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*To the fine soul, to the warm heart of Gustave Bouju,
a worker, a realfather to me. In memoriam.*

L. P.

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PREFACE

Physically I am a clumsy person and I deplore the fact. I think I would be a happier man if I had worker's hands—hands capable of making useful things, of plunging into the depths of nature to tap sources of goodness and peace. My adopted father (I always refer to him as my father because it was he who brought me up) was a journeyman tailor. He was great-hearted and possessed a truly questing mind. He used to say, with a smile, that betrayal by the intellectuals began with the first artist who depicted a winged angel—it is by our *hands* that we attain Heaven!

In spite of my lack of manual dexterity I did once manage to bind a book. I was sixteen at the time, a student at a vocational class in a suburb of Juvisy. On Saturday afternoons we had the choice between wood and metal work, modeling, and book binding. Poetry was then my favorite reading, Rimbaud my favorite poet. And yet—after an inner struggle, I admit—I abandoned the idea of binding his *Une Saison en Enfer* (*A Season in Hell*). My father possessed some thirty books arranged in a narrow cupboard in his workroom along with bobbins, chalk, shoulder pads, and patterns. There were also, in this cupboard, thousands of notes, which he had jotted down in his scholar's hand at a corner of his bench during innumerable nights working at his trade. Among these books I had read Flammarion's *Le Monde avant la Creation de l'Homme* (The World before the Creation of Man) and was just discovering Walter Rathenau's *Où Va la Monde?* (Where is the World Going?). I set out to bind Rathenau's book, not without difficulty. Rathenau was among the first victims of the Nazis, and the year was 1936. So, each Saturday, I struggled over my task in the little workshop of the vocational school, and on the first of May

I presented my father with the finished book, and a spray of lilies of the valley out of regard for him and the working class.

My father had underlined in red pencil in this book a passage I still remember:

Even the most troubled epoch is worthy of respect, because it is the work not just of a few people but of humanity; and thus it is the work of creative nature—which is often cruel but never absurd. If this epoch in which we are living is a cruel one it is more than ever Our duty to love it, to penetrate it with our love till we have removed the heavy weight of matter screening the light that shines on the farther side.

"Even the most troubled epoch . . ."

My father died in 1948 without ever having ceased to believe in creative nature, without ever having ceased to love and to penetrate with his love the sad world in which he lived, without ever having lost the hope of seeing the light behind the heavy weight of matter. He belonged to the generation of romantic socialists who had as their idols Victor Hugo, Romain Rolland, Jean Jaures, wore wide-brimmed hats, and kept a little blue flower in the folds of the red flag. Just at the edge of pure mysticism on the one hand and the cult of social action on the other, my father (he worked fourteen hours a day at his bench: and yet we lived in near misery) succeeded in reconciling an ardent trade union activity with a search for an inner liberation. He had introduced into the humble actions demanded by his work a sort of method of concentration and purification of the mind on which he left hundreds of pages of notes. Stitching buttonholes or pressing cloth, his face yet bore a radiant expression. Every Thursday (a school holiday in France) and Sunday my friends would gather around his workbench to listen to him and to savor his strength, and nearly all of them felt their life changed in some way.

Full of confidence in progress and science, believing in the coming to power of the proletariat, he had constructed a powerful philosophy for himself. The reading of Flammarion's study of prehistory had been a sort

of revelation for him. Guided only by feeling he went on to read books on paleontology, astronomy, and physics. Although with little formal education, he yet managed to penetrate to the heart of these subjects. When he talked it was as if it might have been Teilhard de Chardin (whom we hadn't even heard of in those days):

The experience of our century is going to be something considerably more than the birth of Buddhism! It is no longer a question of endowing such and such a god with human faculties. The religious power of the Earth will undergo in us a final crisis: that of its own discovery. We are beginning to understand, and for ever, that the only acceptable religion for man is the one that will teach him first of all to recognize, love and passionately serve this Universe of which he is the most important element.*

My father believed that the evolutionary process is not to be confused with selection, which is a purely superficial process, but that it is all-inclusive and ascendant, augmenting the "psychic density" of our planet, preparing it to make contact with the intelligences of other worlds, to draw nearer to the very soul of the Cosmos. For him the human species is not something completed. By virtue of the spread of communal living and the slow creation of a universal psyche, it is progressing toward a state of super-consciousness. He used to say that man is not yet perfect and saved, but that the laws of condensation of creative energy permit us to nourish, at the cosmic level, a tremendous hope. And he never lost sight of this hope. It was from that viewpoint that he judged, serenely and with a religious dynamism, the affairs of this world, seeking far and high an immediate and truly effective optimism and courage. In 1948 the war was over, and new battles—atomic ones, this time—were threatening. Nevertheless he considered the disquieting and painful times to be no more than the negative of a magnificent image. It was as if he were in communication with

""Teilhard de Chardin tel que je l'ai connu" (Teilhard de Chardin as I knew him), by G. Magloire, in *Synthese*, November 1957.

the spiritual destiny of the Earth, and for the troubled epoch in which he ended his life of labor, and despite numerous personal setbacks, he felt nothing but confidence and love.

He died in my arms during the night of December 31, and before dying he said to me: "One must not count too much on God, but perhaps God counts on us. . . ."

How did things stand with me at that moment? I was twenty-eight years old. I was twenty in 1940 at the time of France's collapse. I belonged to a critical generation which had seen a world fall apart, which was sundered from the past and mistrustful of the future. I was certainly far from believing that our shattered world was worthy of respect and that it was my duty to penetrate it with love. Rather it seemed to me that a clear head led to refusal to participate in a game where everyone was cheating.

During the war I sought refuge in Hinduism—that was my way of resisting, and I lived in absolute Resistance.

Don't look for help in a study of history, nor among people—they'll let you down every time. Look for it in yourself. Live in this world without being of it. One of my favorite images was the Bhagavad Gita diving bird: "down, skim the water, and up—without having even wet its wings." Act in such a way that events too powerful to be modified by us will at least not affect us. I existed in a rarefied air, sitting—lotus fashion—on a cloud borne from the Orient. . . . When I had gone to sleep my father would quietly thumb through my bedside reading, trying to understand the source of my strange ideas, which yawned like a gulf between us.

Some time later, just after the Liberation, I found a new master to model myself on and to live for. I became a follower of Gurdjieff. I worked hard to separate myself from all emotion, sentiment, impulse, hoping to find, beyond them, a state of—how shall I say it?—of immobility and of permanence, a silent presence, anonymous, transcendent, which would console me for all that I lacked and for the world's absurdity. I thought of my father with pity. I possessed the secrets of controlling the mind; all knowledge was mine. In fact, I possessed nothing except the illusion of possessing, and an overwhelming contempt for those who did not share my illusion.

My father despaired of me. I despaired of myself. I steeped myself to the very bone in a position of refusal. I was reading Rene Guenon, and believed it was our disgrace to be living in a completely perverted world bent on the Apocalypse. The words spoken by Cortes to the Spanish Chamber of Deputies in 1849 became mine: "The cause of all your mistakes, gentlemen, is your unawareness of the direction being taken by civilization and the world. You believe that civilization and the world progress. No, they go backwards!" For me our modern age was the dark ages. I spent my time listing the crimes committed by the modern mind against Mind. Since the twelfth century the Western World, having abandoned the Principals, had been rushing to disaster. To have any hope, however small, was a betrayal. I had energy only for refusal, for the breaking of contact. In this stricken world where priests, thinkers, politicians, sociologists, and manipulators of all kinds seemed to me like dung eaters the only dignified behavior lay in traditional studies and unconditional resistance to the spirit of the age.

