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MAN is a Sun-roused dreamer, en route to tomorrow, a place he spins out of himself across the emptiness of time from gossamers of his imaginings. As he goes, he peoples the loneliness he feels but cannot see with dreams, which, having no feet, can never stumble as he does. These dreams he perpetuates in fairy tales and legends, with heroes he can imitate and magic he can use to explain away those things that he cannot yet bring true.

His urge to suppose is so powerful, his reaching into the not-yet so insistent, that he sometimes pushes his mind behind his body to the point where he seems to be two people. Madness lies along this road- and genius.

Whence springs this always forward looking spirit that dominates the human species? This eternally outbound imagination- is it somehow shared with the stars, which are spit into space like seeds from flower-like clouds of primordial gas (one such, the Trifid nebula in the constellation Sagittarius, is pictured above in a photo that graces "Spectrum," a new science book by Henry Holt) and thus sped off into vast tomorrows of their own for unknown rendezvous? Does man drink up this knowing hunger from his parent star, the Sun, which each day burns away a portion more of the energy that sustains us all here on Planet No. 3 as the solar system spins around the 200,000,000-year-long rim of the Milky Way?

How far back can this awareness of the future be traced into the million years of our evolution? Is it the same compulsion that tells birds when and where to migrate, how long to stay with their young, when and on what route to fly back home? Is it what tells bears when to go to sleep to escape the winter? Does it inform the Atlantic fire-worm that the Moon is full, that the Sun went down fifty-five minutes ago, and that the time of the month has come to light up and breed in the sea around Bermuda? Is this memory of what will be the reason why the seaweed Dictyota awaits both the full Moon and the high tide to release its reproductive cells upon the waters? Does a sixth sense of anticipation explain the potato's ability to predict the weather?

These questions have up to now been relegated to metaphysics. Answers have been left to preachers, priests, and mystics. But science has finally encompassed enough of the undefinable in physics that a few daring minds are beginning to think in terms of what Dr. Fred L. Polak, brilliant cultural sociologist of the University of Rotterdam in Holland, calls bio-philosophy. Some of the possessors of this new courage will meet and talk together at the University of Chicago during the week of this coming Thanksgiving Day as a way of celebrating the one hundredth anniversary of publication of Charles Darwin's theory of evolution in the now historic book, "The Origin of Species." In a paper that has already reached the hands of the fifty eminent thinkers who will join the delegate, Dr. Polak suggests that "mental processes of imagination and speculation that are generally regarded as

absolutely worthless and even dangerous (to rigorous scientific discipline) might be the key to an unfinished chapter in the evolutionary process, which may at once be its presence and its perfection."

Can we, he asks, will we discover the missing links in the chain joining all life on Earth, so that the spiritual and moral status of man at least will not be left offside as an inexplicable unicum that has dropped from the skies, so to speak? Does an incomprehensible gap have to be left just at the peak of the alleged evolution and its harmonious sequence- a vacuum which will be not only a living accusation to science but which may ultimately make people wonder afresh whether this evolutionary theory has not after all been a huge mistake on the part of an overwrought science?

"PRACTICALLY every primitive human impulse toward religion, worship, and ethics is, I think, more or less associated in the first instance with the biologically purposed and pursued optimum improvement of the chances of survival- survival of the tribe or group here on Earth- survival of the individual after death and via the grave in a blissful or wretched abode set up by the power of imagination."

"Spiritual activity assumes a spiritual agency" Dr. Polak observes, "a spiritual agency operating within the evolutionary process. Whether this agency was applied beforehand to the process extraneously or from above by a superior, all-enfolding power is no longer an urgent scientific problem but a matter of belief and religion. But it is of scientific importance whether such an agency exists and if so how it works."

Perhaps, he says, there may be "a current of time that really exists and is pregnant with spirit or spiritual energy, not abstract, indifferent or inert but expressed by a forward-looking dynamism existing throughout the universe and in all matter." Reluctance to face and examine such possibilities because they are utter unknowns at present "may . . . lead to unintentional suppression or emaciation of the known," he warns. And "in this connection I do want to point out that this hypothetical, supplementary substructure for a unified evolutionary theory

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demands attention to the future not merely as an abstract category

"There is no avoiding the strict logic that if a conscious, purposive, direct, and far-sighted orientation upon the future were to weaken or vanish, if the challenging future were no longer to receive a timely and adequate, forward looking and imaginative response, then not only would energetic forward movement and creative purpose cease, but our existing type of culture might decay and petrify. More, a counter-evolutionary and counter-selective motive force might then impel a gradual slipping down, to fall irresistibly at a given point to a far lower level, accompanied by transformation to or absorption by other types of culture testifying to better-directed prevision and greater spiritual fitness or fecundity.

Biological evolution comprises such intermediate stages of vital regression or lethal annihilation of certain kinds of life.

