

THE LOGIC OF TECHNOLOGY

WRITING for *Young India* in 1921, Gandhi said: "To a people famishing and idle, the only acceptable form in which God can dare appear is work and promise of food as wages." If to this statement we add Gandhi's account of what he meant by "God," we have the basis for our discussion. A few years later, again in *Young India* (1925), he gave this account of his meaning:

God is that indefinable something which we all feel but which we do not know. To me God is Truth and Love, God is fearlessness, God is the source of light and life and yet He is above all these. God is conscience. He is even the atheism of the atheist.

By putting these two statements by Gandhi together, we have a simple way of explaining the fact that, until the present century, Western rationalism has produced no popular philosophy—a philosophy that men are willing to *live by*—except economic philosophy. The primary value in all the functioning ideological systems, today, is the satisfaction of material needs. In both the Communist and Capitalist systems, the ultimate *ethical* value grows out of the relationship of men to property and the instruments of production. It is to this value that appeal is made when the object is to move men to action. There are different readings of this value, of course, which makes for ideological conflict. The point, however, is not which reading is "true," but the fact that the truth is sought *there*, in the relationship of men to the satisfaction of their material needs. It is the *bread* philosophy that rules.

Now what, in relation to this situation, is the application of the logic of technology?

The answer is quite simple: Progress in technology—called cybernation or automation—has taken individual struggle and contest away from the task of getting enough "bread" to stay alive. As a result, all philosophies based upon

material necessities have lost their meaning. Need and hunger remain in the technologically advanced societies, but only because these societies are, on the whole, unwilling to recognize that the old bread philosophies will no longer work.

Let us spell this out. Machines, increasingly, are doing the work once done by men. The machines are so productive that fewer and fewer men are needed to keep them going. Students of this process point out that in a comparatively short time the entire population of the United States will be fed, housed, and otherwise cared for by a small handful of technicians.

From this two conclusions may be drawn. One is that the problem of bread has been completely solved. Material needs are no longer a problem. The techniques of meeting these needs are so well understood that they represent no challenge to human beings. Accordingly, people are released from the pressure to found their ideas of ethics and morality on the struggle for material survival and welfare.

The second conclusion depends upon and results from a failure to understand the first. It is that if a society which has solved the problems of material production fails to put that solution to work for the common good, the old system based upon bread philosophy, begins to break down. Abundance, as Robert Theobald has so clearly shown, becomes thereby a *menace* instead of a *promise*.

The basic document of the Triple Revolution (Cybernation, Weaponry, Civil Rights) makes the following summary of the effects of automation:

The rate of productivity increase has risen with the onset of cybernation.

An industrial economic system postulated in scarcity has been unable to distribute the abundant

goods and services produced by a cybernated system or potential in it.

Surplus capacity and unemployment have thus coexisted at excessive levels over the last six years.

The underlying cause of excessive unemployment is the fact that the capability of machines is rising more rapidly than the capacity of many human beings to keep pace.

A permanently impoverished and jobless class is established in the midst of potential abundance. . . .

In recent years it has proved impossible to increase demand fast enough to bring about the full use of either men or plant capacities. The task of developing sufficient additional demand promises to become more difficult each year. A thirty-billion-dollar annual increase in gross national product is now required to prevent unemployment rates from rising. An additional forty-to-sixty-billion-dollar increase would be required to bring unemployment rates down to an acceptable level. . . .

It is reasonable to estimate that over eight million people are not working who would like to have jobs today as compared with the four million shown in the official statistics. Even more serious is the fact that the number of people who have voluntarily removed themselves from the labor force is not constant but increases continually. These people have decided to stop looking for employment and seem to have accepted the fact that they will never hold jobs again. . . . Teenagers, especially "drop-outs" and Negroes, are coming to realize that there is no place for them in the labor force, but at the same time they are given no realistic alternative. These people and their dependents make up a large part of the "poverty" sector of the American population. . . . The recent apparent stabilization of the unemployment rate at around five and a half per cent is . . . misleading: It is a reflection of the discouragement and defeat of people who cannot find employment and have withdrawn from the market rather than a measure of the economy's success in creating jobs for those who want work.

An efficiently functioning industrial system is assumed to provide the great majority of new jobs through the expansion of the private-enterprise sector. But well over half the new jobs created during the period 1957-1962 were in the public sector—predominantly in teaching. Job creation in the private sector has now almost entirely ceased except in services; of the four million three hundred thousand jobs created in this period, only about two

hundred thousand were provided by private industry through its own efforts. Many authorities anticipate that the application of cybernation to certain service industries, which is only beginning, will be particularly effective. If this is the case, no significant job creation will take place in the private sector in coming years. . . .