Looked at from such a point of view, evidently, my father appeared the veriest simpleton. His sense of belonging, of affection, of vision irritated me as something unbelievably absurd. The hope he placed in a growing communal life inspired by infinitely more than purely political motives incited my deepest contempt. My standards were those of the ancient theocracies.

Einstein founded a "committee of despair" of atomic scientists; the menace of total war bore down on a humanity divided into two blocs. Yet my father died with his faith in the future intact; I no longer understood him. I do not intend to raise the problems of the existence of social classes in this book—it isn't the place. But I know very well the reality of these problems: they crucified the man who loved me.

I never knew my real father. He belonged to the old bourgeoisie of Ghent. My mother, like my second father, came from the working class. It was the inheritance from my Flemish ancestors, sensualists, artists, layabouts, and proud, that separated me from a generous, dynamic way of thinking, forcing me into myself and into a misapprehension of the virtue of participation. The barrier between my second father and me had

already existed a long time. He who had never wished other child than me (who came of another's blood), solicitous for me, sacrificed much so that I should become an intellectual. Having given everything, he fell into the trap of thinking that we were kindred spirits. He saw in me a beacon, someone capable of lighting a way for others, of giving them courage and hope—of showing them, as he used to say, the light within us. But I knew of no sort of light—except some sort of dark lamp, perhaps—in me or in humanity. I was simply one intellectual among a multitude of intellectuals.

I pushed the conviction of being an outsider and of the need for revolt—ideas reflected in the literary reviews around 1947 when they wrote of "metaphysical disquiet"—to their extreme limits. Such ideas were the difficult heritage of my generation. How, then, to be a beacon in such circumstances? This typical Victor Hugo thought only caused me to smile sneeringly. My father reproached me with having sold the past, gone over to the side of the mandarins and those proud of their very powerlessness.

The atom bomb, for me the sign of the end of everything, was for him herald of a new dawn: matter was spiritualizing itself and man was discovering in his surroundings and within himself completely unsuspected forces. The bourgeois sentiment, which sees this world as nothing but a comfortable habitation, was to be swept away in the gale of a new spirit—the spirit of the "workers of the Earth" for whom the world is a going machine, an organism in process of becoming, a unity to be achieved, a Truth to be realized. For him humanity is only at the beginning of its evolution. It has received only its primary instruction on the role assigned to it by the Intelligence of the Universe. We are only now beginning to understand the meaning of the phrase "love of the world."

The human adventure had a direction for my father. He judged events as they moved or not in this direction. History made sense: it was leading to some kind of ultrahuman being and promised a superconsciousness. But this cosmic philosophy did not isolate him from his century. He was a "leftist" in his day-to-day living. This irritated me; particularly as I did not then understand that he put more spirituality in his progressiveness than I of progressiveness in my spirituality.

I was suffocating within the closed system of my thinking; I sometimes felt myself to be no more than a little, arid intellectual and envied him his large free-ranging thoughts. Evenings, sitting by his bench, I used to contradict him, provoke him, yet hoping inwardly that he would manage to confound and change me. But, tired, he would lose his temper with me and with a destiny that had given him such splendid conceptions without giving him the means to pass them on to this child of another, mutinous, blood. We would quit each other in anger and sadness, I to my meditations and my literature of despair, he back to his work under the raw electric light that yellowed his hair. From my little bedroom I could hear his breathing, his mutterings. Then suddenly, between his teeth he would begin to whistle quietly the opening bars of Beethoven's "Hymn to Joy"—saying to me in my little bedroom that love will always find its way back. Each evening, around about the hour when we used to have those arguments, I think of him and I hear again those mutters which invariably terminated in song, in that sublime hymn.

He has been dead twelve years. If I had understood then as I understand now I would have managed my intelligence and my heart more skillfully. Then, I was an incessant seeker. Now I have rallied to him after many often sterile and dangerous journeys. I would have been able, much sooner, to conciliate the attraction subjectivity has for me with an affection for the world in all its movement. I would have been able to throw up—and perhaps with greater success in the vigor of my youth—a bridge between mysticism and the modern mind. I would have been able to feel myself at once religious and yet part of the great drive of history. Earlier, much earlier, I would have acquired faith, hope, and charity.

This book sums up five years of questing, through all the regions of consciousness, to the frontiers of science and tradition. I flung myself into this enterprise—and without adequate equipment—because I could no longer deny this world of ours and its future, to which I so clearly belong.

Yet, every extremity illuminates. I should have found a means of communication with my epoch more quickly, yet it may be that in approaching things in my own way I did not altogether waste my time. Men get not

what they merit but what they resemble. I have always been seeking for, as Rimbaud expressed it, the "Truth in a soul and a body." I have not found it. In the pursuit of this Truth I lost sight of numerous small truths which would have made of me, certainly not the superman I yearned to be, but at least a better and more integrated person than I am. However, I did learn some things about the fundamental behavior of the mind, about the various possible states of consciousness, about memory and intuition—some precious things I would not have otherwise learned and which one day may help me to comprehend those things that are grandiose, essentially revolutionary, in the modern mind at its peak: its questionings on the nature of consciousness and the urgent need for a sort of transmutation of the intelligence.

When I came out of my yogi's retreat to take a look at the modern world—I knew of its existence, of course, but did not understand the first thing about it—I was immediately struck by its air of the marvelous. My backward-looking preoccupations, fed on pride and hate, had at least this useful result: I no longer saw this world from its bad side, from the point of view of a "beat-up" nineteenth-century rationalism, of a demagogic radicalism. They had also stopped me from simply accepting the world just because it was there, the place where I happened to live, in that semi-conscious way most people accept it. My viewpoint refreshed by the long visit I had made outside the frontiers of my period, I saw this world to be as rich in a real fantasy as I had supposed the traditional world to be. Better still, my fresh way of looking at the modern world reacted back on and deepened my understanding of the ancient mind. Old and new, I saw both from a fresh angle.

I met Jacques Bergier just about the time I was finishing my book on Gurdjieff's little group. Our meeting (something more than chance I have always thought) was to prove of great consequence. I had just devoted two years to a study of an esoteric school and my experiences in it. But new experiences were beginning for me and this is what I explained to readers of that book on taking my leave of them. With the story of a certain method of trapping monkeys in mind (a handful of nuts in a narrow-

mouthed gourd attached to a tree, the monkey slides in his paw, balls it into a fist around the nuts, and so cannot withdraw his paw, and is trapped) I wrote:

Examine the bait by all means, test it with your hand, then discreetly disengage. Curiosity satisfied, return your attention to the world, resume your liberty, your lucidity, your place on the route leading into our world of Man. The important thing is to discover the extent to which the rhythms of the so-called traditional mode of thinking merge with the movements of contemporary thinking. At their present farthest limits physics, biology, mathematics touch on certain traditional concepts: certain aspects of esoterism, visions of the Cosmos, of the relation between energy and matter. Modern science, once freed from conformism, is seen to have ideas to exchange with the magicians, alchemists, and wonder-workers of antiquity. A revolution is taking place before our eyes—the unexpected remarriage of reason, at the summit of its victories, and intuition. For the really attentive observer the problems facing contemporary intelligence are no longer problems of progress. The concept of progress has been dead for some years now. Today it is a question of a change of state, of a transmutation. From this point of view those concerned with the domain of the interior life and its realities are in step with the pioneering savants who are preparing the birth of a world that will have nothing in common with our present world of laborious transition in which we have to live for just a little while longer.

