

THE LINE OF A LIFE

A READING of the biography of Simone Weil (Pantheon, 1976, \$15.00) by Simone Pétrement, her schoolmate and lifelong friend, may lead one to the uncommon conclusion that if a person takes to heart great and true ideas, and acts upon them, it doesn't matter much if the courses of action adopted prove almost completely out of gear with the evident facts of life. Simone Weil's life was a life of the mind. For her, to agree with and adopt an idea was to act upon it. She believed, for example, in the fundamental equality of all human beings and for this reason identified with the least fortunate. Wherever she saw oppressed people—whether the natives of French colonies abroad or the unemployed in the town where she lived—she sought in some way to subject herself to the conditions they suffered. In 1932, when she was twenty-three and teaching philosophy in the lycée (public school) at Le Puy, she had opportunity to visit a coal mine:

So after putting on miner's overalls and a hard hat, she went down. They let her use a pickax and a compressed-air drill (the tool that is held against one's chest and shakes one's entire body [—jackhammer, we call it]). According to Thevenon, if they had not stopped her, she would have kept on using the air drill until she had collapsed. She asked if the boss would agree to hire her; she was given to understand that this was impossible.

The idea of this delicate girl, periodically afflicted by deadly headaches, physically awkward, with little or no manual skill, running a jackhammer seems completely ridiculous. But she did not think so. To her it seemed precisely what she should attempt. Sensible people prevented her, but her experience in the mine—what she felt and saw—had a shaping effect on her thinking. In the mine she saw that human beings were only accessories to technology. The worker, she wrote, "forms a single body with the machine and is added to it like a supplementary gear, vibrating

in time with its incessant shaking." Knowing at least something at first hand about a miner's life, she went to the core reality of the work he had to do: "This machine is not modeled on human nature but rather on the nature of coal and compressed air, and its movements follow a rhythm profoundly alien to the rhythm of life's movements, violently bending the human body to its service."

Thirty years later in *The Technological Society* Jacques Ellul would point out the amoral determination of technological systems which bind more and more of human behavior to their alien rhythms. Simone Weil had already applied this idea to the conduct of modern war. In "Reflections on War," published in the November, 1933, issue of *La Critique Sociale*, she wrote:

. . . war in our days is distinguished by the subordination of the combatants to the instruments of combat, and the armaments, the true heroes of modern warfare, as well as the men dedicated to their service, are directed by those who do not fight. And since this directing apparatus has no other way of fighting the enemy than by sending its own soldiers, under compulsion, to their death—the war of one State against another State resolves itself into a war of the State and the military apparatus against its own army.

Ultimately, modern war appears as a struggle led by all the State apparatuses and their general staffs against all the men old enough to bear arms. . . The great error of nearly all studies of war, an error into which all socialists have fallen has been to consider war as an episode in foreign politics, when it is especially an act of interior politics, and the most atrocious act of all. . . . Arms wielded by the apparatus of the sovereign State cannot bring liberty to anybody.

Generalizing, Simone Weil declared that no revolution would amount to anything unless it was accompanied by a reform in the technology, making possible humane conditions of work. The

revolution, quite simply, would involve establishing work that does not subordinate the people who do it.

This outlook was confirmed by a year of doing piecework in the Renault and other factories during 1934-35. She wrote to a friend about the experience:

I knew quite well that there was a great deal of affliction in the world, I was obsessed with the idea, but I had not prolonged and firsthand experience of it. As I worked in the factory . . . the affliction of others entered into my flesh and my soul. . . . What I went through there marked me in so lasting a manner that still today when any human being, whoever it may be and in whatever circumstances, speaks to me without brutality, I cannot help having the impression that there must be a mistake and that unfortunately the mistake will in all probability disappear. There I received the mark of slavery. . . . Since then I have always regarded myself as a slave.

Her biographer says:

One of the reasons she had wanted to be a worker was certainly that she had thought she would find real human fraternity in the factory. And one of the things that certainly disappointed her was not finding as much fraternity as she had imagined. She will say, when speaking of the factory:

"There only one knows what human fraternity is. But there is little, very little. Most often, even the relations between comrades reflects the harshness that dominates everything there."

Who was Simone Weil? Most American readers know her as the author of *The Need for Roots* (Putnam's, 1953), which she wrote in London at the headquarters of the Free French during 1943, the last year of her life. It was a book to answer the question: What sort of society should the French strive to create for themselves after victory and liberation from the German occupation? She began—and ended—with examination of the "needs of the soul." Her proposals amounted to "a pattern laid up in heaven," a plan for the sort of ideal society Plato speaks of in the ninth book of the *Republic*. Like Socrates, she would have no other society, and this uncompromising resolve gave *The Need for*

Roots extraordinary impact. By the time this century is over, a great many people may agree that Simone Weil was among the most sage and compassionate intelligences of her time.

