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NON-DARWINIAN EVOLUTION

IT is becoming increasingly difficult to give proper definition to what we call "science." A great deal that is useful can of course be said on the subject, but little that has finality. Physics, during the past twenty years or so, seems to have broadened its scope to include an element of consciousness, and in this case what has happened to the classic scientific requirement of complete "objectivity"? Perhaps we can say that, ultimately, science is the attempt to understand the nature and dynamics of the world around us, with the intention of *complete* impartiality, an attitude which must include a willingness to re-examine and question even the most basic assumptions on the basis of which current scientific investigation proceeds.

Two writers have helped to provide this view of science. One of them is Thomas S. Kuhn, whose book, *The Structure of Scientific Revolutions* (University of Chicago Press, 1962 and 1970), shows how fundamental changes in scientific conceptions take place. The other is Abraham Maslow, who wrote *The Psychology of Science* (Harper & Row, 1966) in an effort to broaden the base of scientific inquiry to include the region of subjective experience—a truly revolutionary objective.

From these studies it seems clear that while life might be identified as the will to *be,* human life is characterized (at its best) as the will to *know.* Science, then, inclusively considered, is the exercise and fruit of that will. Yet as we know, the conclusions of science are subject to expansion, additions, and corrections. And as Kuhn shows, alterations in the scientific outlook come in waves and often involve intense controversy and struggle. There is reason to think that such a wave is now gathering strength. This is best understood by illustration.

Critics of Darwin's doctrine of Natural Selection have been numerous, starting with Alfred Russel Wallace, and it now seems generally agreed that while in its various forms natural selection may throw light on the processes of survival, it does little or nothing to account for the *origin* of species, which remains a mystery. Writers who combine scientific knowledge with the "essay" form of questioning have repeated this criticism, as for example Loren Eiseley in *The Immense Journey,* and also Joseph Wood Krutch. A few years ago, Tom Bethell, one of the editors of *Harper's,* put his finger on the fundamental weakness of the Darwinian claim, saying (in *Harper's* for December, 1978):

> Natural selection can "explain" evolution or extinction millionaires or paupers, competition or mutual aid. In the end it explains nothing because it can explain everything. It is accused of being an unfalsifiable theory, which, according to the influential philosopher of science, Karl Popper, removes it from the realm of the scientific. Darwinian theory Popper now says, is a "metaphysical research program."

Then, generalizing toward the end of his article, Bethell wrote:

> It is not often enough stressed that there are really two logically separate theories of evolution: the theory *that* evolution occurred (which can be simply stated as the theory that all organisms have, and have had, parents); and Darwin's theory as to *how* evolution occurred—the theory of natural selection. The latter only is under attack. If Darwin's theory were decisively undermined, it would still be possible to argue that evolution had taken place as a result of mechanisms not yet understood. Some scientists do take this position. Darwin debunked does not leave us with Genesis as the only alternative. Nevertheless, there are those who argue that the abandonment of the evolutionary mechanism would inevitably lead to doubts that evolution occurred at all. That is undoubtedly why Darwin is still defended so stoutly—

not because his supporters are capitalists but because they are materialists.

This last claim is of profound importance in grasping what seems at stake for those who now take part in the evolution/creation controversy. It is no longer a question of what the "facts" prove or disprove, but a moral issue. The underlying importance of evolution for most scientific thinkers is in its apparent justification of the right and the human necessity to *think* reasonably and as impartially as possible about the nature of man, without submitting to the biases of dogma or inherited religion. As history shows, institutional religion not only stands for opposition to freedom of thought; it has also been guilty of alliances with tyranical political power and systematic cruelties of oppression. Why else would decent and intellectually active men adopt materialism—which is neither attractive nor inspiring as a philosophy—except as a weapon against ruthless thought control? As Bertrand Russell pointed out more than fifty years ago, "the materialistic dogma has not been set up by men who loved dogma, but by men who felt that nothing less definite would enable them to fight the dogmas they disliked."

Materialism, in short, was an all-purpose bludgeon which would not only beat down the claims of religious doctrines which defied the facts of nature—such as the fact that the earth revolves around the sun—but would also prevent mere "beliefs" from ever again gaining a hold on human minds in the mass, weakening if not destroying their capacity to think for themselves. Russell added the comment that, "as ancient orthodoxies disintegrate, materialism more and more gives way to scepticism." Which is to say that when scientists come to feel that it is no longer necessary to combat theological prejudice and power with the politicalized weapon of materialism, they feel able to openly think freely and no longer demand of each other a "united front" against the waning power of dogma.