And that is the precise argument we shall develop in this present book. Before launching into the undertaking I told myself that as a preliminary to understanding the present, one must be capable of projecting one's intelligence far into the past and far into the future. Formerly I had felt a dislike for those described as "moderns," but I had disliked them for the wrong reasons. They are to be condemned because their minds are occupied with so small a portion of the time scale. Scarcely have they arrived on the scene than they are anachronisms. Only a contemporary of

the future can truly be of the present. Even the distant past may be conceived of as an undertow tending toward the future. Thus interrogating the present from this point of view I received some strange but promising replies.

The American writer, James Blish, wrote that Einstein's glory was to have swallowed Newton alive and kicking. An admirable formula! A preliminary to any raising of our sights toward a higher vision of life is that our thinking should have absorbed—alive and kicking—the truths of the previous level. This is the one certainty that has emerged from my studies. Does this sound banal? But when one has been living with methods of thinking that claim to be on the very peaks of human endeavor, such as Rene Guenon's wisdom and the Gurdjieff system with their contempt for the greater part of social and scientific reality, this new way of looking at things changes the intentions of the mind and its needs. "Lower things," said Plato, "will be found again in higher things—though in another form." I am convinced that any advance in philosophy which does not vitally include in itself the realities of the level it claims to have superseded, is an imposture.

So I passed a long exploratory period in the domain of physics, of anthropology, mathematics, biology before making any attempt to fashion an idea of Man, his nature, his force, his destiny. Formerly I sought to comprehend the "totality of the concept Man" and was contemptuous of science. I suspected the mind's ability to scale the highest summits. And yet, what did I know of its advances in the field of science? Had it not there manifested its power in certain ways that I might be inclined to accept? And so, I reflected, the need is to surmount the apparent contradiction between the material and the spiritual. But was the scientific approach the way to achieve this? The least I could do was to investigate the possibility—a more reasonable attitude after all, for a twentieth-century man than undertaking a barefoot pilgrimage across India! The territory to be explored lay immediately around me.

It was my simple duty to discover whether scientific thinking at its extreme limit resulted in a revision of the idea Man. I further decided

that any conclusions I might henceforth come to about the possibilities of intelligence and the significance of the human adventure were to be retained only in so far as they did not run counter to the overall movement of modern consciousness.

I discovered an echo of my attitude in Oppenheimer's reflection that nowadays our poets, historians, and philosophers are actually proud of their ignorance of anything to do with the sciences; our philosophy—in so far as we still have one—is anachronistic, completely out of step with the times in which we live.

Now, for one whose intellectual muscles are in good condition it is no more difficult to attain to the attitude that has inspired nuclear physics than to appreciate Marxist economics or Thomism, no more difficult to grasp the theory of cybernetics than to analyze the causes of the Chinese revolution or the nature of Mallarme's poetics. Our mandarins refuse to make the effort not because effort as such intimidates them but because they prefer their present modes of thinking, their present values.

As Oppenheimer suggested, a more subtle understanding of the nature of human knowledge and of Man's relations with the Universe is necessary and has been necessary for some time now.

So I commenced my ransacking of the treasures of science and modern technique, inexpertly, certainly; with an ingenuousness and a sense of wonder perhaps dangerous but yet productive of illuminating comparisons, correlations, and attunements. In this way I rediscovered some convictions concerning Man's infinite grandeur that I had held when I was immersed in esoterism and mysticism. But I found them wearing a new look. This time, these convictions had absorbed—alive and kicking—the style and drive of a contemporary intelligence, an intelligence bent on the study of realities. They were no longer backward looking; they smoothed out antagonisms instead of exciting them. Erstwhile massive antagonisms—the material versus the spiritual, individual versus collective life—fused as under a tremendous heat. So conceived they were no longer expressions of a choice (that is to say, *of a rupture*), but of a becoming, an overtaking, of a renewing, so to speak, of existence.

The apparent incoherence of bees in flight, the dances executed by them, are, so it is thought, precise mathematical figures and constitute a language. I would like to write a novel wherein all the experiences of a life, the fleeting ones and the significant ones, chance ones and inevitable ones, would equally compose precise figures—would in fact disclose themselves for what they may well be: a subtle discourse addressed to the soul to help it accomplish itself: a discourse of which the soul comprehends, in its entire life, only a few disjointed phrases.

There are moments when it seems that I comprehend the inner meaning of the human ballet surrounding me, that someone is speaking to me by means of this ceaseless movement of people approaching, people pausing for a second, and then moving away. And then I lose the thread, as who does not, until the next equally fleeting moment of illumination.

At the time I left the Gurdjieff circle I had a very great friend in Andre Breton. Through him I met Rene Alleau, the historian of alchemy. One day I was looking for a scientific journalist to contribute to a current events series. Alleau introduced me to Bergier. (It was bread-and-butter work, and in any event science, popularized or not, interested me little.) This chance meeting was to shape my life for many years. Under its influence I rearranged and orientated the various intellectual and spiritual experiences which I had exposed myself to—from Vivekananda to Guenon, to Gurdjieff, to Breton—and found myself at the point where I had started: my father!

Though dissimilar in many ways Bergier and I worked closely and happily together during five years of study and speculation, arriving at a point of view which I believe is novel and rich in its possibilities. This was how the surrealists worked thirty years ago. But unlike them we were exploring not the regions of sleep and the subconscious but their very opposites: the regions of ultraconsciousness and the "awakened state." We call our point of view *fantastic realism*. It has nothing to do with the bizarre, the exotic, the merely picturesque. There was no attempt on our part to escape the times in which we live. We were not interested in the "outer suburbs" of reality: on the contrary we have tried to take up a position at its very hub. There alone, we believe, is the

fantastic to be discovered—and not a fantastic leading to escapism but rather to a deeper participation in life.

Artists who seek for the fantastic outside reality in the clouds lack imagination. They return from their explorations with nothing more than counterfeits. As it is with rare minerals so with the fantastic; it has to be torn out from the very bowels of the Earth, from the heart of reality. True imagination is something other than a leap into the unreal. "No other aspect of the mind dives as deeply as the imagination."

The fantastic is usually thought of as a violation of natural law, as a rising up of the impossible. That is not how we conceive it. It is rather a manifestation of natural law, an effect produced by contact with reality—reality perceived directly and not through a filter of habit, prejudice, conformism.

Modern science has shown us that behind the visible there is an extremely complicated invisible. A table, a chair, a starry sky are in fact radically different from our ideas of them: they are systems in motion, suspended energy. . . . This is what Valéry meant when he said that "the marvelous and the actual have contracted an astonishing alliance" in the modern mind. As we hope to show in this book the alliance between the marvelous and the actual is meaningful not only in the fields of physics and mathematics but equally, for example, in anthropology, contemporary history, or sociology. That which is effective in the physical sciences should be fruitful in the humanities—but there will be difficulties of application. The humanities have become the last refuge of prejudice (as well the prejudices long since abandoned by the physical sciences). Not only that, but in this field, still so fluid, there have been attempts to reduce everything to a *system*: Freud explains all, *Das Kapital* explains all, etc. When we say "prejudice" we are really saying "superstition." Just as the ancients were superstitious so are we. For some people every phenomenon of civilization finds its origin in the existence of Atlantis. For others Marxism has a complete explanation of Hitler. Some see the motive force of genius as the breath of God; others think it is sex. Our task then is to fashion this alliance between the marvelous and the actual in the individual and in social man as it already exists in biology, physics, and mathematics (which openly and quite directly refer

to such concepts as an "absolute elsewhere," the "forbidden light," the "quantity strangeness number").