That her life was in some ways a career of wild impracticality now seems of small importance. She died as she had lived, with total commitment to her principles, suffering, along with tuberculosis, from malnutrition partly caused by the determination to have no better diet than the limited rations of people in occupied France.

Simone Weil was born of cultivated Jewish parents in 1909. At school a professor called her "the Martian," since she seemed to him mainly a brain united to an ineffectual body. Many people, Simone Pétrement says, had at first this impression, as though "some element of common humanity was missing in her—the very thickness of nature so to speak."

Indeed, one senses that many of her old classmates when they finally read her writings, were surprised to discover that she was so human. I myself was astonished by the incredible sensitivity she revealed. Certainly, when it came to generosity, a concern and pity for others, nobody has ever denied that she had these qualities, and in the highest, most selfless forms. In this sense she was more human than anyone else. But what was hard to believe was that she had the ordinary human frailties. One might even think that she didn't have the same needs or the same desires as others, that she was not wounded or hurt by the same things. She forbade herself all weakness with such firm determination that one could mistake for a peculiarity of her nature what was in truth a product of her will.

Upon graduating from the normal school she was equipped to teach philosophy, Greek, mathematics, and literature. A writer in *Politics* (February, 1945) said that after leaving school—

she continued to broaden her culture, going always to the primary sources, whether it was Homeric poetry, Euclidian geometry, Vitruvius' rules of architecture, Vieta's algebra or the laws of the pendulum discovered by Huygens. But even more than her encyclopedic knowledge, tirelessly striving to capture the inmost essence of things, it was her personal honesty and her delicate sense of human relations that

won the admiration and love of her pupils. Outside the academic world, also, this girl of insignificant appearance and unassuming manner, with a frail body and a fiery spirit, made a deep impression on all who came to know her.

What was the ground of her thinking and the source of the discipline in her life? Summarizing a portion of Simone Weil's diploma dissertation, her biographer says that she revised Descartes' *cogito* in this way:

"To exist, to think, to know are only aspects of a single reality: to be able to act. . . . From the moment that I act I make myself exist. . . . What I am is defined by what I can do." . . .

The self is power, the ability to act, and Simone above all affirms that "all real power is infinite." Yet after this she says: "if there exists only the self, there exists only this absolute power; I depend solely on my will, I do not exist except insofar as I create myself, I am God. . . . But that is not true. I am not God. . . . I must recognize the limits of this power; my sovereignty . . . disappears when I give myself something to think about. Freedom is the sole power that is absolutely mine. Hence there is something besides myself that exists. . . .

"I am always double: on the one hand, the passive being who is subjected to the world, and, on the other, the active being who has a grip on it; geometry and physics lead me to conceive how these two beings can be joined, but they do not join them. . . .

"It is through work that reason seizes hold of the world." Work teaches us to use the world insofar as it is an exterior obstacle in order to resist the world insofar as it is an internal enemy. "I must be tricky, cunning, I must hamper myself with obstacles that lead me to where I want to go."

Concerning Simone Weil's religion or religious ideas, Simone Pétrement says:

At first only two things are evident: on the one hand, that she does not like priests, theologians, and respectable people; on the other, that she wants to understand the belief in God and does not reject it, at least in one sense.

The true God of Descartes (at this time she was his admirer) is not, in her view, the God of the theologians. "This God not only does not resemble the God of the theologians, but he is even that which reassures me as against theology, he is what there is

of the infallible in myself. In fact I deceive myself, but by rights I should never deceive myself in the sense that it is up to me not to deceive myself."

The true God, she says, is what is infallible in myself. Actually, thought is infallible in its essence and it is that which proves that the perfect thought exists. "A perfect thought is an independent thought and nothing else. Now thought is independent. I know this, whatever I might know of my own shortcomings. . . ."