Confirmation of this analysis now comes from another article by Tom Bethell, in *Harper's* for February, 1985. His title is "Agnostic Evolutionists—The Taxonomic Case Against Darwinism," in which he assembles what amount to anti-Darwinist views among the scientists in a branch of biology—the taxonomists, including the paleontologists who study fossil remains. Among the taxonomists is an articulate school of researchers who deny that the fossil record supplies indisputable evidence of the lines of biological descent and the parentage of present species. Bethell read them and talked to several men eminent in the field. He also talked to Richard Lewontin, Agassiz Professor of Zoology at Harvard, author of *Human Diversity,* which came out in 1982. It becomes evident that presentday scientists, although they are believers in the general idea of evolution—they prefer "natural" to "supernatural" causes when it comes to the living inhabitants of the world—are no longer able or willing to jump to conclusions about how evolution took or takes place. Lewontin told Bethell:

> "Look, I'm a person who says in this book that we don't know anything about the ancestors of the human species." (He writes on page 163: "Despite the excited and optimistic claims that have been made by some paleontologists, no fossil hominid species can be established as our direct ancestors. . . .") "All the fossils which have been dug up and are claimed to be ancestors—we haven't the faintest idea whether they are ancestors. Because all you've got . . . is Homo sapiens there, you've got *that* fossil there, you've got another fossil *there* . . . this is time here . . . and it's up to you to draw the lines. Because there *are* no lines. I don't think any one of them is likely to be the direct ancestor of the human species. . . . The only way you can know that some fossil is the direct ancestor is that it's so human that it *is* human. There is a contradiction there. If it is different enough from humans to be interesting, then you don't know whether it's an ancestor or not. And if it's similar enough to be human, then it's not interesting."
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> He returned to his chair and looked out at the slanting rain. "So," he said. "Look, we're not ever going to know what the direct ancestor is."

Some early paragraphs in Bethell's article are useful as background on the entire subject of evolution. He says:

> In the public mind, challenges to Darwin's theory of evolution are associated with biblical creationists who periodically remove their children from schoolrooms where they are taught that man evolved from monkeys. Most Americans know about the Scopes trial of 1925, in which a Tennessee high school teacher was fined $100 for teaching evolutionary theory. Four years ago there was the trial in San Diego in which Kelly Seagraves, director of the Creation Science Research Center, unsuccessfully sued the state of California over regulations governing the teaching of evolution in California public schools. (Seagraves wanted science teachers to be required to mention pertinent passages from the Book of Genesis.) What most people do not know is that for much of this century, and especially in recent years scientists have been fighting among themselves about Darwin and his ideas.

Readers with a file of MANAS will find the Segraves action reported in the June 17 and September 16, 1981, issues in "Children." A passage from the Sept. 16 discussion may be of interest:

> The California attorney, Richard K. Turner [who represented Segraves] has explained that he hopes to show before the Supreme Court that "the theory of evolution is just another religious faith." He will maintain, he said, that evolution is a "poor" theory because scientists fight over it and that therefore believing in it is "akin to believing that there's a God."
>
> Such arguments, one might say, make the best possible justification for the First Amendment and the separation of church and state, since it shows the futility of attempting to settle such matters by resorting to the courts. Evolution is an incomplete rather than a poor theory. More than half a century ago scholarly criticism pointed out that the world of learning is amply convinced of the fact of evolution, although *how* it proceeds is by no means agreed upon or established. There can be no rational objection to pointing this out, but if it should lead to making the uncertain advance of science into an excuse for imposing a pseudo-scientific interpretation of Bible teaching on schoolchildren there is an obvious misuse of both reason and the courts.

Actually, one could argue that the fact that scientists disagree about how evolution takes place makes it a *good* theory—that is, one without rigidity and capable of correction and development. Its contrast is with the certainty claimed for religious dogma or literal interpretation of scripture, which can hardly avoid authoritarianism in practice. People who don't recognize this distinction or are unwilling to admit it obviously live in another universe of discourse.

On the question of the disagreement among scientists, Tom Bethell says:

> Scientists are largely responsible for keeping the public in the dark about these in-house arguments. When they see themselves as beleaguered by opponents outside the citadel of science, they tend to put their differences aside and unite to defeat the heathen. The layman sees only the closed ranks. At the moment, with creationism apparently quiescent, we can, if we listen hard enough, hear fresh murmurs of dissent within the scientific walls. These debates are more complicated, perhaps, than the old contest, Science vs. Religion, but they are at least as interesting, and sometimes as heated.

One of the taxonomists, an eminent member of the group known as "cladists," Colin Patterson, in 1981 gave a talk to other biologists at the American Museum of Natural History (in New York) in which he questioned the soundness of evolutionary theory, except as a general proposition; he dared to suggest that belief in evolution is even for scientists virtually an act of faith! When Bethell interviewed Patterson eighteen months after that talk, he said:

> "I really put my foot in it. . . . I compared evolution and creation and made a case that the two were equivalent. I was all fired up, and I said what I thought. I went through merry hell for about a year. Almost everybody except the people at the museum objected. Lots of academics wrote. Deluges of mail. 'Here we are trying to combat a political argument,' they said, 'and you give them ammunition!' "
>
> "They hold the theory very dear. I found out that what you say will be taken in 'political' rather than rational terms."
>
> Patterson told me that he regarded the theory of evolution as "often unnecessary" in biology. "In fact," he said, "they could do perfectly well without it." Nevertheless he said, it was presented in textbooks as though it were "the unified field theory of biology," holding the whole subject together—and binding the

profession to it. "Once something has that status," he said, "it becomes like religion."