As Teilhard de Chardin has stated, only the fantastic is likely to be true at the cosmic level. We believe that human phenomena must also be measured against the cosmic scale. The thinkers of antiquity said this. Our modern world, with its planetary rockets and its efforts to contact other intelligent beings, is saying it. So then, Bergier and I are no more than witnesses to the realities of our epoch.

- A close scrutiny will show that our point of view—the extension of fantastic realism as it exists in the physical sciences to the humanities—is by no means original. Nor do we claim originality. The idea of applying mathematical method to the sciences was not a particularly shattering one but its consequences were novel and important. The idea that the Universe may not be quite what it seems is not original: but see what Einstein did with that idea!

It follows from our attitude that a book such as the present one, prepared with scrupulous honesty and a minimum of naivete, may well spring more questions than answers. A working method is not a system of thought. We do not believe that even the most ingenious of systems could completely illuminate life in its totality, which is our subject. You can work over your Marxism as much as you wish without managing to fit into it Hitler's conviction that the Unknown Master had visited him on occasion. Manipulate the medical theories previous to Pasteur as you will: they have absolutely nothing to say about illness being caused by animal life too minute to be seen. Yet it is possible that there is an overall, final response to the questions we are posing—and that we have not yet heard it. For Bergier and I, nothing is excluded, neither the yes nor the no. We have not discovered still one more Eastern sage; we have not become the disciples of a new Messiah; we are not expounding a doctrine. We simply propose to open the greatest possible number of doors to our readers, and as most of these doors open outward we have stood back a pace so that the reader may enter.

Let me repeat: the fantastic is not to be equated with the imaginary. But a powerful imagination working on reality will discover that the fron-

tier between the marvelous and the actual—between the visible and the invisible Universe, if you wish—is a very fine one. There may be other Universes parallel to our own. Indeed, perhaps this book would not have been written if Bergier and I had not on more than one occasion had an impression of being in contact—actually, physically—with another world. Bergier had one such experience when he was in Mauthausen. Something similar happened to me when I was a Gurdjieff disciple. In each case the circumstances were different but the essential facts the same.

The American anthropologist Loren Eiseley, whose attitude is somewhat similar to ours, tells a story which perfectly illustrates what I have been trying to say.

He, too, believes that the impression of being in contact with another world is not always the result of a too-fertile imagination. People have had such experiences. Not only people, animals too! For the space of a moment the frontier dissolves; it is simply a question of being there at that moment. Eiseley was actually present when such an experience befell a crow. Although the crow was, so to speak, a neighbor of his it took good care to avoid all contact with humanity, keeping to the treetops and the upper air, keeping to its world. But one unusually foggy morning our anthropologist was feeling his way to the station when suddenly, at eye level, two great black wings preceded by a cruel beak loomed up in front of him and then swept by with a great cry of anguish. The cry haunted Eiseley for the rest of the day; he even found himself before his mirror—wondering whether indeed he could be so repulsive a sight! And then the explanation for that terrible cry dawned on him. The frontier had slipped its position because of the fog. Suddenly, before the eyes of the crow (which reasonably believed itself to be flying around at its usual height) there surged up a fact contrary to nature—a man walking on air, in the very heart of the crow's domain. A veritable manifestation of the marvelous from the crow's point of view: a flying man! Ever after, when it saw Eiseley making his normal way along the ground it would give little cries of distress, of regret for a Universe that could never be the same again.



This book is not a romance, although its intention may well be romantic. It is not science fiction, although it cites myths on which that literary form has fed. Nor is it a collection of bizarre facts, though the Angel of the Bizarre might well find himself at home in it. It is not a scientific contribution, a vehicle for an exotic teaching, a testament, a document, a fable. It is simply an account—at times figurative, at times factual—of a first excursion into some as yet scarcely explored realms of consciousness. In this book as in the diaries of Renaissance navigators, legend and fact, conjecture and accurate observation intermingle. Lacking the time and the means we were not able to push our exploration far inland, so all we do here is suggest hypotheses and rough out a scheme for communication between those various regions which are still for the most part forbidden territory. Later, fuller investigation may well make hay of some of our impressions, as happened to Marco Polo's narrative. We willingly face this eventuality, "There certainly were some howlers in that book of Bergier's and Pauwels!" So be it. But if it is this book that has inspired our critics to themselves take a firsthand look, we shall have done what we set out to do.

The words of Fulcanelli might well have been ours: "I leave to the reader of these enigmatic notes the task of comparing, of coordinating versions, of extracting verity from its allegorical setting."

However, our documentation owes nothing to esoteric masters, hidden books, or secret archives. Vast it may be but it is accessible to everyone. But, so as not to weigh down the book too much, we have avoided a multiplicity of references, footnotes, and bibliographies. And sometimes we have developed our argument by way of image or allegory—but always for the purpose of more efficiently making our point and never for the sake of that mystification beloved of the esoterists and which makes one think of the Marx brothers' story:

"Say, there's a million bucks buried in the house next door."

"There isn't a house next door."

"No? Then let's build one."

As I have said, this book owes much in its general theory and its documentation to Jacques Bergier. Everyone who has met him and experienced

his extraordinary memory, his insatiable curiosity, his (a rare quality, this) invariable presence of mind, will at once believe me when I say that five years with Bergier have saved me perhaps twenty years of private reading. His brain includes a formidable library: selection, classification, complex cross-references take place with an electronic rapidity. Watching him thinking out a problem never failed to produce in me an excitation of my own faculties without which I would have found the conceiving and preparing of this book impossible.

We brought together an imposing collection of books, reviews, reports, and newspapers in various languages, at an office in the rue de Berri in Paris and dictated thousands of pages of notes: quotations, translations, reflections. The weekend we met at my place at Mesnil-le-Roi to continue our discussions, breaking off from time to time only to refer to some book or other. The evening I would spend in noting down our conclusions, fresh ideas that had occurred to us, fresh lines of research. For five years I was at my desk every day at dawn (the greater part of the day being spent in bread-and-butter work). Things being what they are in this world we yet so stubbornly cleave to, the question of time becomes a question of energy. Had we had ten years before us, better working conditions, and a team of assistants, we would certainly have produced a vastly superior book. One day (should we ever have the money, got from whatever source!) we would like to set up and direct an . . . institute, perhaps, in the word, to continue the studies here initiated. I hope this book may prove of sufficient worth to help us in that aim. As G. K. Chesterton has it, if an idea does not strive to express itself in words then it is an inept idea, and if words do not result in action it is because they too are inept.

Both Jacques Bergier and I are caught up in a multitude of other activities—mine being very demanding. This despite the fact that when I was young I knew people who literally died from overwork; so, "How do you manage it all?" I don't know; perhaps these Zen words are some sort of explanation: "I go on foot and yet I am mounted on an ox."

Difficulties, obligations to be met, obstructions of all kinds continually rose up on every side to the point where I almost despaired. I am not one of those geniuses who pretend a vast indifference to everything not

to do with their work. My responses are large and wide; a concentration of passion, however splendid the result, strikes me as somehow being a mutilation. Agreed, if one participates in life to the full one risks being swamped. I fall back on a thought of Vincent de Paul: "The greatest aims suffer continuing distraction. Flesh and blood insist on abandoning the mission. Listen to them not. God, once resolved, does not change his mind whatever the occasional seeming to the contrary."