A permanently depressed class is developing in the United States. Some thirty-eight million Americans, almost one-fifth of the nation, still live in poverty. . . . Secretary Wirtz recently summarized: . . . "In our economy of sixty-nine million jobs, those with wanted skills enjoy opportunity and earning power. But the others face a new and stark problem—exclusion on a permanent basis, both as producers and consumers, from economic life. This division of people threatens to create a human slag heap. We cannot tolerate the development of a separate nation of the poor, the unskilled, the jobless, living within another nation of the well-off, the trained and the employed."

Joined with this analysis is some comment on the refusal of many people to face the facts of the cybernetic revolution. It is pointed out that this reluctance to recognize the enormous changes brought by technology is causing Americans to be swept along by forces they do not understand, and is likely to allow a "dehumanized community to emerge by default." The question is asked:

What is man's role when he is not dependent upon his own activities for the material basis of his life?

We might ask in return: What sort of a society is it which needs a desperate emergency to make it seek answers to this question?

Obviously, it is a society led by "practical" men—men who, in the days of universal scarcity, insisted upon making a *total* philosophy out of the satisfaction of economic need. You see this incredible moral impoverishment on every hand in the United States. You see it in businessmen who haven't sense enough to retire after they have become rich and "affluent"—or rather, who do have the sense to stay in business because they know perfectly well they will be perfectly aimless if they leave the all-engrossing task of making more money. It is the only vocation they know.

You see it in the alienation of the artist, the inferiority complex of the teacher, in the personal agony of the conscientious workman who is out of a job and can't get one: these people find themselves excluded from a conventionally "meaningful" life.

The logic of technology has pulled all the pins out of the joints of the bread philosophy. The hard-headed "realists" are now lost in a sea of contradictions. To continue to be "right," they must shut their eyes. To find one another and to share their angers and discontents, they are obliged to form little sects and to repeat slogans which have lost all touch with existing circumstances. Thus the contemporary version of the Social Darwinists, who insist upon having an economic system under which they will be able to practice the traditional virtues of economic individualism. They can't have it, of course; the basis for it no longer exists; but virtue, as everyone knows, is more important than facts, so they continue in their blindly sectarian habits. Their deep tragedy lies in their inability to learn other ways of practicing their virtues—which are indeed important and real. Turn, now, to Karl Marx's theory of history. His basic propositions are set forth in the Introduction to the *Criticism of Political Economy*. We quote the first four (in a translation by Karl Federn):

(1) In the course of social economic production men enter into certain relations, and certain conditions are formed by them, of necessity and independently of their will. These conditions correspond to a certain stage of development of the material forces of production.

(2) Conditions of production, taken as a whole, constitute the economic structure of society—this is the material basis on which a superstructure of laws and political institutions is raised and to which certain forms of political consciousness correspond.

(3) The political and intellectual life of a society is determined by the mode of production, as necessitated by the wants of material life.

(4) It is not men's consciousness that determines the forms of existence, but, on the contrary, the social forms of life that determine the consciousness.

The logic of technology pulls the pins out of this model of bread philosophy, too. When only a small number of people can take care of all the production, the instruments of production do not shape anything but the goods they make. Many people no longer have any dynamic relation with production. They are at last "free," or they are enslaved by their lack of any alternative set of dynamic relationships. You could argue, of course, that Marx, as a Renaissance Man, wanted just this sort of freedom; but if anything has been left out of the working doctrines of the Communist Revolution, it is this Renaissance Man background of Marx's thought. For philosophy, the Marxists have not preached freedom of mind, but only total bondage to the treadmill of Dialectical Materialism. This was the price, they said, of the kind of Freedom which must come first—the freedom of mechanized, enforced "economic justice." This became the vision, but when its conditions are realized, the vision is simply gone. The attempt to revive the old idealism of the revolutionary movement would be like putting on dress rehearsal after dress rehearsal of a play that has already had its grand opening, its run, and its final curtain.

Again we are betrayed by the hard-headed realists—the tough, practical men who know what is right and most important, and know it so well that they are supremely contemptuous of anyone who says that getting goods and services, and even distributing them justly, does not exhaust the meaning of life for human beings. Today, the very instruments of production, which were once so important, have by their extreme efficiency, made themselves irrelevant. Today they have two products: an abundance of goods and a daily enlarging philosophic *void*.

Paraphrasing the question quoted earlier (and put in italics), we might ask socialist thinkers this:

What is society's role when it is no longer obliged to constitute itself a great big corporate guarantee that everyone will get his share of the goods and services provided by the economy?

For if the facts recited regarding the Cybernetic Revolution are correct, material provision is no longer a problem. We can feed and clothe ourselves standing on our heads in about a half an hour of work each day. This is hardly a project for the individual, nor is it much of a police problem for the state. It's too easy. Our difficulty seems to be that we are bound to try to make a big thing out of it because we have not thought of anything else to do with our time.

