India's problems riding like dark horsemen wherever we look. In a seriously over-populated country where starvation is a common occurrence, an unused area as large as this desert perhaps can be thought of only as a potential wheat field and its highest and best use to feed man's body rather than his spirit. A country like ours, which can afford "preservation," is able to say that then man has saved his life to lose it.

Or possibly this would never occur to an Indian, even when well-fed. Man nourishes his spirit in different ways. To us the value of a desert is in its very emptiness and there we seek to escape, not our responsibility for the world, but our manipulations of it where we become imprisoned in the belief of our own power. By retreating to places unhandled by man we think we have returned to the same dimension as that of the frail gerbil hopping about in an untouched dawn. To a man formed by another culture, this may seem an idiocy. Because his relationship to the world is different, he may not have those needs our culture considers basic, nor can we impose needs on him.

There is a freedom of thought in this book that might be useful in subtle ways to the women's movement. No mention of this subject is made, yet the writer's balances of understanding seem to represent an unostentatious tide of progress for both sexes. Freedom and fulfillment are such

inward things that they should never be mistaken for anything that has outward measurements.

What is accomplished by travel?

I think of journeying, and how it is the effort toward greater consciousness and self-discovery, as if by peering at the world we will somehow come to see ourselves. In the eyes of another I am reflected; perhaps that is a beginning. But now it seems that to keep on looking there, is no more than looking in a mirror. I will merely be accumulating different images of my surface, of what I and others think I am; and so the eye must be plunged through to what is, underneath.

It is not that one day I will suddenly "find myself," like coming upon it sitting in a chair, "Oh there it is! now I know who I am." We get stuck in the notion that we are asking questions to get answers when the process is one of watching, plain watching. The action . . . what is going on . . . will tell me what I need to know. If I keep knocking against things and tripping, perhaps I am trying to hammer when what I am is a shuttle weaving. . . .

I remember those other women, barefoot and pregnant, striding along in the sunlight behind a flock of goats, bending over a fire, lifting water from a well. Ah, you are over-worked and have no freedom, I had first thought. And you, she might have answered, do not sense what you are.

Throughout the Islamic world, however, Mrs. Woodin found that her existence seemed in doubt, since she was a mere woman. Except for a day in a bazaar, where she dared to go "unveiled," and was followed about by a horde of wide-eyed males, the writer had to supply her own sense of identity with little help from others, except for her family. In fact, the Muslim point of view seemed infectious, since one day one of her sons said to her, "The trouble with you, Mother, is you're not a boy." In Amman an old Bedouin looked at her curiously and asked if she were the mother of the boys who were in the party. She said she was but he found this unbelievable. "You are too young," he said, "to be the mother of so many large boys." Mrs. Woodin remarks: "Looking at the old man, I saw in his eyes that I was simply another form of chattel, less valuable than a good camel, but more valuable than a bad one." Hardly more flattering

was the kindly ticket-seller in a museum in Jerusalem, who saw five boys troop in after Bill Woodin and asked if they were all his sons. The father of four of them instantly adopted the fifth and said yes, whereupon the ticket-seller told him he was indeed a fortunate man and refunded the price of admission for them all! Mrs. Woodin also discovered that while Jews are not allowed to enter Saudi Arabia, she, even had she been Jewish, could have entered, since the religion of a woman is regarded as of no importance. Moreover, when it came to leaving that country, all the rest had to have exit visas, while she, being a woman, was considered "part of the baggage" and didn't need one. Perhaps as an oblique way of balancing the ledger, Mrs. Woodin speaks of the comparative helplessness of Japanese men to care for themselves in practical ways, since this is the work of the women. The Japanese word for wife is something like "Mrs. Inside" or "In-the-Back," because a wife should not be seen or heard. Learning these things in Kyoto, the author recalled the story of an American woman married to an Italian:

One day she discovered that her six-year-old son was unable to tie his shoelaces, so she immediately sat him down and showed him how. Her Italian mother-in-law appeared and, seeing what she was doing, reprimanded her. "If you teach them things like that, you will set them free," she said.