When I was a student at Juvisy (I referred to this period of my life earlier in this preface) I one day had to comment on a phrase of Vigny: 'A life that has achieved itself is a dream of adolescence realized in maturity.' At that time my dream was to serve and to deepen my father's philosophy of progress. After many retreats, side-trackings, and equivocation, this is now, finally, what I am trying to do. May my struggle bring peace to his ashes long since scattered in the thought that "matter is no more than one of the masks worn by the Great Visage."

PART ONE

THE FUTURE PERFECT

I *Salute to the reader in a hurry—A resignation in 1875—Birds of ill
omen—How the nineteenth century closed the doors—The end of science
and the repression of fantasy—Poincaré's despair— We are our own
grandfathers—Youth, Youth!*

How can an intelligent man today not feel in a hurry? "Get up sir; you've got important things to do!" But one has to rise earlier every day. Speed up your machines for seeing, hearing, thinking, remembering, and imagining. Our best reader, the one we value the most, will have finished with us in two or three hours.

There are men I know who can read with the greatest profit one hundred pages of mathematics, philosophy, history, or archaeology in twenty minutes. Actors learn how to "place" their voice. Who will teach us to "place" our attention? At a certain height everything changes speed. So far as this work is concerned, I'm not one of those writers who want to keep their readers with them as long as possible and lull them to sleep. I'm not interested in sleep, only in waking. Get on with it quickly; take what you want and go. There's plenty to do outside. Skip chapters if you want to; begin where you like and read in any direction; this book is a multiple-use tool, like the knives campers use. For example, if you're afraid of arriving too slowly at the heart of the subject that interests you, skip these first pages. You should understand, however, that they show how the nineteenth century had closed its doors against fantasy as a positive element in man and the world and the Universe, and how the twentieth has opened them again, although our morality, our philosophy, and our

sociology, which ought to be contemporary with the future, are nothing of the kind and remain attached to the out-of-date nineteenth century. The bridge between the era of muskets and that of rockets hasn't yet been built; but it's being thought about. And the object of this book is to make people think about it harder. If we're in a hurry, it's not because we're crying over the past but are worried about the present, and getting impatient. There you have it. You know enough now to be able, if necessary, to skim through this introduction and push on further.

His name is not recorded in the history books—unfortunately. He was a director of the American Patent Office and it was he who first sounded the alarm. In 1875 he sent in his resignation to the secretary of the Board of Trade. What's the good of going on, is the gist of what he said; there's nothing left to invent.

Twelve years later, in 1887, the great chemist Marcellin Berthelot wrote: "From now on there is no mystery about the Universe." To get a coherent picture of the world science had cleared everything up: perfection by omission. Matter consisted of a certain number of elements, none of which could be turned into another. But while Berthelot in his learned work was rejecting the dreams of the alchemists, the elements, which knew nothing about this, continued to transmute themselves as a result of natural radioactivity. In 1852 the phenomenon had been described by Reichenbach, but was immediately repudiated. Scientists before 1870 had referred to a "fourth state of matter," observed in gases. Any kind of mystery, however, had to be suppressed. Repression is the right word; some nineteenth-century thinking ought to be psychoanalyzed.

A German named Zeppelin, returning home after fighting with the Southerners, tried to get the industrialists interested in a dirigible balloon. . . . "Unhappy man! Don't you know that there are three subjects which can no longer be the subject of a paper submitted to the French Academy of Science: the squaring of the circle, the tunnel under the Channel, and dirigible balloons."

Another German, Herman Gaswindt, had the idea of building flying machines heavier than air to be propelled by rockets. On his fifth blueprint

the German War Minister, after consulting the technicians, wrote, with the habitual moderation of his race and office: "How long will it be before this bird of ill-omen is finally bumped off?"

The Russians, on their side, had got rid of another bird of ill-omen. Kibaltchich who was also in favor of rocket-propelled flying machines: a firing squad saw to that. It is true that Kibaltchich had used his technical skill to fabricate the bomb that had just cut up into little pieces the Emperor Alexander II. But it wasn't necessary to execute Professor Langley, of the Smithsonian Institute, who had imagined flying machines propelled by the recently invented internal combustion engine. It was enough for him to be dishonored, ruined, and expelled from the Smithsonian. Professor Simon Newcomb proved mathematically the impossibility of a heavier-than-air machine. A few months before the death of Langley, who died of grief, a little English boy came back from school one day in tears. He had shown his companions the photograph of a design that Langley had just sent to his father. He declared that men would one day be able to fly. His comrades had laughed at him. And the schoolmaster had asked him how his father could be such a fool. The name of this "fool" was H. G. Wells.

And so all the doors were closing with a bang. There was, in fact, nothing left to do but to resign, and Mr. Brunetiere in 1895 was able calmly to speak of the "bankruptcy of science." The celebrated Professor Lippmann told one of his pupils, about the same time, that physics was a subject that had been exhausted and was finished and done with, and that he would do better to turn his attention in other directions. This pupil's name was Helbronner who later was to become the greatest authority in Europe on physical chemistry and make remarkable discoveries relating to liquid air, ultraviolet rays, and colloidal metals. Moissan, a chemist of genius, was forced to recant and declare in public that he had not manufactured diamonds, but had made a mistake during an experiment. It was useless to seek any further: the great discoveries of the century were the steam engine and the gas lamp, and no greater human inventions were possible. Electricity? A mere technical curiosity. A mad Englishman, Maxwell, had pretended that invisible light rays could be produced by means of electricity: this couldn't be taken seriously.

A few years later Ambrose Bierce wrote in his *Devil's Dictionary*, "No one knows what electricity is, but in any case it gives a better light than a horse-power and travels quicker than a gas jet."

As for energy, this was something quite independent of matter and devoid of mystery. It was composed of fluids. These fluids filled everything up, could be described in equations of great formal beauty, and were intellectually satisfying: they could be electric, luminous, calorific, etc. Here was a continuous and obvious progression: matter in its three states: solid, liquid, and gaseous; and the various energy fluids, more elusive even than gases. To preserve a "scientific" image of the world it was only necessary to reject as philosophic dreams the theories about the atom that were beginning to take shape. Planck's and Einstein's "grains of energy" were still a very long way off.

The German Clausius maintained that no source of energy other than fire was conceivable. And though energy may be preserved quantitatively, it deteriorates in quality. The Universe has been wound up once and for all, like a watch, and will run down when the spring is worn out. No surprises are to be expected. Into this Universe, whose destiny is foreseeable, life entered by chance and developed according to the simple laws of natural selection. At the apex of this evolution came man—a mechanical and chemical compound endowed with an illusion—consciousness. Under the influence of this illusion, man invented time and space: concepts of the mind. If you had told an official nineteenth-century scientist that physics would one day absorb space and time and would study experimentally the curvature of space and the contraction of time, he would have summoned the police. Space and time have no real existence; they are the mathematician's variables and subjects for philosophers to discuss at their leisure. There can be no connection between man and such immensities. Despite the work of Charcot, Breuer, Hyslop, extrasensory or extratemporal perception is an idea to be rejected with scorn. Nothing unknown in the Universe, nothing unknown in man.

It was quite useless to attempt any internal exploration; nevertheless there was one fact that defied simplification: hypnotism. People like the naive Flammarion, the skeptical Edgar Poe, and the suspect H. G. Wells

were interested in this phenomenon. And yet, fantastic as this may seem, the nineteenth century proved officially that there was no such thing as hypnotism. Patients tend to tell lies and pretend in order to please the hypnotizer. That is true. However, since Freud and Morton Price, we know that there is such a thing as a split personality. Thanks to a generally critical attitude this century succeeded in creating a negative mythology, in eliminating any trace of the unknown in man and in repressing any suggestion of mystery.