We don't know what the Communists are saying about this problem, but the progressive analysts in our own society are pointing out that one of the first things that will have to be done is to replace the "labor ethic" with another concept of the good life. An extract from a Conversation held on this question at the Center for the Study of Democratic Institutions will illustrate the approach. The participants are Ralph Helstein, president of the United Packinghouse Workers of America; Gerald Piel, publisher of the *Scientific American*; and Robert Theobald, economist and author of the recent book, *Free Men and Free Markets*. We begin quotation at a point in the dialogue where the difficulty in getting a general understanding of the effects of cybernation is being discussed:

THEOBALD: The difference between the industrial age of the nineteenth and the first half of the twentieth centuries and the cybernated age today is that the first combined human skill and machine power and the second combines *machine* skill and machine power. The human being has been pushed right out of the productive process. It is just a question of how long it will take us to recognize that he has been pushed out. . . .

HELSTEIN: The trouble is that so many people today continue to believe in the myth that if a man wants to work, he can work. . . . It is that a state of mind is created at some point in which the man becomes aware that he is no longer a part of any meaningful strains in our society. . . .

THEOBALD: Knowing how long it takes to change political attitudes, knowing what public opinion, economic opinion, administration opinion, is on these issues, I would agree that the chances of reaching full employment in the context of today's

world are pretty slim and that one should be realistic and admit that the goal of full employment is dead. Therefore, we should be talking about how to provide income for people when there are no jobs for them. As I understand it, the whole Western world has a fundamental commitment to the principle that every individual should have enough income to live with dignity.

HELSTEIN: I certainly agree. It seems to me that work and income are the result of an ethic that has long since lost its viability because it has never been brought up to date. If we want to give meaning to the Protestant ethic, we had better start revising our concept of what we mean by work. Work and income are the product of what society has said had to be done under the circumstances of our one-time economy of scarcity.

PIEL: Essentially, it was designed to secure the inequitable distribution of scarcity.

HELSTEIN: Right. Now this no longer has any meaning because there isn't scarcity if we don't want it to be there.

PIEL: So, in the first place, the fundamental premise of our entire economic system and of all our economic thought is overturned. In the second place, when the electronic nervous system replaces the human nervous system, then, clearly, in the technological sense, the job is disjoined from income. In other words, the notion that a job is required to qualify and certify a person for income becomes obsolete.

HELSTEIN: This is not such a revolutionary proposition. It may sound so to people who don't want to look at it, but the fact is that either as a result of work done by their ancestors or work done by themselves in earlier years there are already millions of people in America who have income without work. People on relief are another group. The difference with them is that our society pieces them off in order to sweep the guilt away, without making it possible for them to live socially creative lives.

An article in the *Correspondent* for March-April, by Richard M. Titmuss, "The Limits of the Welfare State," throws the light of another perspective on the remedies so far evolved to meet the problems of an advanced technological society. Mr. Titmuss, a British socialist, begins:

"Modern social welfare," it has been said in the United States, "has really to be thought of as help

given to the stranger, not to the person who by reason of personal bond commands it without asking." It has, therefore, to be formally organized, to be administered by strangers, and to be paid for collectively by strangers.

Social welfare or the social services, operating through agencies, institutions and programs outside the private market, are becoming more difficult to define in any society with any precision. As societies become more complex and specialized, so do systems of social welfare. Functionally, they reflect and respond to the larger social structure and its division of labor. This process makes it much harder today to identify the causal agents of change—the microbes of social disorganization and the viruses of impoverishment—and to make them responsible for the costs of "disservices." Who should bear the social costs of the thalidomide babies, of urban blight, of smoke pollution, of the obsolescence of skills, of automation, of the impact on the peasants of Brazil of synthetic coffee which will dispense with the need for coffee beans? The private benefits are to some extent measurable and attributable but the private losses are not. Neoclassical economics and the private market cannot make these allocations; they are not organized to estimate social disruption and are unable to provide adequately for the public needs created by social and economic change.

Our growing inability to identify and connect cause and effect in the world of social and technological change is thus one reason for the historical emergence of social welfare institutions in the West. Altruism by strangers for strangers was and is an attempt to fill a moral void created by applied science.

It is Mr. Titmuss' point that these measures intended to repair the damage done to peoples' lives by the anonymous forces of technological advance and complexity are the patchwork devices of handymen and tinkerers. They are expedients, not solutions. He looks for a broad solution in Humanist Socialism, and has a book (Doubleday) coming out on this subject. Here, we use the quotation from him as a means of emphasizing the observation of Ralph Helstein—that such forms of aid do not make it possible for people "to live socially creative lives."