Mrs. Woodin has a liking for history and manages to weave in a great deal as she goes with her family from place to place. Nearly all these towns and cities have been subjected to widely differing rule, through the centuries. Damascus is an example:

Like every other place of note in the Middle East, Damascus tantalizes the eye with fragments of what has gone before, or rather, who has come and gone, another long catalogue of names: Egyptians, Assyrians (who deported the inhabitants), Babylonians, Persians (the Achaemenians), Greeks (it was captured by one of Alexander's lieutenants), Nabateans from Petra, Romans (during which time it was a strong Jewish colony), Byzantines, Persians (Sassanids) Arabs (the Crusaders tried unsuccessfully to capture it), Mongols (both Genghis Khan and

Tamerlane lavished their attention to such a degree that it was semidesert for years), Mamluks from Egypt, Turks, Arabs again after World War I (Lawrence of Arabia administered it for a while), the French, and finally independence.

Driving through Iran, they found the countryside almost littered with the remains of high civilization. In one place the boys discovered an elaborate sewer system, no longer in use, with tunnels large enough to crawl through. Refuse is now dumped into open ditches in the same area. As she goes along, Mrs. Woodin corrects popular misconceptions:

Having been traditionally brainwashed, I have always thought of the Persians as those wicked invaders from a luxurious and corrupt Orient who tried to enslave the brave and hardy Greeks. With amazement, I now read how their king had spared the Spartan envoys, though Sparta had killed the Persian ones, and, furthermore, had permitted three grain boats to proceed through his blockade across the Dardanelles, though they were on their way to feed his slave-owning enemies in Greece.

Cyrus founded and organized the world's first true empire by consolidating many different peoples and religions into one effective administrative framework while still allowing his subjects to keep their individual customs. His concept of government, that it should benefit the people rather than the rulers, was a dramatically new one, and he is still thought of as The People's King. "His subjects were cherished and cared for as if they were his children and they revered him like a father," wrote Xenophon. The Persian Empire could then boast of an officially guaranteed world currency, a network of post roads connecting all parts of the empire, the first known medical school, one official language, and a canal connecting the Nile to the Red Sea.

Mrs. Woodin makes it plain that Islamic civilization should not be measured only by the present signs of its decay, recalling the superiority of Arab culture over that of the Crusaders, and pointing out that astronomy and mathematics were cultivated by Arabian scientists, that their libraries were filled with textbooks on science and literature, and that they had hospitals and schools for the education of physicians. Baghdad had its

first paper mill in the eighth century, and the educated wrote on smooth paper.

The ancient Romans, too, gain a kind word for their systematic restoration of the region of the Sahara, reaching far out into the desert itself with wells, cisterns, and irrigation ditches. They colonized ten million acres, which makes "a staggering figure compared to the amount of land under cultivation today."

There is plenty of human interest and detail in this book—how comfortable it is to ride a camel, for one thing. And a moving incident occurred during their isolation by the six-day war, when Mrs. Woodin bought some bread from an Algerian baker:

Picking up the loaves of bread he had carefully wrapped and tied with a string, he came from behind the counter, took hold of my arm and looked me straight in the eyes. Then he said very slowly and sadly, "My son is fighting there."

"And our planes are bombing . . . I'm sorry."

"I, too, am sorry." He nodded toward the door through which he could hear the mob passing along the next street.

As he handed me the bread, he spoke again, so softly I could hardly hear him. "You and I, we shall make nothing bad between us." He said it like a prayer, and I felt tears in my eyes. We stood for a moment, I with his bread in my hands and he holding my arm.

COMMENTARY

THE WORK OF ARTHUR MORGAN

ARTHUR E. MORGAN, who was ninety-three last June, has at various times contributed to *MANAS*, but we had hardly expected to have anything more from him, except perhaps material for reprinting. It came as a pleasant surprise, then, to receive from him the article which appears in this week's "Children . . .and Ourselves." Like a great deal of what Dr. Morgan has written, the substance of this brief discussion is drawn more from his life experience than from any other source, which makes it somewhat unclassifiable in conventional terms. Much of what we really know has this character, and is communicated only with difficulty, since the communication abstracts from life and is bound to leave something out. Dr. Morgan seems much more successful in this sort of communication than many other writers.