"MANY observers believe that especially that typical totality of human life and endeavor which we commonly call Western culture is showing rather alarming symptoms of apathy and

aversion, even of negativism and defeatism, precisely toward belief in a different and better time to come. A regressive tendency has appeared, withdrawing from idealistic renewal and constant concern about future survival to the restricted day-by-day anxiety about existential self-preservation in the incidental events of the present time

"A dangerous, gaping spiritual vacuum thus threatens to originate, all the more dangerous because in other parts of the world a simultaneous phenomenal motive force is expanding, electrifying images of the future with values and standards partly antithetic to our Western spirit, thrusting up new 'types' of culture with great attractive power. The ideological contrasts that are aroused have called forth a new kind of spiritual struggle for existence I am convinced the struggle will be won by the force that is ultimately strongest in predominant images of the future."

Whether or not they would accept his thesis that science might and should try to bridge the worlds of fact and faith with a unified theory of evolution, there are American biologists who share Dr. Polak's preoccupation with the threat of engulfment of Western culture by a rival civilization. Among them the sharpest spokesman, perhaps because he speaks from the refuge of retirement, is Dr. Oscar Riddle, who was for many years engaged in research on heredity at the Carnegie Institution Station for Experimental Evolution at Cold Spring Harbor, N. Y. Writing in a recent issue of *The Humanist*, Dr.

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Riddle quoted from Adlai E. Stevenson's observations on weeks of travel in the Soviet Union: "Many of us seem to rely on some mystical God-given superiority of the white Western world to save us. And my concern is that there is evidence that the Communists accept the reality of the human condition more than we do." Adding his own comment on the Soviet "giant that ... chanced to be born near the beginning of the Age of Science [and] had the wit and used the opportunity to discard ecclesiastical tradition and to accept science for what it is—namely, the foe of supernaturalism,"

Dr. Riddle bluntly declared:

"WHETHER it is mere coincidence or is vitally meaningful, the first nation that ever swept religion completely from its schools also quickly put theologically unhedged science there. Its success in science education has never been approached on this planet. Starting forty years ago with a poor and war-crushed people, seventy percent illiterate, it now annually trains more than twice as many scientists and engineers as does the United States."

"Seventeen months after the first Sputnik," he found, Western peoples and institutions remain subservient to ancient elements of ... deflated divine revelation During a complete century since the Darwin of 1859, scholarship has held in its hands the irrefutable evidence that living things from invisible microbe to man—slowly acquired their present dimensions, properties and functions (including consciousness) under such analyzable natural law as variations and natural selection [Yet] during the whole of this transitional century .. , our now misplaced supernaturalism, slightly mitigated, but persisting into the new Age of Science, has left our social and political leadership unprepared to define accurately our present problems."

"We dare not leave it to the Soviets alone to offer men the inspiration that is to be gained from the wonderful world view opened up by Darwin and other Western biologists," agrees Dr. Hermann J. Muller, the Nobel laureate geneticist." One hundred years without Darwinism is enough," he told the Central Association of Science and Mathematics Teachers at Indianapolis last December. Though school administrators deride his assertion that the teaching of evolution is denied children by law in some of the states, no one accuses him of inventing the conversations he says he has had concerning "the ... immediate need ... for the preparation and adoption of high quality texts that give evolution its due axial position and deal with it out

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spokenly and adequately." In one of those talks, he reports, "the author of one of our most widely used high school biology texts has informed me that if he had insisted on this policy [of teaching evolution in its true perspective] his book would have been rejected by the publishers. A representative of the publishers has next asserted that the fault was not theirs, since if they had been on the level with the children (an expression not used by him!) the book would have been rejected in southern states . . . and by many textbook commissions and schoolboards in other parts of the United States as well"

THE central problem in acceptance of the implications of evolution is the same today as it was in the Bible story, where Jacob wrestled with the angel long ago. Man still finds it hard to face the emptiness of the universe alone. His loneliness probably is, in fact, deeper than ever now because the cosmos he is aware of has expanded. Once the navel of all that mattered, the planet Earth has shrunk to a tiny island in one of no one knows how many archipelagos of space, set behind a lagoon of air, guarded by reefs of magnetism, on the edge of a stormy electrical sea that beats against billions of starry continents.

Knowledge of the immensity about us has come to us mostly in the hundred years since the London publishing house of John Murray sold to bookshops all 1,250 copies of the first edition of "The Origin of Species" on November 24, 1859. On the other hand, there was no United Nations in which men could learn to share global responsibility for human fate when Darwin wrote the words that made man a timeless being.

Darwin could not believe in a personal God because "there seems to me too much misery in the world" to be deliberately hatched by anyone worth believing in. Yet he withheld his great idea for twenty years in fear of ridicule and finally brought it out only after Alfred Wallace hit upon almost the same conception. Even after the original scientific papers of the two men had been read in July, Darwin debated whether he needed to reassure the book publisher "that I do not bring in any discussion of Genesis"

The issue today is not religion but freedom for the responsible individual. That was also the issue for Darwin. Only the stage on which it confronts us is larger than the stage Darwin spoke from, as the following pages will testify.

-JOHN LEAR,
Science Editor