Now, quite possibly, the proposal of Robert Theobald (offered in his May 11 *Nation* article)

that society be organized along the lines of Edward Bellamy's utopian conception described in *Looking Backward* would give everyone scope for "creative living," but our difficulty with this idea is not that it is "socialist," but that it comes in the wrong order. In short:

You don't produce the "ideal environment" and then invite people to start being "creative." The right environment for creative living, both individual and social, is itself an organic evolution of *being* creative; it comes, not from the genius of social planners but from the fertility of individuals who, by their own endless improvisations and adaptations of their lives to the changing environment, make it change in the right direction.

The fact to be faced is that we have a culture—society, civilization—which has no schooling in serious thought about the good life. It has thought only about the satisfactory economic life. Its economic problems are a direct result of thinking seriously about nothing but economic problems, and imagining that there was great virtue in excluding other considerations.

The great mistake of present reformers, however earnest, however concerned about the "practical" problems of the present and the immediate future, is that they are still defining human needs in terms of means instead of ends. We just keep on reforming the means, and then reform the reforms, and never get to the ends. We still talk about people who need help as "they"—and of course, in these terms, all you can ever do is try to fit a better environment around them.

The heavy-handed institutions which become so unwieldy, so ill-adapted to the inner longings of people—so irrelevant to the meanings they want from their lives, and do not know how to get—are precisely the institutions that result from thinking only about means, as though we already knew all about *ends!* This puts both our lives and our projects out of scale. At some point, a man has to decide upon worthy ends and then *go after them*, regardless of whether the top planners, the public

altruists, the reformers and revolutionaries know what to do to help. The planners and reformers will *never* know, until the people themselves begin to exhibit by action the kind of society they really need. And that society will not have its primary definition in economic terms. There will be economic rules, but they will be subordinate to other, more important rules.

This is the central logic of technology, in an age of cybernation and automation: We no longer need to take our definitions of "reality" from economic processes and relationships. At last we are free to think as men.

REVIEW
A NOVEL FOR ENJOYABLE
RUMINATION

JESSE BJER'S *Trial at Bannock* is not, as Avon advertises, "more openly sensational than *The Anatomy of a Murder*." A murder does take place, and "openly" enough, but the allusions to the frayed personal lives of the principals in the trial scenes are delicate rather than exploitive. The publishers make just claim, however, when they say that a brilliant lawyer who defends an ax-convict "forces every man in that courtroom to face the deliberate killer within himself."

Mostly the book is delightful reading, in the form of a first-person account by a young professor of criminal law who assists in the trial, and whose many-faceted character leads him to see why his future should avoid both the deviousness of courtroom procedure and the pedanticism of the university; he is too honest and measured a man to be anything but a judge, and, at the end, it becomes evident that a judge is what he will become. For intrigue, we might add that this same young lawyer, Ira Hart, is involved in the mysterious death of a tormentor of his Mexican wife, and however we assess this incident, notice of it is necessary to explain Professor Hart's last talk with the defendant:

"Earle, I asked you to be responsible. You took the damn money at Denver that time. But never mind. This is the time. Every time is its own time, and you've got to be responsible all over again each time, for laying off or laying on. You knew exactly what you were doing at Sales Garage. And you know now again. Let's not tell ourselves any more stories than we have to, and we can give ourselves the benefit of a doubt too." I stood up. "There's not a very thick line between us. You're under and I'm over. That's all. And I can slip and you can hoist. And you don't have to feel small or pitiful or resentful or anything now. I'm going over there in an hour and a half to help Grubb help you out of this. Are you with me?"

The law, as Hart sees it, can never really dispose of human predicaments. For one thing,

there is in human beings something which makes it inevitable that the law be deposed or circumvented; punishment never fits the crime, and the best jurist will be the one who lives with the sometimes tortured recognition of this fact. Hart reflects:

And what was justice? Blind, the better to listen? For what, the accidental harmony or the right note in the sound of dissolution or even murder? Because it acquitted or convicted from the music of no spheres (there are no spheres, our astrophysicists are certain now), but of *these* rough plains and hills, and of these thoughts on thoughts in *this* head, on the backrest of this chair. And you caught that tentative note by the dim echo in your own inner ears.

Hart's "inner ears" are tuned with cosmopolitan empathy. He does not *expect* his acquaintances to be other than they are. It is stereotyped attitudes which he cannot abide—the ingrained racial, political, and religious prejudices, the rigidities of matriarchal and patriarchal complexes. But with all this he is able to isolate the need for action from the complexities of evaluation. His decisions are sure and swift, because this is a necessity of action, while his reflections are never sure, nor do they insist on certainty.

One of the best passages in *Trial at Bannock* is a long one—a discussion of religion between Hart and his Mexican wife. The occasion is some roughhouse between Hart and his small son:

"Don't you play too roughly with him sometimes?"

"Wrestling?"

"No, not just that. But having him shout like that. All that violence."

"He has to start heading off death and killing somehow."

"And God. He's been asking me questions."

"Who?"

"Don't fool, Carlos."

"Well, there you are."

