

## DECIDING ON IMPORTANCE

OF the over two thousand pages in *Stevenson's Book of Quotations*, more are consumed by sayings about "Truth" than by any other subject. The variety is extraordinary. There is affirmation, exhortation, heroic declaration, and there is skepticism, cynicism, and patient uncertainty. Of final conclusions or precise definitions, there is none. Is this as it should be, or an intellectual disaster?

One might argue, for example, that the full possession of truth would put an end to the meaning of human existence, which is nothing if not the struggle to know. On the other hand, a world in which final truth is inaccessible would not be a place to which wondering humans would migrate. When joined, these arguments produce little more than platitudes covered by saying, "Well, we must do the best we can." Yet a platitude, if well said, may be both acceptable and welcome, as in the case of the last line of Voltaire's romance—

"All that is very well," answered Candide, "but let us cultivate our garden."

Periodically, we find, Candide's advice is good, but sooner or later, in every garden, the winds of wondering deposit a seed of discontent. The unrest of wanting to know—of *needing* to know—can hardly be suppressed.

The question we are pursuing here began with a comparison of two value-charged words—"validity" and "importance." Is only the valid (verified) statement important? Questions and problems may involve unverified ideas yet they are asked, the problems exist for this reason, and the objective in raising them is to achieve valid solutions or answers. The goal, then, is truth, even though the people who insist upon validity in what is affirmed carefully avoid the term "truth" because of its high metaphysical overtones. This

is a consequence of the habitual restraint of the scientific spirit, which has its admirable side.

What is validity? The term belongs to the vocabulary of logic. A valid statement, we find, is a statement to which no objection can be brought. It is a sure thing, and after developing such a statement you are entitled to end with the initials of certainty: Q. E. D. This was the goal of Aristotelean logic and science. Knowledge which lacks demonstrable or public verification is not knowledge, according to Aristotle. A valid statement, then, is one that enjoys recognizable verification. Education, for Aristotle, constituted the instruction in valid knowledge—knowledge that could not be disputed so long as sense and reason have authority. Our culture follows Aristotle in its conception of validity or truth.

We can illustrate this. Late in 1975 MANAS published a favorable review of *Food Is Your Best Medicine* by Henry G. Bieler, a California nutritionist, also an M. D. In this book Bieler declared that the basic cause of disease is toxemia, and that the name of the disease describes the damage done by toxemia. He said that he had learned from years of practice that "when the strain of faulty living habits, reliance on stimulating drugs, incorrect diet and poor environment have broken down the filters of the body, a toxemia develops which results in what is commonly known as disease." Thereafter MANAS received a letter from another medical doctor reproaching the editors for publishing an approving review of Bieler's book. The general idea of "toxemia," he maintained, is not scientific. Puzzled, the editors sought explanation from a local doctor, who said:

So many "variables" enter as hypothetical causes into the toxic condition of the human organism that the precise sort of laboratory testing and identification of disease entities which qualifies diagnosis as

"scientific" is hardly possible. Toxemia, therefore, is regarded as a vague term which covers too much, scientifically speaking, and therefore means too little. And doctors, it is often argued, shouldn't use it for this reason.

(Interested readers may want to look up John H. Tilden's book, *Toxemia*, available in health food stores. A distinguished doctor and nutritionist, Tilden first gave the term wide currency. Bieler's offense, apparently, was that he wrote of toxemia as if its reality were an established fact, and based his practice on its implications, whereas, if he had been *scientific*, he would have called it a "hypothesis.")

The comparison of the scientifically valid with the humanly important could go on and on. In the *American Scholar* for last Autumn, Gertrude Himmelfarb, a professor of history, uses the impact of Darwinism on nineteenth-century England to illustrate the issues of such comparisons. Darwin wanted us to think of man as an animal, and the scientific reasons he gave for this persuasion shook the Victorians of his time to their moral roots. Prof. Himmelfarb relates:

If the Victorians had no dogmatic ideology, no binding religious faith, they did have a compelling, almost obsessive faith in morality. As revelation, ritual, and religious authority failed them, they clung all the more firmly to the most categorical of all imperatives: an inner law, a sense of rectitude inherent in man which was presumed to be a sufficient guide to private and public behavior, and which could be violated only at the risk of inviting a retribution as certain as any devised by church or state. . . . These eminent Victorians who no longer believed in God believed all the more in man; they deified man, not, like Feuerbach, to "de-alienate" him, or like Marx, to "socialize" him, but, like Comte, to moralize him. Their "Religion of Humanity" had only one dogma: that man was capable, by virtue of his distinctively human nature, of every higher impulse, every moral and spiritual quality, which had formerly required the inspiration and sanction of religion. . . . When George Eliot was asked to define her idea of duty, she said that it was the "recognition of something to be lived far beyond the mere satisfaction of self, which is to the moral life what the addition of a great central ganglion is to animal life."