"All that one can conclude," says her biographer, "is that she seems to identify religion with morality." Belief in God means acting correctly. "Belief is more the effect than the condition of courage and virtue. Morality is primary and unconditioned." The opening paragraphs of *The Need for Roots* embody this theme:

The notion of obligations comes before that of rights, which is subordinate and relative to the former. A right is not effectual by itself, but only in relation to the obligation to which it corresponds, the effective exercise of a right springing not from the individual who possesses it, but from other men who consider themselves as being under a certain obligation toward him. . . . It makes nonsense to say that men have, on the one hand, rights, and on the other hand, obligations. Such words only express differences in point of view. The actual relationship between the two is as between subject and object. A man, considered in isolation, only has duties among which are certain duties toward himself. Other men seen from his point of view, only have rights. He, in his turn, has rights, when seen from the point of view of other men who recognize that they have obligations toward him. A man left alone in the universe would have no rights whatever but he would have obligations. . . . Rights are always found to be related to certain conditions. Obligations alone remain independent of conditions. They belong to a realm situated above all conditions, because it is situated above the world. . . .

The object of any obligation, in the realm of human affairs, is always the human being as such. There exists an obligation toward every human being for the sole reason that he or she *is* a human being, without any other condition requiring to be fulfilled, and even without any recognition of such obligation on the part of the individual concerned. . . .

This obligation is an eternal one. It is coextensive with the eternal destiny of human beings. Only human beings have an eternal destiny. . . . Duty toward the human being as such—that alone is eternal. . . .

The obligation has no foundation, but only a verification in the common consent accorded by universal conscience. It finds expression in some of the oldest written texts which have come down to us. It is recognized by everybody without exception in every single case where it is not attacked as a result of interest or passion. And it is in relation to it that we measure our progress.

Simone Weil, quite evidently, relies almost entirely on the self-evidence of what she says. She quotes no "authorities." What is given in experience—universal human experience—she seems to be saying, is not subject to debate. We have but to acknowledge the verities of experience and develop their implications in order to learn our obligations.

How, one wonders, could such a person be born and grow up in any part of the twentieth century? She is unbelievable, yet she lived.

Which brings us to the importance of biography. Simone Pétrement has not written a book about the world except incidentally. Her book is about one human being in the world. What book about the world could possibly suggest the advent and life of a Simone Weil? How could we get any idea of such a person from studying the world? Hence the importance of biography, and to a lesser degree, history. Unfortunately, history tends to smooth away the strangeness and wonder of biography; the blood and pulse of history is in individual lives. Indeed, there have been high civilizations that were content to see in biography all that one needs to know about history. The *Bhagavad-Gita* is such a biographical distillation of history.

Another difference between biography and books about the world is that biography shows the line of a human life—not just the options which are available but the decisions made. Books about the world are like maps. They show various

places and destinations, with some indication of prevailing conditions, but they don't tell us which way to go. A *life* illustrates the ordeal of coping, how living actually works.

Simone Weil's life is made up of acts of the mind and their consequences. We don't really need to know the details of her childhood, her relative, and other odds and ends of biographical detail. While such matters of setting make us realize that an actual human being is involved, they can then be forgotten, and probably will be. The wonder of the life of Simone Weil, its ever-recurring question, is where she got her inspiration, her courage, and her indomitable will.

To ask what was her "philosophy" is very nearly a futile question. What Simone Weil believed is revealed by her choices. Yet she studied and absorbed and used philosophy. Simone Pétrement quotes from what she wrote in *Cahiers du Sud* for May, 1941:

"The rigor and certitude of philosophical investigation are as great as they can be; the sciences are far from coming close to them. Should one conclude from this that philosophical reflection is infallible? Yes, it is infallible to the degree that it is actually carried out." This certainly is a way of viewing the matter that is absolutely contrary to common opinion. "One generally sees only conjectures in philosophy. What produces this opinion are the contradictions between the systems and within each system. It is generally believed that each philosophy has a system that contradicts all the others. Now quite far from this being the case, there exists a philosophical tradition that is truly as ancient as humanity and that, one must hope, will last as long as humanity will; from this tradition, as from a common source, are inspired, it is true, not all those who call themselves philosophers but several among them, so that their thought is nearly the same. Plato is no doubt the most perfect representative of this tradition; the *Bhagavad-Gita* is inspired by the same tradition, and one can easily find Egyptian and Chinese texts that can be named alongside these."

Simone Weil held that writers of her time had much responsibility for its cultural decline. "The essential characteristic of the first half of the

twentieth century is the growing weakness, and almost the disappearance, of the idea of value."

"Words like virtue, nobility, honor, honesty, and generosity have become almost impossible to use or else have acquired bastard meanings. . . . In a general way, the literature of the twentieth century is essentially psychological and psychology consists in describing states of the soul by displaying them all on the same plane without any discrimination of value, as though good and evil were external to them, as though the effort toward the good could be absent at any moment from the thought of men."

Simone recognizes that writers don't have to teach morality. "But they do have to express the human condition. And nothing concerns human life so essentially, for every man at every moment, as good and evil."