If direct evidence of evolution is so hard to find, why do so many biologists at least "believe" in it? Bethell talked to two taxonomists or cladists on the staff of the Museum of Natural History, Gareth Nelson and Norman Platnick, who have together written a book, *Systematics and Biogeography*, hoping to get, among other things, an answer to this question. Nelson told him that very little had been learned from fossils and that its importance had been exaggerated. That some fossils look alike is by no means evidence that they are "related" or in an ancestral line. Speaking of this, Bethell says:

> One reason why many laymen readily accept evolution as fact is that they have seen the famous "horse sequence" reproduced in textbooks. The sequence, which shows a gradual increase in the size of the horse with time, is dear to the hearts of textbook writers, in large part because it is on display at the American Museum of Natural History. For obvious reasons, the museum staff are uncomfortable going on record about the horse sequence, but when Niles Eldredge, a curator in the department of invertebrates at the museum and co-author, with Stephen Jay Gould, of the "punctuated equilibria" theory of evolution (organisms stay the same for millions of years, then change quickly rather than gradually, as Darwin believed), was asked about it once, he said:
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> "There have been an awful lot of stories, some more imaginative than others, about what the nature of that history [of life] really is. The most famous example, still on exhibit downstairs, is the exhibit on horse evolution prepared perhaps fifty years ago. That has been presented as the literal truth in textbook after textbook. Now I think that that is lamentable, particularly when the people who propose those kinds of stories may themselves be aware of the speculative nature of some of that stuff."

Bethell brought this up with Platnick, who said "he thought horse fossils had not yet been properly classified, or even exhaustively studied." He questioned him further, wanting to know "whether Platnick believed that evolution had occurred."

> He said he did, and that the evidence was to be found in the hierarchical structure of nature. All organisms can, as it were, be placed within an internested set of "boxes." The box labeled "gazelles" fits in the larger box labeled "ungulates" (animals with hoofs), which fits inside the "mammals" box, which fits inside the "tetrapods" (four-footed animals), which fits inside "vertebrates." The grand task of taxonomy, Platnick said, is to describe this hierarchical pattern precisely, and in particular to define the traits that delineate the boundaries of each "box."

Asked a similar question, Lewontin said:

> "It is an empirical claim, I think, that all living organisms have living organisms as parents. The second empirical claim is that there was a time on earth when there were no mammals. Now if you allow me those two claims as impirical, then the claim that mammals arose from non-mammals is simply a conclusion. It's the deduction from two empirical claims. But that's all I want to claim for it. You can't make the direct empirical statement that mammals arose from non-mammals."

The core belief of the evolutionists, then, is that all organisms have parents. "No one," Bethell summarizes, "has ever found an organism that is known not to have parents, or a parent. This is the strongest evidence on behalf of evolution." He makes this interesting conclusion to his article:

> Our belief, or "faith," that, as Patterson says, "all organisms have parents" ultimately derives from our acceptance of the philosophy of materialism. It is hard for us to understand (so long has materialism been the natural habitat of Western thought) that this philosophy was not always accepted. . . . In his 1838 *M Notebook* Darwin wrote:
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> "To avoid stating how far, I believe, in Materialism, say only that the emotions, instincts, degrees of talent, which are hereditary are so because brain of child resembles parent stock." Darwin realized that the climate had changed—that evolution was "in the air"—in 1858 when he was jolted by Alfred Russel Wallace's paper outlining a theory of the mechanism of evolution very similar to his own.
>
> The theory of evolution has never been falsified. On the other hand, it is surely also true that the positive evidence for evolution is very much weaker than most laymen imagine, and than many scientists want us to imagine. Perhaps, as Patterson says, that

> positive evidence is missing entirely. The human mind, alas, seems on the whole to find such uncertainty intolerable. Most people want certainty in one form (Darwin) or another (the Bible). Only evolutionary agnostics like Patterson and Nelson and the other cladists seem willing to live with doubt. And that, surely, is the only truly scientific outlook.

What might be added to this conclusion? One thing seems important. In the nineteenth century the modern world was *ready* for the freedom of thought and inquiry that materialism seemed to provide. Materialism did indeed free us of the shackles of dogma. But today, in its linkage with technology run wild, materialism has us fast in its own shackles, which may prove just as confining as the bonds of inherited belief. It seems fair to say that we are now ready, not for a return to dogma, but for a use of our reason which goes beyond physical laws and processes, and the only thing that slows us down is the fear that a free play of the imagination may lead to as many extravagances as religion ever proposed.