What Darwinism did was to imperil that moral faith by making the "great central ganglion" of animal life the nerve center of human life as well. This was the traumatic effect of Darwinism: it did not so much displace God as displace man by nature, moral man by amoral nature. Malthusianism had earlier been accused of de-moralizing man, making him a creature of primitive biological needs. . . . Darwinism de-moralized him further, by making him a creature of nature who had evolved, slowly and painfully, from the animal world, who still bore traces of his origins and was still subject to that process of evolution, the struggle for survival, which had made him what he was.

The *Origin of Species*, as contemporaries immediately recognized, contained within it the seeds of *The Descent of Man* published a dozen years later; and *The Descent of Man*, as was also recognized at the time, was exactly what its title said: an account of the *descent* of man—not, as some commentators would have it, the *ascent* of man. The book was, literally, reductivist, designed to demonstrate that the intellectual and spiritual faculties of human beings differed only in degree, not in kind, from those of animals. Thus language was interpreted as a more sophisticated form of animal cries and gestures. The moral sense (which John Stuart Mill had characterized as a uniquely human trait) became only another form of the "sociability" exhibited by animals.

Hardly anyone but Christian Fundamentalists now point to this Darwinian reductionism, challenging the claims of its author and of the long line of evolutionists since. Lacking is a "valid" alternative to the ape-origin theory, so that Darwinism seems to win all scientifically "respectable" arguments by default. Yet there are sociologists who deplore the "naked ape" books of a few years ago as justifying and encouraging all the "aggressive" tendencies humans find so hard to control, and Prof. Himmelfarb, toward the end of her *Scholar* article, notes that the new discipline of Sociobiology is continuing the reduction of humans to the level of animal life by attempting to "establish a biological basis for altruism and ethical behavior." In a concluding paragraph she writes of the reduction of the humanities to second-class imitative branches of science:

The final irony is that just at this time, when the scientific culture seems to be torn by dissension and self-doubt, when the humanists might be forgiven some small expression of Schadenfreude, they themselves—or at least the most articulate of them, who pride themselves on being at the "cutting edge" of their disciplines—have chosen to capitulate. That capitulation started a long time ago, when modernism first afflicted the arts, and when philosophy, the "mother of all the arts," modernized and "scientized" itself. Since then we have witnessed the attempt of political philosophy to transform itself into political science, history into social science, literary criticism into semiotics, and, most recently, theology into semantics. In each case the effect has been to "deconstruct" those disciplines, to desocialize, dehumanize, demoralize them by stripping them of any recognizable social and human reality.

A strong statement of what happens to our thinking when scientific validity is made the final authority comes from Northrop Frye, who said in *The Stubborn Structure* (1970)

Science moves with greatest confidence, and makes its most startling discoveries in a mechanical and unconscious world. If we remove science from its context and make it not a mental construct but an oracle of reality, the logical conclusion is that man ought to adjust himself to that reality on its terms. Thus moral law imitates natural law, and human life takes on the predictable characteristic of nature as science reveals it. What begins as reason ends in the conditioned reflexes of an insect state, where human beings have become cerebral automata. . . . The world out there has no human values, hence we should think of it primarily not as real but as absurd.

The question that we began with—and which remains—asks what importance can be assigned to matters or views which lack scientific validity. We know the position of the champions of science. The primary realities of life, they insist, are the things, facts, claims, or ideas that scientific observation, experiment, and calculation endow with validity. All else must take a back seat. When values—which cannot be verified as "objective" reality or truth, remaining forever subjective—come into conflict with established fact, the values must give way. "God give me the courage to face a fact, though it slay me!" This

was the scientific prayer of Thomas Huxley, and we cannot help but admire him for it.