There was a minute or so of silence while she decided something. "Well, what do we believe?"

I looked at her across the table. "Listen to me. There's an old joke about a foreign traveler looking around here. Say, it's Bannock, like the last three blocks of Spruce Street by Main, where the churches are. The foreigner is amazed. He's probably a Catholic, with only one to a neighborhood where he hails from. How come, he wants to know, there's this church here and that one right next door? 'This one,' the answer is, 'says there ain't no hell.' Yes? 'And that one says the hell there ain't!' And you know, Linda, growing up in this country, I've been just a mite overexposed myself."

"What are you going to do about your children, though?"

I put down my fork. "One at a time, if I have to, I'll take them to all the churches in town. Masses and services, this hour and that hour, this one and that one, and midweek evening sessions, until he's had enough."

"Oh, Ira!"

"You heard me."

"But aren't you religious at all? I am just asking, Ira, not—"

"Yes, all right. You want to know something, Linda?"

Actually, nobody is religious, nobody at all, at least not any more. About the people who go to church—I'm not speaking of the social necessities, which there are—but those who really go and are moved sometimes: they're that way out of a sort of cowardice of their real convictions, I mean because they may be wrong, and so they're taking out insurance. We've got some road signs coming into Bannock east on Nineteen, I remember. Kaski's Real Estate and, right after, Bannock's Churches Welcome You, and then a local Prudential poster. It's like that, Linda."

"Oh now, Ira—"

"Oh now? Here's another one: in Russell's Hardware they sell those Home Sweet Home signs in saw-toothed rustic. You know. One of them—look next time you're in there—says, 'God Answers Prayers'. There is no sign that says, 'We Can Breathe'. Why not? Because it's true. You understand me?"

"Si. But I think you are not perfectly right."

"Probably not. I mean, of course not. Of course I'm not completely right. But," I said, "mostly?"

She sighed about it or something else. "When you were engaged to me, and I remember we were at

Chivera that summer, walking near the beach at night, sometimes we talked about stars and the rest too. Was that just the summer? Or me then?"

"Then you're just afraid I'm not so romantic any more?"

"You sounded then that you believed in something, or God."

"But who said I didn't believe in God? God: that's entirely different. I don't know enough *not* to believe in That, or Him. But does He have to believe in me?" I had to laugh. "What I mean is, does it have to—or *can*, it, even—go so far?"

She did not quite understand me, from her look. I patted her hand. "The really funny thing is that I believe, all alone. And the way it was down at Chivera. Stars and the rest. But,"

I added, "miscarriages, too. And dysentery. There is also a plaintiff's case as well as the defender's of the faith."

"But, it is Carlos we're talking about. How will he be good unless he thinks—?"

"There's a hell to pay? the only thing wrong with that is, it isn't true, Linda. Or it doesn't work. And if hell won't really make you good, neither will heaven. Meanwhile, I try to teach him not to suffocate too many bugs in a glass jar."

COMMENTARY
DEHUMANIZATION—PLAIN AND
CONCEALED

THERE is a sentence in the first long quotation from the manifesto of the Triple Revolution (see lead article) which bothers us, and may bother others. It is to the effect that if Americans don't watch out they will allow a "dehumanized community to emerge by default." If we wanted to be critical, we could say that the community the writer is talking about has been dehumanized for a long time. This is the community which the white liberals think will be good enough for the Negroes, once they catch up to it—but to which James Baldwin objects; it is the community which is still pretty well fed and clothed, and thinks it is okay to secure its own future by trying to scare everybody else in the world half to death with nuclear death-rattles; it is the community that sees nothing unusual in expecting to find out about the "goals" of American civilization by reading the pages of *Life*.

We would argue, instead, that only an already dehumanized community could have the problems this manifesto describes. We invite the analysts of the Triple Revolution to get behind these conditions and further risk their reputations in an intellectually hazardous attempt to define the causes of this inner dehumanization. As a primer for this investigation, they might start out by reading Karen Horney's *The Neurotic Personality of our Time*. They might ask, *Why* did all these people allow an acquisitive corruption of the Protestant Ethic to distort their lives with such impressive wholeness that they had almost no way of seeing what was happening to them, and are now left with no resource except seeking scapegoats to explain the fear and anguish that their inner impoverishment has brought?

A dehumanized community is not just a community of people who have lost their self-respect because they can no longer earn their own livelihoods and are reduced to the bread-and-circuses lot of the Roman rabble. That is bad, but

the important thing to ask is: For how many generations have these people been wasting their talents on second-rate objectives? For how many generations have they been showing their children how to ignore the basic questions of human life?