A study of human beings at their best in the twentieth century might well begin with the life of Simone Weil.

REVIEW

IN PRAISE OF PURPOSE

OF a good book you can say that it has an underlying theme. This *reason* for the book may be on the surface or it may be hidden, but it must be there, and in some sense identifiable, or the printed pages do not make a book at all. If the author's intention is didactic, he tells you right at the beginning what he is writing about. If he is a dramatist, the theme may be concealed until the climax, when it explodes into view. The poet is more of a dramatist than an instructor. His theme is indicated by images which carry half-revealed mysteries, components of feeling which color and light one another as they appear. They generate a field of awareness where the reader has invitation to contemplate the poet's inner vision.

Another characteristic of a good book is that its contents will have a contrapuntal arrangement: there will be the theme and then another line or background against which the theme gains its meaning. For example, in Arthur Young's book, *The Reflexive Universe*, the primary theme is that *man is purposive*—it is his nature and being to seek for fulfillment of some sort. For Young, this fulfillment is to understand the world. His book, therefore, focuses on the contrapuntal line, his account of the world. He notes that, usually, we think of people who write about the world as scientists. "But I," he says, "am not a scientist." He is an inventor, and he distinguishes between the scientist's knowledge of the world and the inventor's. The scientist is concerned with describing the world and its arrangements. He doesn't go beyond that. The inventor, on the other hand, looks at the world not simply in terms of the knowledge we have about it, but in order to make a specific *use* of it. He turns some part of the world to a purpose he has in mind.

Ideally, you could say, the scientist is a philosopher whose goal is the contemplation of reality, while the inventor's goal is some kind of action or creation. A similar comparison could be

drawn between the philosopher and the artist, or between the scientist and the artist, since the philosopher may also be a man of action, and probably should be. Writers like Mr. Young are really setting out to reform philosophy by making it evident that contemplation is not enough. Human beings need to act, and while, for the actor, particular knowledge of the world is indispensable, it cannot be compared in importance with the animating motive which lies behind all action.

The artist has in common with the inventor that he, too, is a maker of things. The artist, more than the inventor, perhaps, is a maker of *wholes*. It is this which distinguishes a work of art from some valuable device. The deliberated "wholeness" of the artist's creation reaches beyond any finite utility. This wholeness is his gift to the world, his instruction to the world, and also his joyous act of sacrifice. But both the artist and the inventor are intent upon purpose, with the result that they stand apart from the scientist in the way they regard knowledge. In a rather remarkable book on the contribution of the artist or designer to the task of understanding ourselves, *The Humanization of Man* (Newman Press), John Julian Ryan makes a similar contrast between the scientist and the artist. After some discussion of their methods, since both science and art involve methodical principles and sometimes elaborate technique, he offers this comment:

To treat these various methods as if they were only one, or at least properly reducible to one, is to fail to gain from each of them what it, and it alone, has to offer. It means, particularly, to fall prey to the delusion that if we adopt the scientific attitude and follow scientific method at all times as if it were the only or primary one, we are automatically adopting the right technical method and attitude. Yet we could hardly make a greater error.

For the user of scientific method is primarily concerned with taking things apart to discover, as with a Geiger counter, what makes them "tick"; whereas, the user of artistic (technical) method is primarily concerned with putting them together so that, in the meeting of a need, they "click." The one

sees a thing chiefly as a specimen, the concrete embodiment of a principle; the other, chiefly as a means to an end. The chemist, for example, looks upon a pinch of salt as a specimen of sodium; the chef as a basic source of flavoring. Granted that the scientist must be an artist as an inventor of hypotheses and experimental methods, and that the inventor or performer must take advantage of whatever scientific method or finding will prove useful to him; still, there is little in the primarily abstract-analytic training of the scientist which, of itself, perfects the concrete-synthetic habit of mind of the artist. There is good reason why Einstein's name is not to be found on the roll of great inventors, or Edison's name on the roll of great scientists.

In this comparison, the scientists seem to come off second-best. But we should not, in consideration of the fact that scientists were once natural philosophers, leave the matter here. There is a sense in which the universe *as a whole* is something that *is* there simply to be understood, contemplated, wondered at, and not "used" in the inventor's sense. The whole is the whole and no utility. Only the parts of the whole have a use, perhaps for making a greater whole, or a richer one.