There is more to be said about "validity." Are scientific facts *indubitably valid*, now and forever? Not according to Thomas S. Kuhn, whose *Structure of Scientific Revolution* (1962) assembles evidence to show that the world scientists look at may be radically altered by the impact of new discoveries. "What were ducks in the scientist's world before the revolution were rabbits afterwards." There are even questions to be asked about Darwinism, although those who raise them are a tiny minority. Take for example the last sentence of *Hallmarks of Mankind* (1948) by Frederick Wood Jones, a distinguished British anatomist, who said at the end of a detailed comparison of ape and human skeletons, ancient and modern: "If the Primate forms immediately ancestral to the human stock are ever to be revealed, they will be utterly unlike the slouching, hairy, 'ape men' of which some have dreamed and of which they have made casts and pictures during their waking hours; and they will be found in geological strata antedating the heyday of the great apes." Then, in *New Scientist* for Sept. 3, 1981, two anthropologists present much complex evidence in support of a view which they summarize in one place:

In the popular mind, man is descended from the chimpanzee. This is not true. Both are descended from some common ancestor, and when pressed the popular mind would admit that what it really thinks is that man and the chimp are descended from something very ape-like, very like a chimp. To translate our suggestion into that form of speech, we think that the chimp is descended from man, that the common ancestor of the two was much more man-like than ape-like.

To be sure of what these writers mean, it would be necessary to read their articles carefully in full, and the same applies to Prof. Jones. One other authority, Jean Louis de Quatrefages, a French anatomist and zoologist and a contemporary of Darwin, held similar views. In his *Introduction to the Study of the Human Races*, he argued from comparisons of the maturation of

the brain cavities of apes and men (research by Gratiolet) that anthropoid apes form a retrogressive departure from the human type.

Why, one is likely to wonder, didn't the other anthropologists of that time pay attention to de Quatrefages? Did they think his ideas weren't worth considering, or that his facts were all wrong? There might have been various reasons, one of them being that Huxley didn't in the least object to the idea of having an ape for his "grandfather," since the evolution controversy was also an aggressive war by scientists against the fanciful Garden of Eden story. Another reason would be that the time had not arrived for taking de Quatrefages seriously. As Gunther Stent, a Cal Tech geneticist, pointed out in an article in the *Scientific American* for December, 1972, some scientific ideas or discoveries are *premature* when first proposed and have to wait until the framework of scientific thinking will allow them a place in which they will mean something. An example is the discovery of DNA in 1869 by Friedrich Miesler, the importance of which was hardly realized until Watson and Crick inquired into its structure. Prof. Stent gives other examples, one being the long neglect of Gregor Mendel's 1865 discovery of the "gene" (not his word) until its recognition or "rediscovery." Why? Because, Stent explains, "the concept of discrete hereditary units could not be connected with canonical knowledge of anatomy and physiology in the middle of the 19th century," and also because "the statistical methodology by means of which Mendel interpreted the results of his pea-breeding experiments was entirely foreign to the way of thinking of contemporary biologists." The Cal Tech scientist suggests similar reason for the reluctance of many scientists to pay attention to the results of experiments in Extrasensory Perception (ESP). They just aren't *ready* for anything like that.

The point, here, is not to launch an "attack" on science, one of the most admirable of human achievements, but only to question its oracular

status as arbiter of what is worth thinking about and trying to understand. Some present-day scientists are themselves pointing to the need for this sort of reassessment. It happens, for example, that in the issue of *New Scientist* (published in England) quoted above, the opening editorial reports on the meeting last fall of the British Association, with this beginning:

Every year the British Association for the Advancement of Science brings together many of the country's top scientists for what can at times seem more like a meeting on "the advancement of society." For it is a common belief among many scientists that if only everyone else in society were to behave more "scientifically," many of our social, economic and political problems would evaporate. By "scientifically" the scientists usually mean that others should adopt their approach to problems: with experiment and theory being harnessed to describe the real world in terms of measuring, in ever-finer detail, society's variables and assembling a "model" of the physical world. This approach is not all it's cracked up to be, and the very first lecture at this year's BA [British Association meeting] was a spirited demolition of this "model" of science.

This first lecture was given by Prof. Brian Pippard, who objected to the selection of Physics as the model science that others should imitate as a guide. Physics is a particularly bad choice for giving help to the social sciences, for the reason, he said, that the method of the physicists "is not very good at modelling instability, critical phenomena, and chaos." He thought it a pity that many social scientists "are rather too apt to examine their methodologies with an anxious glance over the shoulder at the physicists, instead of getting on with the job." Prof. Pippard is an expert in thermodynamics, so it might be too much to ask him to extend his opinions into the area of, say, morals.

But what would a model moral world look like, or would it have any visible "appearance" at all? If not, then what sort of ideal structure might moral science some day adopt as a guide?

This question transports us to the region of unvalidated ideas. Ortega began his *Meditations*

on *Quixote* (1914) by telling his readers what he intended to do.

They are simply essays. The essay is science, minus the explicit proof. For the writer it is a point of intellectual honor not to write anything susceptible of proof without possessing the latter beforehand. But it is permissible for him to eliminate from his work all apodictic appearance, leaving the verifications merely indicated in ellipse, so that he who needs them may find them and so that they do not hinder, on the other hand, the communication of the inner warmth with which the thoughts were conceived.