By what discipline will metaphysical wondering be ordered and guided? This question remains unanswered save by a few philosophers—W. Macneile Dixon for one, who illustrates it in *The Human Situation.* Meanwhile our readiness for a change in relation to ideas about evolution is abundantly shown in a book which had attention here recently—*The Bone Peddlers* (Macmillan) by William R. Fix. Surely, some kind of awakening of the human spirit is now going on.

REVIEW
A CONTINUOUS DELIGHT

PRIMO LEVI, an Italian chemist who in 1977 retired from his career with a Turin chemical manufacturer supplying the paint industry with finishes, enamels, and synthetic resins, in order to write obliquely autobiographical books—which have made him famous—has produced a volume of recollections that will probably make him equally well known in the United States—*The Periodic Table* (Schocken, 1984, $16.95). The chapters have the names of elements, twenty-one in all, which generated his memories. The author has a subtle and perceptive mind which, combined with a command of language (his translator, Raymond Rosenthal has an equal skill), makes for reading that is a continuous delight. He is an Italian Jew that experienced little of antisemitism until he was taken by the Nazis to Auschwitz during the war—an experience which he survived and told about in another book.

The Periodic Table has few real horrors in it, and occasional unpleasantness has light-hearted description. What one is held by and remembers is his characterizations of his friends and other people. Here, for an example, is his account of a classmate at the Chemical Institute, Sandro Delmastro. Sandro was later murdered by the Fascists for joining the Resistance in 1944. Levi ends the chapter (titled "Iron") by saying:

> Today I know that it is a hopeless task to try to dress a man in words, make him live again on the printed page, especially a man like Sandro. He was not the sort of person you can tell stories about, nor to whom one erects monuments—he who laughed at all monuments: he lived completely in his deeds, and when they were over nothing of him remains—nothing but words, precisely.

But the words are extraordinary. Here is Sandro:

> He was born in Serra d'Ivrea, a beautiful but niggardly region. He was the son of a mason and spent his summers working as a shepherd. Not a shepherd of souls: a shepherd of sheep, and not because of Arcadian rhetoric or eccentricity, but happily, out of love for the earth and grass and an abundance of heart. He had a curious mimetic talent when he talked about cows, chicken, sheep, and dogs he was transformed, imitating their way of looking, their movements and voices, becoming very gay and seeming to turn into an animal himself, like a shaman. He taught me about plants and animals, but said very little about his family. His father had died when he was a child, they were simple, poor people, and since the boy was bright, they had decided to make him study so that he would bring money home: he had accepted this with Piedmontese seriousness but without enthusiasm. He had traveled the long route of high school—*liceo*—aiming at the highest marks with the least effort. He was not interested in Catullus and Descartes, he was interested in being promoted, and spending Sunday on his skis and climbing the rocks. He had chosen chemistry because he had thought it better than other studies; it was a trade that dealt with things one can see and touch, a way to earn one's bread less tiring than working as a carpenter or a peasant. . . .
>
> And finally, and fundamentally, an honest and open boy, did he not smell the stench of Fascist truths which tainted the sky? Did he not perceive it as an ignominy that a thinking man should be asked to believe without thinking? Was he not filled with disgust at all the dogmas, all the unproved affirmations, all the imperatives? He did feel it; so then, how could he not feel a new dignity and majesty in our study, how could he ignore the fact that the chemistry and physics on which we fed, besides being in themselves nourishments vital in themselves, were the antidote to fascism which he and I were seeking, because they were clear and distinct and verifiable at every step, and not a tissue of lies and emptiness, like the radio and newspapers? . . . He was killed with a tommygun burst in the back of the neck by a monstrous child-executioner, one of those wretched murderers of fifteen whom Mussolini's Republic of Salo recruited in the reformatories. His body was abandoned in the road for a long time, because the Fascists had forbidden the population to bury him.

During the early years of the war Levi was given a job with a group that was covertly part of the resistance. His first assignment, performed at the Institute, was to purify benzene. His account of the first stage of this process gives the reader a feeling of what it is like to be a chemist, a rare sort of communication provided at intervals throughout the book. The craft of the chemist has qualities which might be compared to the practice of a secular religion. He says:

> Distilling is beautiful. First of all, because it is a slow, philosophic, and silent occupation, which keeps you busy but gives you time to think of other things, somewhat like riding a bike. Then, because it involves a metamorphosis from liquid to vapor (invisible), and from this once again to liquid; but in this double journey, up and down, purity is attained, an ambiguous and fascinating condition, which starts with chemistry and goes very far. And finally, when you set about distilling, you acquire the consciousness of repeating a ritual consecrated by the centuries, almost a religious act, in which from imperfect material you obtain the essence, the *usia*, the spirit, and in the first place alcohol, which gladdens the spirit and warms the heart. I took two good days to obtain a fraction of satisfying purity: for this operation, since I had to work with an open flame, I had voluntarily exiled myself to a small room on the second floor, deserted and empty and far from any human presence.