In his discussion of education in *Time Running Out?* Vinoba Bhave affirmed this distinction:

The fountain-head of all the world's conflicts is that knowledge has been separated from action. . . . There is no such thing as knowledge divorced from action. There is only one exception from this rule, and that is the knowledge that "I am, I exist"; the knowledge of the Self *is* divorced from action. It is beyond action. But all other knowledge is linked with action. There is no knowledge without action and no action without knowledge. The two are one, this is not a question of technique, but is a fundamental principle. . . .

In order to complete what seems the essential point, it is necessary to add that without holistic knowledge of the world, there can be no effective knowledge of the self. The world, we might say, is the lens through which we bring the self, or rather its reflection, into focus. And the world as a whole, which is the object of inspection by the scientist—the scientist regarded as natural

philosopher, and not merely the research arm of technological enterprise—is the alter ego, the vast, objective self, of the human being. *This* knowledge, considered as a unity, is indeed divorced from action, since the world, as a whole, needs nothing done either to or for it. Only in its incomplete aspects, in its parts, has the world needs requiring action. Wholes are at rest in their completeness and invite only contemplation.

When philosophers lose the secret of their calling, taking their cues from the often partisan interests of the men of action, and when scientists become the hired men of ideologists and their industrial collaborators, then perversion of purpose, of the *reason* for action, becomes the rule instead of the exception. And then, in no long time, the best among the men of action, the inventors and the designers, realize that *somebody* must do the work of the philosophers, so that a new literature of transcendence written by artists, inventors, and novelists—begins to appear. Because it is an imperfect literature, it has, we might say, a common touch. It shows how much ordinary humans can accomplish if animated by unselfish purpose.

We have an illustration of this assumption of responsibility in a recent novel, *A Time of Soldiers*. (Avon paperback) by Andrew Jolly. This is the story of three generations of men in the American Army. Soldiers are men of action. The theme of this book of American tragedy is that worthy purpose must lie back of human action. The first of the three soldiers is an officer, Jack Lear, who describes to a friend his adventure during a border skirmish with some raiders sent by Pancho Villa across the Rio Grande to steal horses. During the action Lear kills a Mexican who has been shooting at him. Looking at the dead raider, he sees that he was only a boy of eighteen. His friend remarks that the boy was probably Indian, since Villa had been recruiting Indians. The officer wonders about the life of this boy, and his friend, who is telling the story, replies:

I said that if the boy was Indian . . . then most likely he didn't even know who Villa was, or Carranza, or any of the others, and his conception of the Revolution, if he had any at all, was that it was an unsettled time when some, but not all, of the old rules and laws he had always known were relaxed and one therefore had to be doubly careful to guard the things that belonged to one. If he had come from one of the mountain villages—and he probably had—he would not have had any conception of the Revolution as a social movement sweeping in various phases and through various evolutions throughout Mexico because he would not have any concept of Mexico as a thing making a claim upon his love, his allegiance, his life. His family in the village would have that kind of claim upon him, and maybe the village would, too, though that is less certain. He would have no concept of the boundaries of Mexico or of any other state of the world he would know nothing of its history, he would not know it as a *thing* at all, would not think of himself as even living in it. . . .

So it was not any devotion to a national leader or to a national cause that had led him to cross the river illegally with the band of horsemen that night near San Elizario because he would not have had any concept of a nation for there to be a leader of or a cause for, and if someone had said that the Revolution would make his life better, he would not have comprehended because there would always be the vast indifference of the mountains, the stubborn and unyielding soil, the stupidity of the goats, the scarcity of water, the deceit of friends, and the ceaseless vigil to protect the chastity of one's women and the honor of one's home.

Some other attraction seduced him into the recruiter's squad, perhaps a need for some silver to bring home to his young wife, soon to bear his child.

"Tell me one thing," Lear's friend said to him. "Why did you become a soldier?"

He did not look up from the wild idiot flame. "Because," he said, "I did not want to be only my own self alone."

The world had gone bad on Jack Lear. Its purposes were bitterly confused. He did not know what to do about this, so, after a time, in which there were other senseless killings, he arranged to leave it, although, technically, not by his own hand.

COMMENTARY

THE PURSUIT OF TRUTH

IN *The Story of an African Farm* (1883), Olive Schreiner tells the mythic tale of a Hunter who pursues Truth throughout his life. Intimation that it might be found came to him as the reflection in the water of a lake of "a vast white bird, with silver wings outstretched, sailing in the everlasting blue." An old man rich in the wisdom of past experience told him that once a hunter has seen the bird, he never rests again.

Then the hunter took from his breast the shuttle of Imagination, and wound on it the thread of his Wishes, and all night he sat and wove a net.

In the morning he spread the golden net open on the ground, and into it he threw a few grains of credulity, which his father had left him. . . . Then he sat by to see what would happen.