A candid and open thinker, Ortega confesses that his doctrines are for him scientific convictions—he believes philosophy to be a science—but he does not expect the reader to accept them as truths, but rather as "possible new ways of looking at things," saying, "I invite the reader to test them for himself, to see if, in fact, they provide fertile visions. He, then, by virtue of his intimate and sincere experience, will test their truth or error."

One might identify the essay as a more *modest* undertaking than a scientific treatise. When Ortega says that he will remove "all apodictic appearance," he means that he will not attempt to *validate* what he says. In avoiding the apodictic method, he adopts the Platonic stance of awaiting instead of demanding assent. Plato believed that the subjective (moral) quality of the inquiring human is more important than the external, measurable qualities of an object in the determination of truth. He held that the really important truths can never be settled by objective evidence, but only by a kind of rapport between the knower and the known. There is no human development involved in accepting what *must* be believed. Public truth, in other words, is secondary truth, quite necessary for surviving in the world, but not sufficient.

Reading the essays of Ortega, one is reminded of something set down by Amiel, the Swiss diarist who was born in Geneva in 1821. He wrote in 1875:

A philosophic truth does not become popular until some eloquent soul has humanized it or some gifted personality has translated and embodied it. Pure truth cannot be assimilated by the crowd; It must be communicated by contagion.

## *REVIEW*

### TWO UNUSUAL BOOKS

EIGHT years ago we gave attention here to the translation (in manuscript) of a book published in German in Switzerland—*Vom Sein und vom Sinn*, by Dr. Hans C. Syz, a psychiatrist who had long association with Trigant Burrow, and has worked for many years with the Lyfwynn Foundation of Westport, Conn. Now that his book has been published in English (by the Philosophical Library, at \$6.00) under the title, *Of Being and of Meaning*, we are glad to return to the extraordinary recollections it contains.

Born in 1895, Dr. Syz recorded in 1916 the material which makes his book. He was then a twenty-one-year-old medical student in Zurich. He says in his preface:

As will be evident, the notes were not written for publication; they emerged from the need for clarification when I was faced with a powerful experience for which no avenues of communication seemed available other than writing. Thus came about a spontaneous account of a potent event which was stirring and meaningful to me and which had relevance to a whole array of perennial problems of life and existence. In expressing my thoughts I did not adhere to an established philosophy or to the teachings of a preceptor.

The experience, which went on for days, passing through phases, was a compound of terror and transfiguration. One might call it a peak-experience, yet any such classification has a reductive effect since it suggests that the actuality of such experience is describable. It was as if all his assumptions about human life had dissolved. "One could also say," the medical student mused, "that suddenly I sensed deeply the question of the meaning of life in its entirety." He became the object, and then the subject, of sweeping change. "I simply could not live my life as it came. I had to give account to myself for what I did; I sought to discover my real self in order to guide my actions according to my true nature."

The book is without astounding revelation, yet it may reveal all that, in our present condition, we are able to know. This seems quite suitable: Life, which is a contradiction in terms, must be grasped by an explanation which is a contradiction in terms. Dr. Syz's youthful revery has the maturity of this understanding, with manifold suggestion of the riches it contains. His report of less than fifty pages—which are ample—begins with a sadness approaching horror, yet ends in a dispassion above either joy or pain. Invitation is found in a closing paragraph:

There is a tremendous overrating of the capacities of the intellectual in certain circles today, not only subjecting all existing conditions to warranted criticism but beyond this bogging down in a veritable intellectual dogmatism. . . . If the intellectual method is consistently carried through, however, one would arrive at a philosophical consideration of those deeper problems which in my view should lead to a delineation of the limits of this method. It should lead to a final awareness, to an ultimate experience, which we could perhaps call mystic or religious. For instance the philosophy of Plato with its praise of the idea culminates in such an experience.

One is grateful for such communications, yet becomes acutely aware of the limitations of the written word. We feel this again in attempting to tell about the latest book of drawings (pen and ink) by Dr. Frederick Franck (*Crossroads*, \$9.95) entitled *Art as a Way*. These line and wash drawings—all of Dr. Franck's drawings—have an unforgettable quality. Years ago, in 1962, when we had for review his *African Sketchbook*, which told of the time he spent at Lambaréné with Dr. Schweitzer, setting up a dental clinic there, we felt unequal to the task and asked the help of an artist friend. In this book, he said, "instead of a labored portrait, the detailed drawing, are quick, nervous renderings of the African landscape, the people of Africa as seen through the eyes of an artist."