After the war and the year spent at Auschwitz, Levi found a job in a paint factory which made varnish, finding ways to hasten the hardening of slow-drying varnish and to slow down the drying of finishes that dried too fast. It was a time of privation for all Italians, "when meat and coal were still rationed, nobody had a car, and never in Italy had people breathed so much hope and so much freedom." Living with the agony of so recent a past, Levi found himself needing a form of expression other than chemical arts.

> . . . I had returned from captivity three months before and was living badly. The things I had seen and suffered were burning inside of me; I felt closer to the dead than the living, and felt guilty at being a man, because men had built Auschwitz, and Auschwitz had gulped down millions of human beings, and many of my friends, and a woman who was dear to my heart. It seemed to me that I would be purified if I told its story, and I felt like Coleridge's Ancient Mariner, who waylays on the street the wedding guests going to the feast, inflicting on them the story of his misfortune. I was writing concise and bloody poems, telling the story at breakneck speed, either by talking to people or by writing it down, so much so that gradually a book was later born: by writing I found peace for a while and felt myself become a man again, a person like everyone else, neither a martyr nor debased nor a saint: one of those people who form a family and look to the future rather than the past.

Later he formed a consultant chemist group with a friend and did jobs like figuring out how to make lipstick stick to the lips instead of spreading in surface veins to adjacent parts of the face. While doing this work he came to appreciate the psychology of customer relations, which he calls Customer Service, of which he says:

> It is perhaps the most hygienic of the specialties that constitute the decathlon of the factory chemist: the specialty that best trains him in eloquence and improvisation, prompt reflexes, and the ability to understand and make yourself understood; besides, you get a chance to travel about Italy and the world, and it brings you into contact with all sorts of people. I must also mention another peculiar and beneficent consequence of CS: by pretending to esteem and like your fellow men, after a few years in this trade you wind up really doing so, just as someone who feigns madness for a long time actually becomes crazy.

Now who, from being a consultant chemist, would think of all those things which come to be involved? The reflections continue:

> In the majority of cases, at the first contact you have to acquire or conquer a position superior to that of your interlocutor: but conquer it quietly, graciously, without frightening him or pulling rank. He must feel you are superior, but just a little: reachable, comprehensible. Never, but never, for instance, talk chemistry with a nonchemist: this is the ABC of the trade. But the opposite danger is much more serious, that the customer outranks you: and this can easily happen, because he plays at home, that is, he puts the products you're selling him to practical use, and so he knows their virtues and defects as a wife knows her husband's, while usually you have only a painless, disinterested often optimistic knowledge of them, acquired in the lab or during their production.

He knows all this, but explains that he can't apply it. "I am not a good CS, and I fear that by now it is too late for me to become one." He is, we suspect, too honest a man. Yet he understands exactly how such things work.

That is part of the essential charm of the book. You would like to know the writer better and the photograph on the flap, showing a gentle, kindly, bearded face, someone in his sixties—someone who is likely to always know more than he says—is a help in this.

COMMENTARY
A DISTANT REMEDY

IT is wholly natural for human beings to want to know, to be certain, to leave no stone unturned when it is a matter of finding things out, yet, on the other hand, the assumption that finality has at least been achieved seems always to get us into trouble.

Consider the content of this week's lead article. It has to do with science and religion and their inability to get along save in the case of very good science and very good religion. This is not difficult to discern and will be accepted by most as a general statement, but then if someone asks you to define very good science and very good religion, you are almost certain to get into more trouble.

A definition divides things up, so you are not going to find out about wholeness by the use of definition. Great campaigns result from attack on definitions which see only a part of what is examined. The campaigns seem necessary at the time—as for example the campaign conducted by Galileo, and before him, Giordano Bruno, and after him Charles Darwin, for freedom of scientific thought. These men did not really attack religious truth, but only the prohibitions of an institutional version of it, but look at what they were called by the aggressive defenders of the religious institutions of the day. And one of these pioneers, Bruno, was burned at the stake for refusing to pretend to conformity to what he was unable to believe—his crime was integrity!

But today the current runs in the other direction. Institutionalized science has placed the stamp of its materialistic assumptions—matter is all, survival and self-interest are the laws of life—on our civilization, and we are paying an almost immeasurable price for submission to this low-rating of the human species.

What can we do about this aspect of the human situation? We can begin by recognizing the duality, the inevitable ambiguity, of very nearly everything worth saying. We lose finality but we gain freedom, and we reduce institutional stances to what they are—never more than half-truths, because institutions which rely on half-truths, are always threatened by really open minds. Politics lives by half-truths, so do tyrannies. Free humans insist on keeping open minds, and suffer the consequences. There is probably no remedy for this, until there are more open minds.