He caught many beautiful creatures, but not the Truth, although the birds he made captive, he said to himself, were "surely of the beautiful family of Truth." As he grew older he wove other nets of what seemed to him purer and stronger materials, but still the great bird eluded him. Meeting again his counselor, he asked where he should seek Truth. The old man said:

"I can walk only where many men have trodden. On these mountains few feet have passed; each man strikes out a path for himself. He goes at his own peril: my voice he hears no more. I may follow after him, but I cannot go before him."

The day came when the Hunter, old and weakened, could climb no higher. His shuttle was cracked, his longing quieted by exhaustion and failure. "If Truth had appeared above him in the clouds now he could not have seen her, the mist of death was in his eyes." Then he thought of others, young and fresh, who would follow the way he had shown, using the steps he had cut in the rock.

"My soul hears their glad step coming," he said, "and they shall mount! they shall mount!" He raised his shrivelled hand to his eyes.

Then slowly from the white sky above, through the still air, came something falling, falling. Softly it fluttered down, and dropped on to the breast of the dying man. He felt it with his hands. It was a feather. He died holding it.

CHILDREN

. . . and Ourselves

ORIGINAL SIN IN EDUCATION

IN *Ten Faces of the Universe* (Freeman & Co., 1977, \$6.95), the British astronomer and cosmologist, Fred Hoyle, declares for the mathematical deity of Sir James Jeans. The sole activity of God, says Hoyle, is geometrizing:

All other attributes of God are without meaning, and it does far more harm than good to go on playing around with them.

As an example, consider the fact that something approaching the conditions of a civil war exists today in Northern Ireland. Although secular problems have played a significant role in causing this situation, a religious quarrel between Protestants and Catholics is generally conceded to lie at the root of it. Since the Christian religion is supposed to be based on an ethic of "love thy neighbor," this quarrel is perverse and contradictory. A while ago, I happened to suggest in a talk that a quick and simple solution to the Irish problem would be to arrest every priest and clergyman in Ireland and to commit every man jack of them to long jail sentences on the charge of causing civil war. When the ensuing laughter subsided, I was surprised that not a single person among the fair-sized company present seemed to doubt that this odd-sounding proposal would in the long run solve the Irish question.

Priests and clergymen do not intend to cause pain, but when they persist in repeating nonsense words and concepts to children, and insist that those words and concepts have great hidden significance, they *do* cause pain. The mental frustration of it all then erupts into violence, when two groups of people fed on different nonsense words, intermingle with each other. Where the Irish have a sensible objective, such as defeating England at rugby, nobody cares who is Catholic and who is Protestant. Together they simply get on with the job, and they do it very well. There is no such thing as Catholic eyes, or Protestant legs, or Marxist numbers, or capitalist geometry. Combining a nonsense word with a valid word produces this kind of ridiculous association.

What then shall we do, asks Mr. Hoyle, about the impulses of religion? They are natural to man and cannot be suppressed. An appropriate response to the religious impulse or longing, he

suggests, is in evidence when "a scientist spends a good fraction of his life trying to discover the mathematical form of some new physical law." Hoyle adopts this general view of religion:

Whenever anyone, at whatever level of sophistication, makes the effort to understand a little more about the world, that is worship. There will never be any long-term purpose for our species other than understanding of the universe. If this purpose does not prove sufficient for us, if we are impelled to invent all manner of nonsensical substitutes, then very likely we shall not survive as the dominant animal on the earth for very much longer.

Fred Hoyle has the flair of a fine writer and the spontaneous movement of a clear mind toward matters which concern us all. No wonder his books are popular, and that he gets the reader on his side through simple common sense. We'll probably return to the rest of his book later on, but here the focus is on what he says in the first chapter on education. Everybody, he proposes, starts life "as a potentially competent mathematician."

Watch a baby between six and nine months old, and you will observe the basic concepts of geometry being learned. Once the baby has mastered the idea that space is three-dimensional, it reaches out and begins grasping various kinds of objects. It is then, from perhaps nine to fifteen months, that the concepts of sets and numbers are formed. But now an ominous development takes place. The nerve fibers in the brain insulate themselves in such a way that the baby begins to hear sounds very precisely. Soon it picks up language, and it is then brought into direct communication with adults. From this point on, it is usually downhill all the way for mathematics, because the child now becomes exposed to all the nonsense words and beliefs of the community into which it has been so unfortunate as to be born. Nature, having done very well by the child to this point, having permitted the luxury of thinking for itself for eighteen months, now abandons it to the arbitrary conventions and beliefs of society. But at least the child knows something of geometry and numbers, and it will always retain some memory of the early halcyon days, no matter what vicissitudes it may suffer later on. The main reservoir of mathematical talent in any society is thus possessed by children who are about

two years old, children who have just learned how to speak fluently.