While in Africa Dr. Franck wrote for MANAS two "Letters from Lambaréné," and apart from his clinical duties as oral surgeon he found time to visit a nearby leper colony where he

taught the victims of wasting disease to paint and draw, even if, as was sometimes necessary, he had to lash a brush to the wrist of a fingerless hand.

In the present book, *Art as a Way*, the drawings combine definite and expressive line with a gossamer quality—both the reality and the ephemera of life are there. Those who have Dr. Franck's books find reason to go back to them again and again—most of all, perhaps, to *My Eye Is in Love*, issued in 1964. *Art as a Way* is likely to become a similar treasure. Both text and drawings embody the strength and delicacy garnered by Dr. Franck, and deepening penetration is their natural accompaniment. Early in his counterpoint of words he says:

If the word "artist" is to retain any meaning at all, the minimum requirement to merit it should be the lifelong commitment to a craft, a discipline, as one's central concern. For "artist" is an honorific: "Ah that Leonardo, what an artist . . . !"

To pin this honorific on oneself is a bit too pompous. . . . If ever a Frenchman hands you his card "Jean Dupont artiste-peintre," you can be sure that Monsieur Dupont is a hack. . . . When the governor of Kyoto called on Keichen the Zen Master, he gave his card to the disciple who opened the door. Keichen read: "Kitagaki, Governor of Kyoto," and shouted: "Throw him out! I don't associate with people of that ilk!"

The poor flustered student started to apologize abjectly, when the visitor pulled another card, struck out his title and said: "Try again!"

"Well, well!" Keichen cried. "Isn't that nice! Kitagaki is here to see me. Show him in! Do show him in!"

The book becomes a saga of Dr. Franck's wanderings and what he saw in the places of past and present which attracted him. He writes of the time, long ago, when art was the sign manual of an inward unification of being:

Art did not yet, self-consciously, present itself as "art." It was not yet the busy-ness of gallery exhibitions, opening galas, of curator-critic-dealer cartels, auctions and art columns, with all the shenanigans of a too affluent society. It was still

intertwined with, unseparated from, life in the human mold.

This human mold, how overwhelmingly it is revealed in the art of the Masters!

For years now I have conversed with these intensely human men, in Louvre, Prado, Rhyksmuseum, Uffizi, Metropolitan. . . . Let me say a word about it, for these wordless conversations will explain why so many drawings in this book are the result of such encounters. They are humble conversations on my part—humility is simply awareness of one's place in the order of things—yet they were intimate.

To enjoy this privilege of conversing with the masters who have survived all fashions and fads, it is enough not to trudge through the museums, nose in the air, pigeonholing, pontificating, but to be silent and quiet, to respect one's hosts.

I don't just glance at Rembrandt's nudes. . . . The moment I begin to scribble his Suzanna, his Hendrikje Stoffels in my sketchbook, I enter into dialogue with Rembrandt. I stand there and let my pencil follow what my eye sees. I am not "copying," I am making contact. I no longer see these women only through my eyes, but also through the Master's. Both Rembrandt and his women spring to life! Scribbling down his self-portraits I share the painter seeing himself as the proud young artist, then deeply saddened in middle age, finally alone and old as if crushed and shrunken in an empty universe.

So with Veiasquez, Goya, and others. Yet Dr. Franck's drawings remind only of himself. The text is done by hand, in a script, growing more legible and friendly as you read along. A keynote of the book is a quotation from T. S. Eliot: "Art is not to express personality, but to overcome it."

## **COMMENTARY**

### **FUSION OF TWO WORLDS**

CROWDED out this week from *Review* is a portion of a book we also had in mind—*Science and Philosophy* by Alfred North Whitehead, in particular the first essay in Part II (Philosophy) which is titled simply "Immortality." The development of this idea by Whitehead is a sequence of lofty metaphysical reasoning which has few if any parallels in the writers of this century. (Published in 1948 by the Philosophical Library, the book contains material written between 1912 and 1936.) Ours is a time when long thoughts about what it means to be human are again coming to the fore. After centuries of concentrating on the conditions and promise of physical existence, the idea of individual survival after death is receiving serious if usually private attention. Whitehead seems never to have doubted the immortality of the human soul.