CHILDREN
. . . and Ourselves

RELIGIOUS STUDIES

THE first two books of a new series, "Religious Traditions of the World" published by Harper & Row (paperbacks, $3.69 each), are *Religions of Japan* by H. Byron Earhart and *Religions of Africa* by E. Thomas Lawson. These books, which are slight in size, have the "feel" of texts and seem written more as the sociology of religion than a study of religion itself. Ever since Heinrich Zimmer demonstrated in his *Philosophies of India* (Bollingen), edited and completed after Zimmer's death by Joseph Campbell, that it is possible to write about religions in ancient and far-off lands in a way that shows the depth of conviction with which they have been and are believed, a new spirit has begun to be present in books on religion. While this quality is asserted in these first members of the Harper's series, the writers do not make it felt. They are, however, broadly informing.

For example, in the introductory chapter of the book on Japan, there is an informing passage on the Japanese language:

> The earliest origins of Japanese are lost in history, much as are the origins of the Japanese people. Whatever the ancient influences upon the Japanese language, it is not spoken by any other people. Unlike the closely related Romance languages such as Italian, French, and Spanish, the Japanese language is quite different from Chinese: spoken Japanese does not feature a distinct pattern of tones, as does spoken Chinese. One of the most interesting characteristics of Japanese—and one quite difficult for Westerners to learn—is the many levels of politeness expressed. The Japanese language is "hierarchical," in the sense that different verbs, verb endings, nouns, and other forms must be used depending on the hierarchical social relation between speaker and listener. A professor will use quite different language to speak to a student than the student will use to speak to the professor.
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> Japanese was not a written language until Chinese writing symbols ("characters" or "ideographs") were borrowed. These Chinese symbols or characters are identical (or slightly abbreviated) in Japan (and in Korea). But in Japan, two phonetic systems were used to retain the structure and grammar of spoken Japanese while borrowing elements of written Chinese.

There is this interesting comment on Japanese art:

> Nature is a major subject in poetry and also in graphic art. Nature is not depicted, as it often is in the West, as the creation of God—rather, nature itself is practically divine. Landscape painting is one of the favorite forms of graphic art: mountains, rivers, trees, waterfalls and other natural scenes grace paintings, folding screens, fans, and woodblock prints.

The original religion of the Japanese is Shinto, called an "informal loose tradition of beliefs and practices." Involved, we are told, is a religious concern with Kami, which may refer to "one or many 'deities'." Shinto did not, apparently, become an obstacle to the spread of Buddhism, which was brought to Japan from China in the sixth century A.D., it being first adopted by the aristocracy and later by nearly everyone. Little is said about Buddhist philosophy, the emphasis being on ritual practices.

Forms of Taoism and Confucianism were also informally adopted, again mostly in ritual practices. Christianity has had its influence, although not widely accepted, and there have been various innovations in the form of "New Religions," and all of these religions or religious influences are called by the author the "seven major areas of Japanese religion" in what seems an indistinct blend. The individual is said "to participate in a number of separate traditions as they form an integral part of his or her way of life." But since, as Mr. Earhart says, "When Buddhism was accepted, in Japan, it was more than just a set of principles or a religious faith—it was part of a total way of life or civilization"—one cannot help wishing for another kind of writing that would convey some realizing sense of how the everyday life of the people was shaped by Buddhism. But for this one must read Lafcadio Hearn, who wrote a dozen and more volumes on the life of the Japanese people and made

renderings of their stories and literature. One book that is especially liked by readers in this country is Hearn's *Gleanings in Buddha Fields*, which has incomparably beautiful passages on Buddhistic thought. We might add that Kenneth Rexroth edited a selection of Hearn's writings on Buddhism (Ross-Erikson, 1977) that seems to go to the heart of Buddhism in Japan.

In *The Religions of Africa*, the author, Thomas Lawson, explains that he will concentrate on the beliefs of the Zulu and the Yoruba peoples. The Zulu live in South Africa and speak a set of languages known as Bantu. They number about four million and are today under the domination of the white South African government. The Yoruba are more than seven million. They are free and are "an important part of the complex modern state of Nigeria."

The Zulus, confined to a small area of their original homeland in Natal, are today "strongly insistent on their autonomy and freedom." Their leaders are among "the most eloquent spokesmen for the rights of all black people in South Africa." Albert Luthuli, a Zulu chief, was awarded the Nobel Peace Prize for arguing the case for relief from oppression and for Zulu rights. Their religion is described by examples of its practice at the time of birth and of death, and the various magical practices, including sorcery, used to do or overcome evil. Here, too, it is the sociology of religion which has attention.