Modern advanced societies have found no way to make effective use of the marvelous years in a child's life from two to five. Quite apart from the mathematical talent awaiting to flower, the child has uncanny linguistic ability. It is well within the capacity of the average child to learn four or five languages, perfect in accent and syntax. Yet we let the child fritter away these priceless years, feeding itself on the arbitrary conventions of our society. Only at a much later age, when the linguistic ability has largely been lost, is the child expected to learn a new language. Results, achieved at great expense to taxpayers, are by then poor.

There is so much obvious truth in this analysis that one hesitates to question it, yet *something* is surely left out. If we're all so smart at two, being thereafter blighted by a wicked, unimaginative society, why don't the wolf-children, brought up in splendid isolation from human kind and their dreadful conventions, turn out to be veritable geniuses?

Is it that the young, when they reach four or five, begin to inherit the penalties of some original sin that Mr. Hoyle has left undefined? On the other hand, the blighting effect of the exposure to society is real. People who have given their lives to studying what happens to children in school—from Herbert Read to John Holt—leave us in no doubt about this.

We might put the matter in another way. Children have wonderful natural instincts for coping with direct experience. The trouble comes when they start trying to use abstractions. There are apparently good (mathematics) and bad abstractions (theology), abstractions which increase the potency of thought and abstractions which involve us in nightmares of self-deception. The child may have an infallible grasp of geometrical realities, but he can't *tell* you about them. He can use them but not discuss them. Actually, few accomplished adults can explain well the things they do best, and sometimes, when they try, it confuses them. Knowing and teaching have different levels of knowledge.

Yet Mr. Hoyle has some good arguments on his side. The stubborn youngsters, like himself as a child—or like the French mathematical genius, Galois, who at twenty-one set down the essentials of the theory of groups on a single sheet of paper the night before he was killed in a duel—sometimes preserve the freely inventive capacities of their early years. Galois was practically untouched by school—he ignored all that happened there except the classes in mathematics, which interested him. Hoyle followed a similar course. No teacher was ever able to run his life or organize his mind. He thought only about what he wanted to think about.

Are teachers then wholly unnecessary? Not at all; but Hoyle has distinct ideas about what they should do:

Having taught mathematics for twenty years myself, at the level of the dreaded and famous Cambridge Tripos, I have strong opinions on this subject. In the first place, students should never be *taught* mathematics at all. Everybody should learn individually, because each person has a different pace. Setting the pace right is critical, because all important ideas must be clearly and completely learned, to a point where ideas and techniques become wholly instinctive. A slow pace does not matter very much, because there is ample time in life to become an expert mathematician, almost regardless of pace. What does matter, crucially, is for the learning to be so precise and complete that returning over the old ground is scarcely ever necessary. It is just because students attempt to go too fast, and are then forced into endlessly reviewing old material, that so many of them fall by the wayside.

Now, how is the student to learn for himself? By solving puzzles. The function of the teacher should be, first, to select in a wise way the material on which the puzzles are based, second, to make sure the puzzles are well-suited in difficulty to the sophistication of the student, third, to answer questions, and finally, if the teacher is capable of it, to give an occasional word of inspiration.

What is this book about? It is about ten different ways of looking at the universe and trying to understand it.

FRONTIERS

Loyalty Beyond Humanity

[These two quite brief essays by Arthur Morgan came to us from the unpublished materials left after his death, and are printed here through the kindness of Margot Ensign, who is engaged in ordering his literary estate. Dr. Morgan died at the age of ninety-seven in 1975.]

AMERICAN pioneers drove back the Indians or killed them off, as inferior creatures of no value. Had they deep understanding of and interest in the nature of human society they would have realized that each distinctive native group had a social pattern, a thought pattern and a language pattern of its own which might have great possible contributions to make to the human quest for values. In general, Europeans had this same shortcoming in their relations with "primitive" peoples over the world. Much of value has been lost as a result of that shortcoming.

This shortcoming in some degree was the result of primitive group loyalty. It was one group against the world. Had a sense of universal human brotherhood existed there might have been greater comprehension of the values in other ethnic groups.

Probably patriotism at first related only to the clan or community which constituted the primitive "sovereign" group. Within that clan or community one might live for the whole; might in emergency give his life for it. As the group grew larger the range of patriotism expanded. Visions of loyalty to all mankind emerge, and claim the support of some men. If "civilized" men could have believed that "primitive" men had great contributions to make, the former might have regarded the latter more highly.