Biology, too, was finished. M. Claude Bernard had exhausted its possibilities, and the conclusion had been reached that the brain secreted thoughts as the liver secretes bile. Doubtless it would soon be possible to analyze this secretion and write out its chemical formula to fit in with the pretty patterns of hexagons for which M. Berthelot was famous. As soon as we discover how the hexagons of carbon combine to create mind the last page will have been turned. Let's get on with the job! and have all the madmen shut up. One fine day in 1898 a certain seriously minded gentleman forbade the governess to allow his children to read Jules Verne. These false ideas would only deform their young minds. The gentleman's name was Edouard Branly. He had just decided to abandon his experiments with sound waves as being devoid of interest, and take up the career of a general practitioner.

Scientists have to give up their throne. But they also have to get rid of the "adventurers"—that is to say, people who think and dream and are endowed with imagination. Berthelot attacked the philosophers—"fencing with their own ghosts in the solitary field of abstract logic" (a good description that, of Einstein, for example). And Claude Bernard declared that "a man who discovers the simplest fact does a greater service than the greatest philosopher in the world." Science can only be experimental; without it we are lost. Shut the gates; nobody will ever be the equal of the giants who invented the steam engine.

In this organized, comprehensible, and yet doomed Universe the place assigned to man was that of an epiphenomenon. There could be no Utopia and no hope. Coal deposits would be exhausted in a few hundred years, and humanity would perish by cold and starvation. Men would never fly

and would never travel through space. Nor would they ever explore the bottom of the sea. Strange that this ban should have been imposed on any investigation of the ocean depths! From a technical point of view there was nothing, in the nineteenth century, to prevent Professor Picard from constructing his bathyscaphe. Nothing but an extreme timidity and concern that man should "stay in his proper place."

Turpin, who invented melinite, was promptly jailed. The inventors of the internal combustion engine were discouraged, and an attempt was made to show that electric machines were merely forms of perpetual motion. Those were the days when the great inventors were persecuted, isolated, and in revolt. Hertz wrote to the Dresden Chamber of Commerce that research into the transmission of the Hertzian waves should be discouraged, as they could not be used for any practical purpose. Napoleon III's experts proved that Gramme's dynamo could never function.

As for the first automobiles, the submarine, the dirigible balloon, and electric light ("one of that fellow Edison's swindles"), the learned societies were not interested. There is an immortal entry in the Minutes of the Paris Academy of Sciences recording the reception of the first phonograph: "No sooner had the machine emitted a few words than the Permanent Secretary threw himself upon the impostor (presenting it) seizing his throat in a grip of iron. 'You see, gentlemen,' he exclaimed, 'what it is . . .' But, to the stupefaction of everyone present, the machine continued to utter sounds."

Nevertheless, some great minds, profoundly discontented with the situation, were secretly preparing the most formidable revolution in human knowledge in the history of mankind. For the time being, however, every avenue was barred.

Barred in every direction—in front and in the rear. The fossils of pre-human creatures that were beginning to be discovered in large numbers were not taken seriously. Did not the great Heinrich Helmholtz prove that the Sun derived its energy from its own contractions—that is to say, its own combustion—from the only force existing in the Universe? And did not his calculations show that the Sun had not been in existence for

more than about a hundred thousand years? How, then, could there have been a long process of evolution? Moreover, it would never be possible to fix a date for the beginning of the world. In the short interval between two states of nothingness we human "epiphenomena" must be serious. Facts, facts!—nothing but facts!

As their researches into matter and energy had met with little encouragement, the best among the inquiring minds turned to explore an impasse—the ether, a substance that permeates matter in all its forms and acts as a vehicle for luminous and electromagnetic waves. It is at once both infinitely solid and infinitely tenuous. Lord Rayleigh, who at the end of the nineteenth century represented official English science in all its splendor, formulated the theory of a gyroscopic ether—an ether consisting of a mass of spinning tops turning in all directions and reacting on one another. Aldous Huxley has remarked since that "if it is possible for a human invention to convey the idea of absolute ugliness, then Lord Rayleigh's theory has succeeded."

Scientists everywhere were engaged in speculations on the ether on the eve of the twentieth century. Then in 1898 came a catastrophe: the Michelson-Morley experiment shattered the hypothesis of the ether. All the work of Henri Poincaré bears witness to this collapse. Poincaré, a mathematician of genius, felt crushed by the enormous weight of this nineteenth-century prison, the destroyer of all fantasy. He would have discovered the theory of relativity, had he dared. But he did not dare. His books—*La Valeur de la Science*, *La Science et l'Hypothèse* (*The Value of Science*, *Science and the Hypothesis*)—are expressions of despair and abdication. For him, a scientific hypothesis is never true and can at best be useful. Like the Spanish inn—you only find there what you bring yourself. According to Poincaré, if the Universe contracted a million times and ourselves with it, nobody would notice anything. Such speculations are therefore useless because they have no connection with reality as we perceive it.

This argument, up to the beginning of this century, was cited as a model of profound reasoning. Until one day a practical engineer pointed out that the butcher, at any rate, would notice it, as all his joints would

fall down. The weight of a leg of mutton is proportional to its volume, but the strength of a piece of string is proportional only to its length. Therefore, were the Universe to contract by only a millionth of a degree, there would be no more joints hanging from the ceiling! Poor, great, and dear Poincare! It was this great thinker who wrote: "Common sense alone is enough to tell us that the destruction of a town by a pound of metal is an evident impossibility."

The limited nature of the physical structure of the Universe; the non-existence of atoms; restricted sources of fundamental energy; the inability of a mathematical formula to yield more than it already contains; the futility of intuition; the narrowness and absolutely mechanical nature of Man's internal world; these were the things the scientists believed in, and this attitude of mind applied to everything and created the climate which permeated every branch of knowledge in this century. A minor century? No; a great century, but narrow—a dwarf stretched out.

But suddenly the doors so carefully closed by the nineteenth century in the face of the infinite possibilities of man, of matter, of energy, of time, and of space are about to burst asunder. Science and technical skills will make enormous progress, and a new assessment will be made of the very nature of knowledge.

Not merely progress, this, but a transformation. In this new state of the world, consciousness itself acquires a new status. Today, in every domain, all forms of imagination are rampant—except in those spheres where our "historical" life goes on, stifled, unhappy, and precarious, like everything that is out of date. An immense gulf separates the man of adventure from humanity, and our societies from our civilization. We are living with ideas of morality, sociology, philosophy, and psychology that belong to the nineteenth century. We are our own great-great-grandfathers. As we watch rockets rising to the sky and feel the ground vibrating with a thousand new radiations, we are still smoking the pipe of Thomas Graindorge. Our literature, our philosophical discussions, our ideological conflicts, our attitude toward reality—all this is still slumbering behind the doors that have been burst open. Youth! Youth!—go forth and tell the world that everything is opened up and already the Outside has come in!

Bourgeois delights—A crisis for the intelligence, or the hurricane of unrealism—Glimpses of another reality—Beyond logic and literary philosophies—The idea of an Eternal Present—Science without conscience or conscience without science?—Hope

"The Countess had her tea at five o'clock": Valery said something to the effect that that kind of thing could not be written by anyone who had gained an entrance to the world of ideas, a thousand times stronger, more romantic and more *real* than the world of the heart and senses. "Anthony loved Mary who loved Paul; they were very unhappy and had lots of little nothings." A whole literature!—to describe the palpitations of a mass of amoeba and infusoria, whereas human Thought gives rise to tragedies and gigantic dramas, transmutes human beings, alters the course of whole civilizations, and enrolls in its service vast sections of the human race. As to soporific pleasure and bourgeois delights—we workers of the earth, devotees of intellectual enlightenment, are well aware of all that they contain in the way of insignificance, decadence, and rottenness.