For those who wonder about his other writings, Community Service, Inc., Yellow Springs, Ohio, will supply a list of his available works. Our suggestion is to begin with *The Long Road*, a small volume with much to say to those who still believe that tough-minded common sense, large-hearted generosity, and sustaining vision are capable of successful combination in human life.

We give the rest of this space to further extracts from Arthur Morgan's book, *Observations*, on the subject of education:

Human excellence lies partly in the power to know and to think, but partly also in the power to feel, to judge, to do, to dare, to undertake, to achieve; and these latter qualities, like the power to think, are increased by their exercise.

The capacity to act with courage and decision, to withstand pressure of events, to endure hardships, to meet the impact of powerful personalities, to be sensitive to ethical issues, and to purposes, hopes, and aims of other men—all these qualities are subjected to education, and

well-proportioned education will train and exercise them.

No man has real character unless he can deliberately walk up to a disagreeable job and do it. That ability comes only with practice and its development is a real part of education.

Practice and theoretical study should be like the blades of a pair of shears; neither blade is good for anything by itself, but they cut by being in contact with each other. Conventional education has been like shears with only one blade—that of theoretical education.

While we are learning to be effective, we should also be learning what it is most worthwhile to be effective about.

CHILDREN

. . . and Ourselves

VITALITY AS A LIFETIME OBJECTIVE

HEALTH and vitality are not just incidental assets to be accepted as they are inherited and as socially desirable. They are basic elements of life to be sought, secured and stabilized, and given a high place among personal assets.

With humanity in general, health and vitality do not hold such a position among the concerns of life. Conditions of health and vitality are not specifically explored and sought as a continuing purpose to be achieved and maintained, but as something in the course of nature, to be given consideration from time to time as occasion demands, or as social standards dictate. The full scale of vitality is not sought and paid for as a thrifty investor thinks and plans for his fiscal estate.

So generally is this true that usually the normal length of life is not attained. The advanced years are not a time of the full retaining of mental and physical vigor, but expose the fading remnants of an uncared-for vitality, leaving a prevailing impression in society that age is impotence, or a heavy burden to be endured and paid for, unless an intelligent society learns realistically to bring it to a close.

A well-managed life is a growing asset, and the accumulation of experience a growing treasury of experience, to be drawn upon for fresh endeavor. The books are not closed, but are a source of stimulus and experience for new endeavor and adventure, for the coming generation. With the background of experience the past should become a reservoir of experience, hope and critical judgment.

Age should be the front line of adventure and discovery. The data for action and adventure have been assembled. Youth should find in age the data it needs for action which is not wasteful. Age should be the stimulation of hope, daring and

adventure. The dreams of youth have been examined and the living prospects identified.

However, the preparation for age must begin in youth. The fine sensitiveness of youth is unspoiled and sometimes undamaged. By the time a man or woman is twenty or thirty years of age, his quality as an old person may be to a considerable extent determined. The directions of life are largely set. Quite generally the sensitiveness to purpose and direction is largely stabilized or even blunted, so that the full flower of humanity is no longer present.

We live in a world in which there is a mixture of purposes, aspirations and actions, which impinge on youth, encouraging, tolerating or injuring its innate capacity for fulfillment. The vast possibilities of life then are nascent. If those capacities are preserved and guarded, they can not only make the contributions of youth, but may become the reservoirs of experience, outlook and adventure, protectors of the aspirations of youth.

The full possibilities of life and the commitment, daring and sustained effort necessary for their fulfillment, must be realized in youth, or the pattern will be marred beyond fulfillment, and age, if it is reached, will become, not the using of life experience for the fulfillment of the vision, but the fading of vision judgment and purpose. Many factors are involved. Many years ago I had a young associate whose promise in youth was exceptional. Among his excellences was physical fitness. His chosen expression was running, especially the "hundred-yard dash." In this he made a notable record. But he violated the normal limits of his constitution, and died in his early thirties. I had a friend in India who, among his varied capacities, had a very strong body. It has been characteristic of Indian culture that extreme physical strength, rather than fine physical condition, was a conventional ideal. This man's ability in lifting weights placed him about fifth in that respect in India. He also had other evidence of unusual ability. But today, in his thirties, the

condition of his muscles and nerves puts him in the condition of a confirmed invalid.