Break off a section of the over-sweet, white-flour crust of American life and look underneath. Read, for example, what the American community (in the South) was doing to Clyde Kennard, a brilliant Negro youth, for trying to get into Mississippi Southern College at about the time James Meredith was planning to enter the University of Mississippi. After two inadequate attempts to frame Kennard on insignificant charges—

it was discovered that it would require a felony to keep him out of school, and so he was accused by a nineteen-year-old mentally retarded lad who had been arrested three days before. The Negro lad said that he had stolen \$25 worth of chicken feed and had sold it to Clyde Kennard, who bought it knowing it was stolen. In one of the most farcical trials and travesties of justice I ever witnessed [John Howard Griffin, author of *Black Like Me*, tells this story in the July *Progressive*], the young man was found guilty of having stolen the feed and was given a suspended sentence, while Clyde Kennard was found guilty of having bought it and was given seven years of hard labor.

In prison Clyde Kennard developed cancer of the intestines, but was kept on the hardest work gang. "He would be carried out in the mornings, and he would work until he began to collapse, and then would be carried back." To avoid having Kennard die on their hands, the prison authorities arranged a "pardon" and released him when he weighed less than a hundred pounds. Just before he died Clyde said: "Mr. Griffin, I'd be glad it happened if only it would show where racism finally leads. But the people aren't going to know it, are they?"

Well, one tragic illustration hardly makes a case—but in a *human* society, you wouldn't have to make a case. Everybody would be making his own.

CHILDREN ... and Ourselves

AMERICAN IDEAS AND EDUCATION

IN introducing the work of this title (Charles Merrill, 1964; \$10.60), the author, Prof. Frederick Mayer, points out that educational theories must always be "related to a larger framework" and that the background of teaching and learning theories inevitably involves philosophy. There are two ways of illustrating this point. The first suggests the many ways in which the political, religious and cultural factors of environment encourage a particular outlook from which educational theory then derives. The second is to hold, as did, for example, John Rice of Black Mountain College, that every great man is, of necessity, a teacher, and that his affirmations of conviction imply an educational perspective. It is this later development that receives appropriate attention in *American Ideas and Education*. To quote from Prof. Mayer:

The most important contribution of this book is its encouragement of an affirmative philosophy of education on the part of the reader. More is needed than mere description of ideas, classification of systems, and marshalling of facts. . . .

This work places education at the core of American culture. The founders of our nation, men like Jefferson and Franklin regarded this civilization not only as a unique political experiment but also as the expression of a new educational ideal that would produce genuine enlightenment and emancipate mankind from the superstitions of the past. To see education as the center of the American experiment is to see the perpetual vitality of American ideals, ideals that must be redefined in every generation.

Thus the interplay between basic philosophical convictions of distinguished thinkers and the specifics of education requires a great deal of depth-study before one attempts to evaluate a particular school of thought.

While a companion volume of Prof. Mayer's *A History of Educational Thought* (Charles Merrill, 1960), the present work, *American Ideas*

and Education, is quite possibly the more important, by reason of its attention to some of the crucial issues of our time. Take, for example, the current nation-wide discussion of religion and the schools. It is impossible to neglect, in such a discussion, the motives of the men who decided to erect "a wall of separation between church and state." Whether or not we agree with their intentions, we are at least obliged to understand them. In such connections, the value of Prof. Mayer's perspective becomes clear.

An informative chapter, "Jefferson as Thinker and Educator," gives clear definition to a position shared by Washington and other framers of the Constitution. Prof. Mayer explains why Jefferson felt it so necessary to erect bulwarks against tyranny in politics and education:

Lincoln once remarked that Jefferson's ideas "represented the definitions and axioms of a free society."

The enemies of man, according to Jefferson, are not external; they are not represented by specific nations or civilizations, or by one religion or one philosophy; rather the enemies of man reside in his own heart and permit his seduction by superstition and ignorance.

Education starts by liberating man from the tabus of the past; it removes him from the prejudice of his environment; it teaches him the value of freedom, it imbues him with a vast sense of responsibility; it gives him an incentive to work for humanity; it stirs the resources of his intellect and his emotions; it appeals to his sense of purpose; it gives him a fervent sense of beauty; it gives him a genuine sense of morality which removes all social barriers.

One cannot fail to be struck by the parallel between this Jeffersonian thinking and aspects of the existential thought of our own time. In a closing chapter, Prof. Mayer writes:

Liberal education, in existential terms, means education that molds our inner being. Liberal education can be measured by its capacity to emancipate us from the idols of the tribe so that we develop a strong sense of identity based upon an awareness of inner freedom.

The center of existential education is the dialogue between the teacher and a student and, more important, the inward dialogue which is part of the educational process of all individuals. Thus Socrates and Kierkegaard agree and become our guides, for they teach that truth is not an external process but an inward achievement which depends on our own receptivity. In existentialist circles the lecture method is regarded as a secondary device, for it often creates a mechanical relationship between teacher and student. As for teaching machines, they may be acceptable aids, but only as preliminary steps in an education which depends on existential inter-stimulation.