The coming of the white settlers, both Boer and English, had great impact not only on the social but also the religious life of the Zulus. Prof. Lawson says:

> When the Christian missionaries, in all their sincerity, translated the Bible into Zulu, they called their Christian God Unkulunkulu, thinking that that was the name of the Zulu God. But for the Zulu, Unkulunkulu was the first man, not the God of the Sky. This first man was a creator, however. After having come from the sky he was the creative source of all other human beings. The Christians showed their inability to understand by confusing two different roles.

The Zulus, however, have proved themselves adaptable and able to recognize "what is of value in the thoughts and acts of the people who came from across the sea."

> The values of a formal educational system, the discoveries of science, the political and social theories that describe and explain human behavior have all made an impression. And many Zulu have set as their goal the acquisition of new knowledge in whatever context it is available. Some of the white universities have been accessible, and some have not. When they are accessible, the Zulu have used them for their own purposes. When they are not the Zulu have devised their own means for educating themselves. The Zulu have demonstrated that they are willing to face the challenges of a new world and have the resources to meet the challenge no matter what the whites have decided about the meaning and end of Zulu life.

The Yoruba, who are found in Ghana, Togo, and Dahomey as well as Nigeria, may number ten million in all. Many of them were brought to the New World by slave dealers and some of the Yoruba traditions are partially practiced by blacks in Cuba, Brazil, and even New York City. The Yoruba believe that humans are both physical and spiritual. Birth into the physical world entails a loss of memory and this "memory of destiny needs to be recovered or rediscovered." Custom and the arts of divination are involved, and also the practices of agriculture.

Again, the reader longs for a more philosophical approach which gives attention to the underlying ideas of the religions of Africa. Fortunately, there are books which deal with these ideas in a way that enables one to remember them, while sociological detail is easily forgotten. The volume that we have found most helpful at this level is Janheinz Jahn's *Muntu*, issued by Grove Press in 1961. From Jahn's chapter, "African Philosophy," we take a passage quoted from Adebayo Adesanya, a Yoruba writer, who describes the harmony of African conceptions:

> "This is not simply a coherence of fact and faith," he writes, "nor of reason and traditional beliefs, nor of reason and contingent facts, but a

> coherence or compatibility among all the disciplines. A medical theory, e.g., which contradicted a theological conclusion was rejected as absurd and vice versa. This demand of compatibility among all the disciplines considered as a system was the main weapon of Yoruba thinking. God might be banished from Greek thought without any harm being done to the logical architecture of it, but this cannot be done in the case of the Yoruba. . . . Philosophy, theology, politics, social theory, land law, medicine, psychology, birth and burial, all find themselves logically concatenated in a system so tight that to subtract one item from the whole is to paralyze the structure of the whole.

Jahn comments that this unity "holds not only for Yoruba thought, but presumably also for the whole of traditional thinking in Africa, for African philosophy as such." This author draws on five works, all appearing since the second world war, for the sources of African religious philosophy—covering the thought of five different peoples—five systems which "agree basically with one another." Using material supplied by contemporary writers—including Frantz Fanon, the black psychiatrist—Jahn's book has a vitality not easy to find in academic studies.

FRONTIERS

Two Life Stories

SOMETHING of the story of Mildred Loomis, born on January 5, 1900, now co-editor of the quarterly newsletter, *Green Revolution,* is told in the Winter 1984 issue by Kevin Kelly. Today Mrs. Loomis is called the "Grandmother" of the Counter Culture, since her life-long interest has been in "small, caring, land-based communities, forming bioregions to replace state and national boundaries," with her fundamental inspiration coming from the thinking and writing of Ralph Borsodi. Late last year she suffered a stroke, from which she is now convalescing, endeavoring to retrain her muscles so that she can again write and type. Such biographical sketches have a particular value in showing how various individuals have emancipated themselves from the assumptions and habits of conventional life and undertaken careers of independent vision.

Of German and Danish parents, she grew up on a farm in Blair, Nebraska, revealed her talents by getting A grades in high school and editing the school paper. She went to the state university and in her junior year decided to study business administration in order to go into advertising as a means of repaying her parents for supporting her. But the first job she got was as a secretary for a large, Sioux City, Iowa, church. The contrast between the poor children and the rich bothered her and when she was unexpectedly asked to join Dayton, Ohio's system of Weekday Religious Education she was happy to take the job.