As we read him, he seems convinced of immortality because the two essential elements in life, fact and value, are interdependent and inescapable, each one obtaining its significance from the other. This, for him, is precisely the meaning of being human. Self-conscious intelligence defines itself through awareness of both fact and value. The facts of life reveal the circumstantial finiteness of existence, while the world of value is for humans participation in a timeless reality. Whitehead says:

Thus each idea has two sides, namely, it is a shape of value and a shape of fact. When we enjoy "realized value," we are experiencing the essential junction of the two worlds. But when we emphasize mere fact, or mere possibility we are making an abstraction in thought. When we enjoy fact as the realization of specific value, or possibility as an impulse toward realization, we are then stressing the ultimate character of the Universe. This ultimate character has two sides—one side is the mortal world of transitory fact acquiring the immortality of realized value; and the other side is the timeless world of mere possibility acquiring temporal realization. The bridge between the two is the "idea" with its two sides. . . . The World of Fact would dissolve into the

nothingness of confusion apart from its modes of unity derived from its preservation of dominant characters of value.

Two other ideas relate these conceptions to the individual humans. "We cannot," Whitehead says, "dismiss Personal Identity without dismissing the whole of human thought as expressed in every language." He also says: "The emphasis upon the divine factor in human nature is of the essence of religious thought." His position, briefly put, seems to be that humans achieve immortality through the transformation of fact into value—a fusion of the two worlds.



## CHILDREN ... and Ourselves IGNORED ADVICE

BOTH Arthur Morgan and E. F. Schumacher called for the development of appropriate technology—Morgan in his (still available) *Industry for Small Communities* and Schumacher in *Small Is Beautiful*. An article by S. Pratap Reddy in *Science for Villages* (September, 1981) shows that while this idea is spreading in India, it still needs to be put to work in practical applications. He says:

Now that so much is being talked about removing rural poverty and unemployment by taking industry to villages it would be well to keep in mind the existing level of technological skills, which can be scaled down to meet the specific problems faced by local craftsmen and entrepreneurs. One successful example is the way university teachers in Sri Lanka have acted as technical consultants to local blacksmiths. Similarly, Soon Jun University in Korea's Mechanical Engineering Department has contributed to solving many technical problems of local metal-working firms.

This seems a fresh application of Morgan's idea that the faculty of a college or university ought take part in making the town where it is located a better place to work and live. Morgan involved the teachers at Antioch in projects of this sort, developing small industry suitable for a town the size of Yellow Springs. The fruits of this effort are described in detail in *Industry for Small Communities* which may be ordered from Community Service, Inc. (P.O. Box 243, Yellow Springs, Ohio 45387, about \$3.00).

Continuing, Pratap Reddy says:

It is often more difficult to recapture directions and simplicity than to proceed in the direction of increasing sophistication and complexity. Any ordinary engineer or technologist can increase complexity, but it requires perspicacity to make things simple. Technology is the institutionalized and commercialized form of scientific knowledge. In propagating such knowledge, the relevant consideration should be not only the material cost, but the cost of unemployment and human degradation also.

Mr. Reddy directs his criticism mainly at existing educational institutions:

We have engineers who are over-trained for what they are offered, under-trained for some of the jobs available, and mistrained for the kind of employment that suits our economy. Today we have [in India] more than 140 Engineering Colleges along with over 30 polytechnics, incurring enormous outlays. The objective of these institutions is to disseminate knowledge which is most appropriate to our needs. However, there is a serious lack of congruence between the educational process and the requirements of a developing economy.

It is somewhat discouraging to see how blindly the Western-based sophisticated technology is built into the engineering curriculum. It inhibits the process of learning-by-doing and renders local technological institutions either irrelevant or poor images of advanced country institutions. Designing a windmill, a water-distribution system or small bio-gas plant which uses only local resources and which can be manufactured by people with little technical know-how is just as challenging, difficult, and instructive to the students' capabilities as the design of a diesel engine, a concrete dam, or a turbo-generator.

What Reddy is criticizing here is really the continuing effect of the cultural imperialism that Gandhi denounced almost seventy-five years ago, in *Hind Swaraj* (1909). In following the example of British education, the Indian administrators and teachers accepted the delusive goal of bigness and power, failing to see that this was a self-destructive path, even as Gandhi said. But the plan wasn't uniquely "British," of course; it pervaded and still largely shapes the entire "progressive" Western world. It would be a great pity if Asian peoples found it necessary to wait for the final awakening to the need for reform in the West, and then, at last, to copy once more what Westerners decide to do. The waiting period would at least be cut short if Indian educators will now listen to Reddy. He says:

There is a need to broaden the attitude of technological institutions and make their programs more realistic. The curriculum should be recast to incorporate the technology that is appropriate to our needs and would fit smoothly into a relatively unsophisticated environment like ours. Along with development, transmission and extension of knowledge, the applied profession of technology

should assume responsibility for managing, seeking and implementing solutions to concrete practical problems. Thus, technological education should also familiarize students with socio-economic problems of millions of people living in rural areas. It should also be integrated with action-research operative in local environment in order to ensure entrepreneurial innovation and welfare of the masses.