Such exceptional cases are obvious. In general, life failures are less obvious. The care of the physical body is neglected. The use of drugs, such as alcohol, tobacco, tea and coffee are so nearly universal that their omission is ranked as trivial fastidiousness. Relatively few executives master the art of physical excellence. I found myself in a situation where long sustained tension seemed a necessary course. Exercise was neglected. Normal hours of rest were forgotten. I gained twenty-five pounds above optimum weight. That experience had lasting effects from which I did not fully recover. Relative to all other factors, perhaps the most important is the maintenance of wholesome attitude of mind.

The act of optimum care of the body, mind and spirit is one of the major concerns of life, so seldom exercised that its practice sets one apart as peculiar. If the insight, independence, courage and persistence necessary for its achievement were general, we should find ourselves in a very different kind of world. The principal period for acquiring marked excellence is the period of youth, while the possibilities of excellence are yet unimpaired.

Of course, the major significance of individual effectiveness in pursuit of optimum regard for human potential is the total effect on the course of all of life.

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[We supplement Dr. Morgan's brief essay with some extracts from the book, *Observations*, compiled from various of his writings. The following paragraphs are chosen from the section on "Education."]

One of the greatest truths that has come to me is that a man has it largely in his power to remake his hopes, his desires and his aspirations.

The fact that a man can educate his sense of satisfaction, so that it will be experienced in actions that bring long-range, enduring satisfactions, and to all men, rather than to himself alone, is a fundamental consideration in ethics, and in life in general. No element in education is more important than the education of desire. "Where a man's treasure is, there will be his heart also." What one desires, that will he seek.

Education includes not only transmission of knowledge but also the process of "apostolic succession," the passing on of the spirit which has emerged in the ages of human aspiration. In the lack of this latter element, knowledge may be only the instrument of primitive or vagrant impulse.

It is the business of education to enlighten intelligence, to stimulate aspiration and energy, and to provide discipline, so that freedom may lead to excellence in every phase of living, and so that great leadership may be recognized wherever it appears.

The pattern of man's life is determined by his intelligence, and by the motives, impulses and disciplines which, taken together, we call character. Both intelligence and character are educable. The difference between educated and uneducated character is as great as between educated and uneducated intelligence. . . . For an educational program to concern itself solely or chiefly with training the intelligence will result in distorted and inadequate personality

The technique of living in the world of reality and of affairs is so fundamentally valuable that to omit it from education is a loss not to be countenanced.

FRONTIERS Evolutionary Action

LITTLE by little, the movement for ecological reform and environmental protection is taking on definable shape. That is to say, the institutions and agencies which for the most part shape the direction and channel the energies of the major nations of the world are beginning to respond in various ways to the waves of popular feeling that are expressed by literate peoples. The warnings of eminent scientists are having an effect, and national leaders as well as large industrial enterprises with products to sell to the public are selecting themes for use in their advertising campaigns and public relations efforts that are intended to demonstrate their responsibility and beneficent intentions. With something less than enthusiasm for these latter side-effects of public concern about the environment, Gordon Harrison begins an article in the *Saturday Review* for Nov. 6 (an extract from his new book, *Earthkeeping*):

If the ecological awakening was ever touched with the spirit of revolution that has been plucked from it in this age of instant communication and universal salesmanship by the enemy or the old guard—the polluters themselves. Worried about clean air? Burn only Sir Galahad gas in your car. Want to keep the rivers sparkling pure? Wash your dishes with St. George's detergent. It is hard to shout from the barricades slogans that appear daily on television commercials. It is hard even to remember what they mean.

Not all the symptoms of response are as empty as this. In the same issue of the *SR*, a regular feature of the magazine, "Earth Watch," pictures a steam bus demonstrated last month in Washington D.C. The 51-passenger vehicle, powered by a steam generator developed by Brobeck and Associates of Berkeley, is to go into daily service as part of a regular transit system in the East Bay area of San Francisco. Road tests have proved satisfactory. There will be "low levels of exhaust emission without the customary smoke and odor" of the diesel engine formerly used.

Environment for last September reports that electric buses that run on batteries are already in use in Koblenz, West Germany. These vehicles carry up to a hundred passengers and the batteries last for five hours (they are towed on a trailer, which is periodically exchanged for one with fresh batteries). In service since last March, the electric buses are popular with the Koblenz inhabitants, mainly because of their quiet operation.