At the end of the nineteenth century the "bourgeois" theater and novel were in their heyday, and for a time the literary generation of 1885 paid homage to Anatole France and Paul Bourget.

Nevertheless, about the same time, a much more important and exciting drama than any in which the characters of *Divorce* or *Le Lys Rouge* (The Red Lily) were involved was being played out in the sphere of pure knowledge. The dialogue between materialism and spiritualism, science and religion, suddenly entered on a new and exciting phase.

The scientists, who had inherited the positivism of Taine and Renan,* were confronted with staggering discoveries that were to demolish the strongholds of incredulity. Where hitherto only a reality that was well vouched for could be believed in, suddenly the unreal became a possibility, and things were viewed from the standpoint of a romantic intrigue, with the transformation of characters, the intrusion of traitors, conflicting passions and illusory discussions.

* [Historian Hippolyte Taine and philosopher Ernst Renan —Ed.]

The principle of the conservation of energy was established as a certainty, solid as a rock. And yet here was radium, producing energy without acquiring it from any source. No one doubted that light and electricity were identical: they could only proceed in a straight line and were incapable of traversing any obstacle. And yet here were X-rays that could go through solid objects. In the discharge tubes matter seemed to disappear or be transformed into particles of energy. The transmutation of the elements was taking place in nature: radium turns into helium or lead. And so the Temple of Consecrated Beliefs is ready to collapse; Reason no longer reigns supreme! It seemed that anything was possible. The scientists who were supposed to have the monopoly of knowledge suddenly ceased to make a distinction between physics and metaphysics—between fact and fantasy. The pillars of the Temple dissolve into clouds, and the High Priests of Descartes are dumbfounded. If the theory of the conservation of energy is false, what is there to prevent a medium from manufacturing an ectoplasm out of nothing? If magnetic waves can traverse the earth, why should thought transmission not be possible? If all known bodies emit invisible forces, why should there not be astral bodies? If there is a fourth dimension, could this be the spirits' world?

Madame Marie Curie, Sir William Crookes, and Oliver Joseph Lodge go in for table turning; Thomas Edison tries to construct a machine for communicating with the dead. Guglielmo Marconi, in 1901, thought he had intercepted messages from Mars. Simon Newcomb was not surprised when a medium materialized seashells fresh from the Pacific. The seekers after reality are bowled over by strong blasts of the fantastic and the unreal.

But the stalwarts, the Old Guard, endeavor to stem the flood. The Positivists, in the name of Truth and of Reality, reject everything *en bloc*: X-rays, ectoplasms, atoms, spirits of the dead, the fourth phase of matter, and the idea of there being inhabitants on Mars.

And so begins a conflict between fantasy and reality—a conflict often seemingly absurd, blind and confused, but one that will soon have repercussions on all forms of thought in every sphere: literature, sociology, philosophy, morals, and aesthetics. But in the physical sciences order will be reestablished, not through retreat or the whittling down of claims, but

thanks to fresh advances. A new conception of physics takes shape, due to the efforts of titans such as Langevin, Perrin, Einstein. A new science is born less dogmatic than the old one. Doors are opened onto a different *kind* of reality. As in all great novels, in the end there are neither good nor bad characters, and all the heroes are right so long as the novelist's ideas are directed toward a complementary dimension where all their destinies converge and become one, and are raised, together, to a higher level.

How do we stand today? Doors have been thrown open in almost all the strongholds of science, but that of physics has lost almost all its walls to become a cathedral entirely built of glass wherein can be seen the reflections of another world infinitely near.

Matter has been shown to be as rich, if not richer in possibilities than the spirit. The energy it contains is incalculable; its resources can only be guessed at; it can undergo an infinite number of transformations. The term "materialist" in its nineteenth-century connotation has become meaningless; and so has the expression "rationalist." The logic of "common sense" is no longer valid. In the new physics a proposition can be both true and false. A.B. no longer equals B.A. An entity can be at once continuous and discontinuous. Physics can no longer be relied on to determine what is or is not possible. One of the most astonishing signs of the breach that has been made in the domain of physics is the introduction of what has been called the "strangeness quantum number." What has happened is roughly as follows. At the beginning of the nineteenth century it was believed, somewhat naively, that two, or at most three, numbers were enough to define a particle, referring respectively to its mass, its electric charge, and its magnetic moment. This turned out to be very far from the truth. In order to define completely a particle, another dimension, which cannot be expressed in words, had to be allowed for, known as *spin*. It was believed at first that this "dimension" corresponded to a period in the particle's rotation on itself, rather like the period of twenty-four hours which, in the case of the planet Earth, regulates the alternation of night and day. However, it soon became clear that the explanation could not possibly be as simple as that. The spin was simply the spin—a quantity of

energy connected with the particle, envisaged mathematically as a rotation, although nothing whatever within the particle actually turns.

In spite of erudite research carried out, notably by Professor Louis de Broglie, the mystery of the spin has only been partially explained. Then suddenly the discovery was made that among the three known particles—protons, electrons, and neutrons (and their mirror reflections, the negative antiproton, positron, and antineutron) there were at least thirty other particles. The cosmic rays, the great accelerators, produced them in enormous quantities. But to describe these particles the three numbers used hitherto—mass, "charge," "magnetic moment"—no longer sufficed. It was necessary to create a fourth, perhaps a fifth number, or even more. And so, quite naturally, the physicists called these new dimensions "strangeness quantum numbers." There is something supremely poetic about this salute to the angel of the bizarre. Like many other expressions used in modern physics—"forbidden radiation," "absolute elsewhere"—"strangeness quantum number" has overtones which seem to go beyond physics to rejoin the more profound regions of the human mind.

Take a sheet of paper. Pierce two holes in it, close together. Obviously, common sense tells us, an object small enough to go through these holes will go through either one or the other. By the same criterion, an electron is an object. It has a definite weight and produces a ray of light when it strikes a television screen and a shock when it hits a microphone. Here we have, then, an object small enough to go through one of our two holes. Now, the electron microscope will tell us that the electron has gone through both holes at the same time. What? If it has gone through one, it can't have gone through the other at the same time. But indeed it *has* gone through both. It sounds crazy, but the experiment has been made. Attempts to explain it have led to the formulation of various theories, notably that of wave mechanics. But this theory is still not a complete explanation of a fact that defies reason, which can only function in terms of Yes or No, A or B. In order to understand it, the very structure of our reason will have to be changed. Our philosophy is based on thesis and antithesis. But it looks as if, in the philosophy of the electron, thesis and antithesis are both true at the same time. Are we talking about absurdities? The electron seems to obey laws, and

television, for example, is a reality. Does the electron exist, or not? What nature calls existence is not existence in our eyes. Is an electron something or nothing? The question is meaningless. And so, at the extreme limits of knowledge, our normal methods of thought and the "literary" philosophies, born of an outdated outlook on the world, simply disappear.