Appropriate technology has the advantage that it provides on-the-job training and faculties for learning-by-doing, with long-term efficiency of the operation, as well as benefitting indirectly the rest of the economy. Neither the producers nor the users have devoted thought to the solution of the growing unemployment and inappropriateness of technology.

Interestingly, a magnificently devastating criticism of American education in the early grades, by Bruno Bettelheim and Karen Zelan (in last November's *Atlantic*), founds its case on a text published seventy years ago—Edmund Burke Huey's *The Psychology and Pedagogy of Reading*. In their *Atlantic* article, Bettelheim and Zelan demonstrate that the schools are more and more violating the rule Huey gave, which was, in his words:

The school should cease to make primary reading the fetich (sic) it has long been. The child should never be permitted to read for the sake of reading, as a formal process or end in itself. The reading should always be for the intrinsic interest or value of what is read. . . . Word-pronouncing will therefore always be secondary to getting whole sentence-meaning, and this from the very first. . . . School readers, especially primers, should largely disappear except as they may be competent editings of the real literature of the mother tongue, presented in literary wholes, or as they may be records of the children's own experiences and thoughts.

The most important point of this *Atlantic* article is that present-day readers in the primary grades seem designed to make children contemptuous of reading and indifferent to books.

A child who is made to read, "Nan had a pad. Nan had a tan pad. Dad ran. Dad ran to the pad," and worse nonsense can have no idea that books are worth the effort to learn to read. His frustration is increased by the fact that such a repetitive exercise is passed off as a story to be enjoyed. The worst effect of such drivel is the impression it makes on a child

that sounding out words on a page—decoding—is what reading is all about. If, on the contrary, a child were taught new skills as they became necessary to understand a worthwhile text, the empty achievement "Now I can decode some words" would give way to the much more satisfying recognition "Now I am reading something that adds to my life." From the start, reading lessons should nourish the child's spontaneous desire to read books by himself.

Decade after decade, the readers have been getting worse—fewer new words with each edition. In the 1920s, in Huey's time, the readers "contained an average of 645 new words. . . . by the 1970s, when many children were attending kindergarten and reading was consistently taught there, the first-grade primers contained only a quarter of the vocabulary presented to first-graders fifty years ago." Why? Because the primers were so dull that it was assumed they were "too difficult." So they cut down year after year on the number of words, making the books still more uninteresting.

The *Atlantic* writers quote from texts now being used and name the publishers. These publishers know that their books are dull, so they add ingenious pictures, but the pictures low-grade the words. If the children can guess word meanings, from the pictures, why should they bother with "reading"?

When one of the writers complained to a publisher about the "blandness" of the stories in his books, he admitted that "he, too, thought the stories would bore young readers, but he was obliged to keep in mind that neither children nor teachers buy textbooks: school boards and superintendents do. And their first concern is that no one mind their choices." Fairy tales are banned for this reason, since step-mothers are often made unattractive, while the punishment of wrong-doers seems cruel.

Is it possible to have good books for children in our age of high technology? Yes, quite possible. The *Atlantic* writers tell about the ones used in Switzerland, which are excellent. Reading retardation among children is much commoner in America than in Europe, and more severe.

## *FRONTIERS*

### A "Little Tiny Accident"

THE Sierra Club book, *The People of Three Mile Island—Interviews and Photographs* by Robert Del Tredici, came out in 1980. The thirty-seven interviews, mostly with people who live in that part of Pennsylvania, reveal the impact of the accident on those especially endangered. Also quoted are mayors and policemen of the nearby towns, and officials of the Nuclear Regulatory Commission. Executives of the Metropolitan Edison Company, which owns the nuclear power plant, have their say. So do certain scientists, doctors, nurses, and veterinarians.

The book begins with a minute-by-minute account of how, on March 28, 1979, the Three Mile Unit 2 accident developed to the point of terrorizing the people of the region. Next comes an extract from tape recordings of the dialogue between NRC commissioners on March 30. A quality of desperation emerges in their talk. Chairman Joseph Hendries thought he ought to call the Governor of Pennsylvania—and "do it immediately," adding: "We are operating almost totally in the blind, his information is ambiguous, mine is nonexistent and—I don't know, it's like a couple of blind men staggering around making decisions." (This section was not reviewed or edited by the Commission, according to an introductory note.)