Other favorable signs are regularly reported by these and other journals.

Meanwhile, in the *Nation* for Oct. 18, Marshall I. Goldman, an economist at Wellesley, describes an eight-day international conference on the Environmental Future held last summer in Finland. The American scientists in attendance were surprised to find the Europeans equally concerned about environmental disruption. The American delegates were all harder on the United States than anyone else, being distrustful of their own government and outspoken in criticism of official claims of "the innocuousness for the environment of some new invention or project." The main issue that developed during the meeting, which Mr. Goldman believes will dominate other and more important conferences, arose out of the resistance of the "developing countries" toward measures of environmental control:

The attitude of the developing countries is based partly on the fear that environmental control is also a device to impede industrialization and economic growth among the poorer countries of the Southern Hemisphere. They see laws requiring the installation of emission controls as a way to impose higher production costs on infant industries, which then will not be able to compete with more established producers in the developed countries.

The two opposing positions dashed most sharply over the issue of DDT. In response to warnings about the pending extinction of American bald eagles and peregrine falcons and the likelihood that DDT has a carcinogenic effect on human beings, spokesmen for the developing countries warned that banning production of DDT—the chemical choice for combating malaria—was viewed as genocide in their countries. Nor did it quiet the debate to point out that

the curbing of malaria may be good for the individual, but it has also caused the population explosion in much of the world. This only invited charges of racism and raised perplexing moral issues which this conference was not equipped to solve.

Fortunately, in some situations the ultimately high price of using DDT is known to countries below the equator. Mr. Harrison tells how at first DDT wiped out pests and doubled cotton production in the Cañete Valley of Peru. In time, however, the pests grew immune to the poison while their natural enemies, the birds, died off from eating poisoned insects. Production dropped from a third to half, making the farmers desperate. Finally, they returned to the more selective pesticides of the past and introduced changes in cultivation practices, helping the enemies of the pests and reducing the latter's feeding opportunities. Today production is the highest in history. Mr. Harrison comments:

The trouble with DDT as a method of control is that it is essentially the method of war. It regards the pest as an enemy and seeks to destroy him. The trouble with war as an instrument of reform is that it does not discriminate. Attacking pests by broadcasting persistent and general poisons is like trying to get rid of Communists with napalm. The side effects in both cases are disastrous, and for similar reasons. In the indiscriminate spreading of death, functioning systems are disordered. As they break down, opportunities for plunder open up exactly as riots bring looting in train. Once the structure of community, whether of man or nature, has been destroyed, the pests, like the lawless, can no longer be controlled. So the exterminator emptying niches in nature creates pathologic conditions that parallel the social chaos in the wake of war. . . . It is the special arrogance of man, and may be the death of him, to think that any living thing can be dismissed merely as a nuisance.

It cannot be coincidence that the theme of community seems to underlie very nearly everything worth reading, these days. MANAS receives a number of periodicals devoted to constructive change and reformation, and this idea is now almost a universal cry. Some go back to Kropotkin for their inspiration, others point to the new youth communes on the land, a few of which

are gradually learning the laws of survival and collaboration with the earth. Books reprinting the works of utopian writers flood in from publishers. Social critics and essayists focus on the ills of bigness and the incapacity of large bureaucratic organization. "Native autonomy movements" win renewed attention, and Mr. Harrison, in his new book, writes at length on the deadly effects of uniformity. Scientists concerned with the sterility of mechanistic theory point to the delicate balances of living systems and speak of the universal presence of hierarchical organization within semi-independent units or systems of life.

All these ideas fit together like the pieces of a great picture puzzle, and in this case the pieces are themselves becoming increasingly aware of their "fit" with one another. A text for the tasks which lie ahead might well be the following from Mr. Harrison:

Effective action must be radical in the sense of challenging the conventional wisdom. But it is a mistake to think that it must, therefore, be grand in scale to count. On the contrary, the entire record of man's relations with nature reveals that the significant changes have been set in motion by almost imperceptible shifts in direction. That is the method of evolution. It can also be a deliberate tactic of change. It is the tactic of current citizen action; what is important is to recognize how effective such action can be and not give up before the immensity of the task.