Moral ideas can never be excluded from an existential scheme of education. This does not mean teaching about morality or censoring books, or presenting abstract schemes of ethics, but rather a development of perspective. The teacher thus becomes a moralist without absolutes who develops within the student a feeling about the alternatives which he faces.

While most existentialists are opposed to conventional religion—indeed, Sartre and Camus are atheists—reason is subordinated to faith, and the need for a cosmic perspective is recognized. Viktor Frankl, an existentialist psychiatrist, feels that man's real sickness is religious, man chooses false values and idolizes them. Existentialism opposes all forms of religious dogmatism which make man an appendage to an institution.

In Mayer's terms, we must recognize that men such as the "third force" psychologists to whom Abraham Maslow refers are actually pioneer educators in a Jeffersonian sense. So, as philosophers, the men who have contributed to the definition of the individual and to democratic culture include Emerson and Thoreau, William James and Carl Rogers, as well as Horace Mann, Froebel and Pestalozzi. At the conclusion of the final chapter, titled "The Coming American Renaissance," Prof. Mayer states his own convictions in a manner which invites continuing discussion:

Such a system is based on unwavering humanitarianism. The genuine teacher will affirm man's dignity and show that democracy is not a vain ideal, but a way of life that can be extended to all aspects of our institutional system. By his actions and

his philosophy the genuine teacher will exemplify the possibilities of man, and he will show that permanent enlightenment and a new renaissance can be achieved.

The teacher must become the prophet of our time. His task is to guide and advance civilization. He teaches by soul-searching example and by facing without fear the dilemmas of our time.

The new teacher may start at 18, and he may not finish at 85. We have never fully explored the creative possibilities of youth or the potentialities of maturity. Wilson changed Princeton for decades by hiring a group of young instructors. Hastings College of Law achieved a national reputation by hiring the retired deans and professors of Eastern colleges. There is no reason why occasionally the Ph.D. could not be given at 18 or why many teachers should not be active in advanced age.

The exploration of human ideals is the real challenge of our time. What matters is not quantitative knowledge but the determination of the individual to be educated and to radiate his insights to others and thus help create a great culture.

A lasting culture demands more than academic ornamentation. It demands more than the orthodox scholastic ritual. It certainly requires more than efficiency. A great culture demands boldness of insight, a dedicated leadership, and, above all, a cordial hospitality for new ideas.

The kind of revolution that Jefferson accomplished in his time can be achieved in ours. It is a revolution demanding a deep sense of responsibility and an intense dedication to the arts and sciences—not as playthings for the elite, but as imperatives for all. A great culture demands constant re-examination. It calls for a meeting of theory and application. It demands that education become the center of American life. We have the resources; we need only courage and vision to achieve a new world.

There can be no doubt that Prof. Mayer, in Milton Mayer's phrase, is a "vestigial Greek," or considerably more than "vestigial." Discussing the Greeks in *A History of Educational Thought*, he characterizes Platonic thought as an inspired integration and thinking which made Athens a truly educational community:

Plato appeals to the identity of opposites. The existence of life demands the existence of death, whereas the existence of death demands the existence

of life. Also, death can only touch those substances which are composite, it cannot touch a simple substance—the soul. The soul, imprisoned in the body, longs for external union; it naturally transcends the limitations of human existence.

Plato feels that education, ethics, politics, and economics form an indissoluble unit, for how could a Utopia be established without a correspondence between theory and practice?

Many modern theorists of education show certain weaknesses in their isolation of education as a specialized study, and in their preoccupation with details of philosophy or curriculum construction. They overlook the fact that we are determined by social values and that society cannot be changed merely by intellectual ideas. In this way, Plato was far more realistic than many modern thinkers, for the author of the *Republic* stressed the interrelatedness of all aspects of life.

Plato believes in an integrative approach to life. Thus knowledge rises from opinion, which is fallible, to reason which generalizes and establishes laws, to intuition, which sees the universe in its totality. Is not our sense perception a prelude to the nature of Ideas, which are eternal? Is not the specific the prelude to generalization? Is not human existence a yearning for spirituality?

FRONTIERS

The Dilemma of a Scientific Culture

THE AMERICAN SCHOLAR for the Summer of 1964 has in it another chapter of the great debate begun—or resumed—by C. P. Snow with his essay on "The Two Cultures." This contribution, called "The Illusion of the Two Cultures," is by Loren Eiseley, himself a scientist who teaches at the University of Pennsylvania. It is easy to see where Dr. Eiseley stands:

Today's secular disruption between the creative aspect of art and that of science is a barbarism that would have brought lifted brows in a Cro-Magnon cave. It is a product of high technical specialization, the deliberate blunting of wonder, and the equally deliberate suppression of a phase of our humanity in the name of an authoritarian institution: science which has taken on, in our time, curious puritanical overtones. Many scientists seem unaware of the historical reasons for this development, or the fact that the creative aspect of art is not so remote from that of science as may seem, at first glance, to be the case.