One scientist interviewed for the book, Chauncey Kepford, a radiation chemist, called what happened "a little tiny accident." Asked how he would rate it if a molten core in the basement is 100, the chemist said, "Point One." He explained:

Because, if they had a molten core in the basement of that plant right now, the ambient radiation levels would be hundreds to thousands of times higher, if not much higher yet; and their seals would have long since gone; and strontium go would be oozing out of that plant on a continuous basis, along with a lot of other goodies. So when they talk about containing a core meltdown, take it with a grain of salt. . . .

Probably none of the accidental events at Three Mile Island will ever be precisely duplicated, so that details become unimportant except to specialists. But an urgent general interest should remain concerning things that wild almost certainly happen again, given parallel human conditions. The director of the Pennsylvania Emergency Management Agency, Oran Henderson, told the interviewer:

When this incident first happened on Wednesday, the twenty-eighth of March, this agency was misled into feeling that the incident was something that had occurred and now it was basically *over*. Clear through Friday morning, up until six or seven o'clock that morning, we were receiving reports to the effect that it'll be a cold shutdown, the plant will be in a cold shutdown mode in thirty minutes. Earlier that morning they said, "Well, it's run into a snag, but maybe two hours from now—" We were never informed properly of whether they were controlled or accidental emissions. We learned many hours later that things were happening that we should have been notified of at the time or even before they happened.

The NRC at that time were stumbling as to what was going on. They didn't have a handle on it; and if they didn't have a handle on it, we certainly couldn't be expected to have a handle on it.

This sort of confusion *can* be expected to come again, and to hope to avoid it seems far worse than relying on the dubious precision of engineering or scientific predictions.

Speculation about another human reaction comes from another Pennsylvania official, Thomas Gerusky, head of the Bureau of Radiation Protection, Department of Environmental Resources, Harrisburg. Asked to comment on the quotation from Albert Einstein, "The future of nuclear power must be decided in the town squares of America," Mr. Gerusky said:

What the people around here are concerned about is not nuclear power in general; they are concerned about Three Mile Island. I don't think they give a damn about Beaver Valley and Peach Bottom and the other reactors, they are concerned about Three Mile Island and Unit One starting up again, and any releases at all from Unit Two. If they knew

that Three Mile Island wouldn't start up again, I think it would help a lot.

Is this official right? As one not opposed to nuclear power, he may prefer to think that the concern is mainly local, and this may be the case, up to a point. But if persons living far from the sites of reactors knew just a little of what the people near Three Mile Island know and feel, all such projects would be abandoned without further debate. So far, the portion of the population that is aroused includes many local people (around the country, near reactors) and a handful of determined experts who are trying to educate the general public.

Fortunately, the experts are gradually making themselves heard. One of them, Dr. Ernest Sternglass, a radiation physicist, taking part in a press conference three months after the accident, spoke of "a very close connection between what happened at Three Mile Island and in all other nuclear sites in the United States where releases have taken place, and what is happening to the people of Hiroshima and Nagasaki over the decades following the war." Explaining, he said:

The tragedy is that we have not wanted to learn because our government is determined to keep on building nuclear reactors and allowing them to have the same discharge limits that were used to allow nuclear bomb testing. . . . It is now possible to say that the total number of Americans who died as a result of bomb testing is close to one hundred times the number of people who died at Hiroshima, very close to 20 million people who died earlier than they would have if we had never dropped the bomb in Hiroshima and Nagasaki, and if we had never done the bomb testing in Nevada and in the Pacific, and Russia in Siberia, and England in Australia that has poisoned the atmosphere of the world.

Suggestion of what may happen when more people learn what is risked by building these reactors might be found in the growing European opposition to nuclear weapons. Last fall (Oct. 26) the *Christian Science Monitor* reported:

The 150,000-strong turnout of protesters in London Oct. 24 was described as the biggest demonstration ever seen in the British capital. There

was a roughly similar turnout in Rome the same day. And 24 hours later it was the turn of Paris and Brussels.

In September, the *Monitor* report goes on, a quarter of a million demonstrators crowded into Bonn, the West German capital, to make their feelings known. Such protests, an American diplomat declared, must be "taken seriously." While American anxiety over the use of "improved" nuclear missiles hardly approaches the level of concern among Europeans—since Europe is expected to be a nuclear battlefield—the linkage between nuclear power and nuclear weapons seems increasingly evident to some. And if the long-term effects of fall-out from both sources are so much the same, as Dr. Sternglass maintains, the protest of the American public may eventually become nationwide, not "local" at all.