We have not projected that way of thinking beyond the human species. Other species, of mammals especially, have characters that might make great contributions to life if evolution should progress to a condition where their mental processes were as acute, as ranging, as penetrating and as generalizing as ours. In a world where such a process had taken place there might be variety of temperament, insight and wisdom which would add to the richness and variety of life values.

Should not man's loyalty transcend loyalty to the human species? Should it not be loyalty to life as such? Then, would not such loyalty express itself practically in protecting the continued existence of other species, making possible their continued evolutionary development?

As a fantasy, suppose that such development had taken place, and that other species could present as valid claims as man for occupying the earth. Could man be "democratic" under such circumstances? Could he find tolerance and a sharing of the earth with other species?

Is it more than a sort of biological accident that this condition does not now exist? If so, is not any ethic that limits itself to human welfare a pragmatic rather than a universal ethic?

Suppose that in the course of time men develop facilities for cosmic transportation and visit other inhabited planets. Could they be "democratic" and share new ground with other species, or would they begin extermination as pioneers in America did in dealing with the Indians? Is it anything more than a cosmic accident that there are not such planets nearby? Is an ethic that would not meet such conditions a universal ethic?

The point I am making is that for an ethic to be universal it would need to be equal to such conditions, even though, through cosmic chance such conditions do not exist to our knowledge. In other words, adequate loyalty needs to be more than to one's clan or one's country or one's species or one's planet. It must be equal to any cosmic possibilities.

The ultimate loyalty is the loyalty to value, however that value may appear. The greater value should have loyalty over the lesser value.

What is value? Value is that which causes experience of worth—experience which of itself is better than absence of that experience. There are hierarchies of value. Wisdom and ethics consist of holding to the relatively greater value, against pressure to act otherwise. The patriot gives his life if necessary because he believes that the values which will be created or preserved by his giving his life are greater than those which would be created or

preserved by his keeping his life. This patriotism should extend beyond family, beyond clan, beyond nation to all mankind. It should, so far as there is vision to see, extend beyond mankind.

Pragmatically this extension of "patriotism" or ethics seems nonsense. But man craves to go beyond the pragmatic, the immediately practical, toward this universal.

There are two approaches to the universal; one, through sheer speculation, as in speculating on immortality of immaterial spirits after the death of the body; the other by extension or extrapolation of experience. This latter is legitimate, but dangerous. . . .

June, 1945

THE PURSUIT OF REALITY

A friend of mine, who is of a philosophic turn of mind, was in the habit of climbing alone in the desert mountains of California. One day as he was climbing, busy with his thoughts and not with the way, he found he was following a wild goat path, and had reached a point from which he could not retreat. In his effort to retrace his steps he fell over a cliff, and for two days lay helpless in the desert sun with his legs broken, before he was found by his friends.

There followed a long period of illness during which he was for much of the time in a delirium. His troubled mind kept pursuing the thoughts that were with him at the time of his accident.

He thought he was pursuing "reality," who was within sight, but who constantly hid her face and eluded his grasp. Repeatedly he would steal upon her quietly, and then, just as he was to take hold of her, she would cover her face and slip away, leaving in his hands only the appearance she had been wearing at the moment. For long periods he continued this pursuit, with greater and greater cunning, but at each moment when capture seemed certain he would find in his grasp only the momentary covering or appearance of reality, while she herself had again escaped.

But at last he was more fortunate. Through a chance circumstance reality was caught in a corner from which there was no way of escape. As he took hold of her she turned her head away and made a last effort to elude him, while in a confession of despair she murmured, "The same! The same!" And then he discovered that having reality in his grasp he had only a succession of manifestations, forms, or appearances. Her confession was that each time he had taken hold of her when she seemed to escape, the appearance or manifestation which he held in his hand was in truth, reality, and that she has only an endless succession of such forms or phases or manifestations.

This story of my friend seemed to give expression to an intuition I have about reality. We constantly think of our daily experiences as being of small import, as being only a mantle which hides from us the great importance which we call reality. I believe we should be nearer right in considering the day's experience as being a phase of reality itself. If the day's experience is not important, then nothing in all creation, nothing in time or space, in heaven or hell, nothing in the phenomenal world or the noumenal world, is important.

To give maximum value and significance to the experiences of the day; maximum significance and value in consideration, not of today alone, but of all the days that are to come—that is morality.

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ARTHUR E. MORGAN