Then came the 1929 economic crash. Kevin Kelly relates:

> Dayton collapsed: its three largest factories closed or went on part time. Half the heads of families were out of work; hungry children stayed home from school for lack of coats and shoes. . . . Soon came the anticipated news that funds for Weekday Religion had diminished. Of 20 teachers 10 would be released. Who would go? Those who had most consistently looked at the church's responsibility for economic justice. This included Mildred. Again she reappraised. Again she decided she needed more preparation. She and others would go to the largest university in the largest city, discover the answers, and return to restore Dayton to the brightness of a "Gem City."
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> At Columbia University and Union Seminary in New York City, Daytonians sought advice from sociologists. To "What can we do in Dayton?" they replied: "We don't know, but here's a book with relevant analyses and suggestions." To the students they presented *This Ugly Civilization,* by Ralph Borsodi (Macmillan, 1928).
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> The young women from Dayton read the book and went to visit its author at his Dogwoods Homestead near Suffern New York. They found, as he had described it, a large three-sectioned home of native rock, surrounded by smaller buildings that served as living quarters for the Borsodis' sons, and other outbuildings for tools and for chickens and goats. Here was a New York businessman and his wife, from a Kansas farm, producing their own food; weaving and tailoring their own coats, blankets, and drapes; enjoying their own recreation (pool, chess, and billiards); and educating their children at home.
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> Borsodi, too, knew of Dayton's dilemma. His suggestion was, "Get Dayton's unemployed families on the land instead of feeding them by charity of government relief, teach them to build homes and communities, and to garden, preserve, and store their harvest, grind their flour and cereal; and bake their bread. Let them know real responsibility and self-reliance."
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> As a result of his recommendations, Borsodi was invited to counsel and guide Dayton in dealing with its unemployed. He would bring Dayton people onto the land in small communities.

But Borsodi's plan for Dayton, the Liberty Homestead project, sounded too much like life on a Nebraska farm, which Mildred had left behind. She went to Chicago and worked in a settlement house, and finally returned to Dayton just before she was asked to resign for doing a report on the gap between the rich and the poor. In Dayton she was launched on her career, working with Ralph Borsodi. The Liberty Project, lost its flavor for Borsodi when its members finally decided to work under government direction. He had told them, "Remember that government is compulsion." So he went home to Suffern. Mildred Loomis remained an advocate of Borsodi's ideas and in the

fifty years since that time made the School for Living and its paper, the *Green Revolution*, avenues of decentralist influence and education. Her most recent book, *Alternative Americas* (Universe Books, 1982), has a foreword by Hazel Henderson, who says:

> This remarkable book helps us to see today's resurgence of co-ops, neighborhood revival, community economic reconstruction, and land trusts in the context of past efforts. By so doing, it helps demonstrate thc irrelevance of old political labels, whether they be Republican or Democrat Liberal or Conservative, capitalist or socialist.

Fitting in with the story of Mildred Loomis is an interview with Bill Mollison, the Australian founder of the Permaculture Movement which he began, years ago, in Tasmania, the island state of Australia where he was born. Permaculture, he says, is "an integrated, self-sustaining system of perennial agriculture." Permaculture associations, community financed and operated, are said to "control 30 per cent of all the rural land titles in Australia." The motivating ethic is "responsible stewardship of the Earth," and much of their land, protected in conservation districts, exists in its natural state.

This introduction is taken from the opening words of an interview with Mollison by Arol Wulf, which was published last year in *Ecolibrium Interviews,* along with similar interviews of Cleveland Amory, Ed Asner, and David Hinds. Subscription to these interviews is $10 a year, single issue $2, from Ecolibrium Interviews, 517 Canon View Trail, Topanga, Calif. 90290.

In their talk—after Mollison had described the "standard farm" of today, with a house, perhaps a greenhouse, some forest, a pond, crops and an orchard, and added a diatribe of criticism telling what is wrong with this picture—Wulf asked him what he would do to change things around. Mollison replied:

> I want to disorder it; to invent nothing, to bring in nothing else. I want to re-order these elements. I propose to put the glass house on the sunny side of the house, I propose to put the pond in front of that. I propose to put the chicken house on the other side of the glass house and put part of the forest and orchard behind the chicken house. I propose to remove 70% of the crop from cultivation. In fact, 70% of the total agricultural product is fed to chickens, pigs, cows and the like. All I've done is shift around these elements and put them in a different order. We can heat and cool houses with glass houses attached and that's throughout the United States all the way up to latitude 55 in Sweden. The chickens heat their part of the glass house at night because their body temperature is 108° and they radiate heat. Chickens don't need to be fed 70% of the crop, the chicken being the model of the pig, the cow, etc. They should not have been fed wheat to start with. If we put their food system outside the chicken house, they become their own food gatherers, transferring the food into heat. It works perfectly. We've built a lot of them. If we take the litter and twigs from the orchard, combine it with chicken manure and make a compost heap, we can then fully energize the house; methane gas for cooking and hot water. We can use biological energy. Or if we'd like to structure the pond a little more, put salt in the bottom, make it sixteen feet in diameter, the pond will fully energize the house on its own. . . . Therefore, the whole system runs like a clock, it needs no oil well outside, it needs no coal burning outside, it doesn't need any energy through the gate. It's not eroding soil any more and it has a product. It has a product from trees and poultry, and people can live there indefinitely.

This is just a fragment of the interview, which seems filled with uncommon sense.