I am not so foolish as to categorize individual scholars or scientists. I am, however, about to remark on the nature of science as an institution. Like all such structures it is apt to reveal certain behavioral rigidities and conformities that increase with age. It is no longer the domain of the amateur, although some of its greatest discoveries could be so defined. It is now a professional body, and with professionalism there tends to emerge a greater emphasis upon a coherent system of regulations. The deviant is more sharply treated, and the young tend to imitate their successful elders. In short, an "Establishment"—a trade union—has appeared.

Similar tendencies can be observed among those of the humanities concerned with professional analysis and interpretation of the works of the creative artist. Here, too, a similar rigidity and exclusiveness make their appearance. It is not that in the case of both the sciences and the humanities standards are out of place. What I am briefly cautioning against is that too frequently they afford an excuse for stifling original thought, or constricting much latent creativity within traditional molds. . . .

Creation in science demands a high level of imaginative insight and intuitive perception. I believe no one would deny this, even though it exists in varying degrees, just as it does similarly among writers,

musicians or artists. The scientist's achievement, however, is quantitatively transmissible. From a single point his discovery is verifiable by other men who may then, on the basis of corresponding data, accept the innovation and elaborate upon it in the cumulative fashion that is one of the great triumphs of science.

Artistic creation, on the other hand, is unique. . .

The ground of the whole argument is right here, in the claim and fact that the achievement of the scientist is "transmissible." A "copy" of a scientist's work by another scientist is not an imitation but a *verification*. It adds to the certainty—the verity—of the original achievement, qualifying it as an addition to the body of scientific knowledge. What would be plagiarism in the arts is virtue and collaboration in the sciences. The artist—we say or hope—adds to the sum total of human readings of *meaning*; the scientist, on the other hand, has added to the sum total of *means*.

Why should there be any argument about this? Well, it is a matter of experience that people cannot use other peoples' readings of meaning with the same efficiency and dispatch that they can use other peoples' means. So we say that the development of more *means* really adds to the usable wealth of the world and mankind, whereas contributions to meaning remain speculative, dubious, without practical application.

This is the main argument for insisting upon the superior value of the practice of science to mankind. A second argument, often made, is that eventually, by the progressive accumulation of more and more knowledge about means, a kind of alchemical change takes place in the deliveries of science: they become imbued with *meaning*. By the irresistible logic of massive knowledge concerning how the processes of matter and life work, we gain instruction in where *we*, as expressions of life, *ought* to go, and what we should strive for.

In the terms of this second argument, we have the promise that science will one day become as authoritative as Divine Revelation was once

believed to be, but with the difference that its directives for human behavior will be based upon truth distilled from experience instead of being obtained from an inaccessible and "supernatural" source.

The champion of Scientific Culture gets his solid, practical support from the first argument, and his utopian ardor from the second. Together, the two arguments are hard to beat.

Dr. Eiseley suggests that without the intuitive inspiration of the artist, science remains something routine and more or less "dead." This seems true enough, but it does not really weaken the case of the partisan of Science. It makes the creative spirit a necessary servant of scientific progress. We also need to get at the question of what, in a scientific discovery, is *not* transmissible. Obviously, the motives and intuitive wonderings of the first discoverer are not communicated, except by the atmosphere and context of his report, and these can be dropped away. The purposeful essence of the human being, once involved in the discovery, is gone. But this, the retort comes, is the unique virtue of science—we none the less capture the fruit of the original scientist's genius and will have it forever after.

Well, let us press this argument to a conclusion. Suppose we have these "fruits," raised to the *nth* power, and leave all the creative inspiration and genius behind? What kind of a culture would *that* be? A very dangerous one, no doubt. Dangerous to itself and to everyone else. A culture something like the one we have now, perhaps?

But this is a monstrous distortion, someone will say. Science is taken up by other men with inward inspiration and vision: it is like a torch handed on in a relay race, and the runners are all human beings with the qualities that belong to human beings.

Yet here we have a stipulation that the essence of the person—the incommunicable aspect of scientific discovery—is indeed

important, and that the practice of science without this quality could lead to great disaster. And we have from Dr. Eiseley and many others testimony to the effect that the institutionalization of science is just exactly that—the practice of science in a dehumanized fashion.

Thus the transmissibility of scientific knowledge is both its great triumph and its great defeat. Once the link between power and personal responsibility is broken, men find themselves able to build a world of efficient means which disdains serious investigation of ends. This is a world filled with *hubris*—a world in which the technical excellence of the means is made into an argument that proclaims the futility of seeking ends. It is an argument which proceeds without knowledge—without even an expressed curiosity—concerning the nature of man and concerning the means by which that nature is to be understood.