The earth is part of the Universe; Man is not only in contact with the planet he inhabits. Cosmic rays, radio astronomy, and theoretical physics reveal the contacts he has with the Cosmos as a whole. We no longer live in a closed world, as no intelligent person in tune with our times can have failed to notice. How, then, in these circumstances, is it possible for a thinking man to be still preoccupied with problems that are not even planetary, but narrowly regional and provincial? And how can our psychology, as revealed in works of fiction, remain so enclosed and confined to the analysis of the subconscious impulses of human sensuality and sentimentality? While millions of civilized people read books and go to the cinema or the theater to see how Françoise can be in love with René and yet, through her hatred of her father's mistress, revenge herself by becoming a lesbian, there are scientists, making a celestial music out of mathematics, who are speculating as to whether space does not contract around a vehicle. The whole Universe would then be accessible: one could visit the farthest star in the space of a lifetime. If equations like these could be verified, human thinking would be revolutionized. If mankind is no longer confined to this Earth, new questions will have to be asked with regard to the deeper aspects of Initiation and the possibility of making contact with intelligent beings from Beyond.

What, then, is our position today? As regards research into the structure of space and time, our notions of past and future are no longer valid. Where particles are concerned, time travels in the two directions simultaneously—past and future. At very high speeds, at the velocity of light, for example, where does time come in? We are in London in October 1944. A V2 rocket traveling at 3,107 miles per hour is over the city. It is about to fall. But to what does this "about to" apply? As regards the occupants of the house, which in a moment will be destroyed and who have only their eyes and ears, the V2 is, indeed, "about to" fall.

But from the point of view of the radar operator, using waves traveling at 186,411 miles per second (a speed which makes the rocket appear to be crawling) the trajectory of the bomb is already traced. He can only watch; there is nothing he can do. Humanly speaking, nothing can now intercept the engine of death; no warning can be given. In the eyes of the operator the rocket has already crashed. At the speed of radar, time is practically nonexistent. The occupants of the house are "about to die"; in the radar's eye they are already dead.

Another example: when the cosmic rays reach the Earth's surface, they are found to contain particles, the μ mesons which live on Earth only for a millionth of a second, destroying themselves by radioactivity. Now, these particles are born nineteen miles up in the air when the atmosphere of our planet is beginning to be dense. So, by the time they have covered this distance, they have already exceeded their life span by our reckoning. But their time is not ours. Their journey was made in eternity, and they only entered time when they lost their energy on arriving at sea level. Apparatus, it is thought, could be built to reproduce these conditions. In this way drawers of time, as it were, could be created in which objects enjoying only a brief span of life would be placed and preserved in the fourth dimension. This receptacle would be a hollow glass ring placed in a field of intense energy in which the particles would rotate so rapidly that for them time would practically have ceased to exist. A life span of a millionth of a second might thus be maintained and observed for minutes, or even hours. . . .

"It must not be supposed that past time vanishes into the void; time is one and eternal, of which past, present, and future are only different aspects—different 'pressings,' if you like—of a continuous, invariable recording of perpetual existence."

The modern disciples of Einstein recognize nothing but an eternal present, which was also what the ancient mystics believed. If the future exists already, then precognition is a fact. The whole trend of advanced knowledge is to place the laws of physics, and biology and psychology as well, in a four-dimensional continuum—that is to say, in the eternal present. Past, present, and future *are*. Perhaps it is only our consciousness that moves. For the first time, consciousness is admitted in its own right into

the equations of theoretical physics. In this eternal present, matter appears as a slender thread stretched between past and future. Along this thread glides human consciousness. By what means is it able to modify the tensions of this thread so as to have an influence on events? One day we shall know, and psychology will then become a branch of physics.

And no doubt there is a place for freedom within this eternal present. "The traveler in a boat on the Seine knows in advance what bridges he will encounter. He nonetheless has freedom of action and is capable of foreseeing anything that could happen *en route*."*

Freedom to *become* in the midst of an eternity which *is*. A double vision, an admirable vision of human destiny bound up with that of the whole Universe!

If I had my life to live again I should certainly not choose to be a writer and spend my days in a backward society where adventure is kept under the bed like a dog. I should want a lionlike adventure: I would go in for theoretical physics in order to live at the very heart of true romance.

The new world of physics explicitly contradicts the philosophies of despair and nonsense. Science without conscience spells ruin for the soul. But conscience without science means ruin too.

These philosophies which were all the rage in Europe in the twentieth century were nothing but phantoms of nineteenth-century creeds dressed up in the new fashions. Real, objective knowledge in the field of technology and science, which sooner or later englobes the domain of sociology, teaches us that the history of mankind follows a definite path, accompanied by an increase in man's powers, a rise in the general level of intelligence and a compulsive force which acts on the masses transforming them into active thinkers and giving them access to a civilization where life will be as much superior to ours as ours is now to that of the animals. The literary philosophers had been telling us that man is incapable of understanding the world. Andre Maurois in *Les Nouveaux Discours du Docteur O'Grady* (*The Return of Doctor O'Grady*) for example, wrote as follows:

*R. P. Dubarle, in a broadcast discussion, April 12, 1957.

Yet you will admit, Doctor, that nineteenth-century man believed that science would one day be able to explain the Universe. Renan, Berthelot, Taine, early in their lives, hoped that this would come about. Twentieth-century man has no such hopes. He knows that discoveries only make the mystery deeper. As to progress, we have seen how man, with all his powerful resources, has only succeeded in producing famine, terror, disorder, torture, and contusion in the mind. What hope is there left? Why do you go on living, Doctor?

In point of fact, however, the problem could no longer be stated in these terms. Though the protagonists in this discussion were unaware of it, the circle was already closing around the mystery, and the "progress" so bitterly decried was opening the gates of Heaven. We do not turn to Berthelot or Taine for enlightenment on the future of mankind, but rather to men like Teilhard de Chardin. At a recent discussion between representatives of the various scientific disciplines the following idea was put forward: one day, perhaps, the ultimate secrets of the elementary particles will be revealed to us by what takes place deep down in the brain, for it is here that the most complex reactions in our region of the Universe are finally registered, and the brain, no doubt, contains in itself the laws which govern the most profound mysteries of this region. The world is not absurd, and the mind is surely not incapable of understanding it. On the contrary; it may well be that the human mind *has already understood the world*, but doesn't know that—yet.

*Brief reflections on the backwardness of sociology—Talking
cross-purposes—Planetary versus provincial—Crusader in the
modern world—The poetry of science*

The outlook in modern physics, mathematics and biology is limitless. Sociology, on the other hand, is barred from new horizons by the

monuments of the last century. I remember how astonished and disappointed we were, Jacques Bergier and myself, in 1957 when we were following the correspondence between the celebrated Soviet economist Eugene Varga and the American magazine *Fortune*. This luxurious publication expounds the views of an enlightened capitalism. Varga is an intelligent writer, and is respected by the powers that be. A public discussion between two such authorities might have done much, one would have thought, to bring about a better understanding of the times we live in. In the event, however, it proved a ghastly failure.

Mr. Varga stuck faithfully to his gospel. Karl Marx had predicted the inevitable collapse of capitalism, and Mr. Varga thought this collapse was imminent. The fact that the economic situation of the United States was steadily improving and that the great problem from now on would be how the workers' leisure time could best be employed had escaped the notice of this theoretician who, in these days of radar, was still looking at the world through Karl's spectacles.

The idea that the predicted collapse might not happen according to the prearranged schedule, and that it was possible that a new society was coming into being across the Atlantic did not for a moment enter his head. Neither did the editor of *Fortune*, for his part, foresee any change in the structure of society in the U.S.S.R.,* and made it clear that the America of 1957 was the expression of a perfect and unchangeable ideal. All that the Russians could hope for was to attain, if they behaved themselves, a similar state of perfection in a century, or a century and a half. Nothing worried or disturbed the theoretical adversaries of Mr. Varga—not even the multiplicity of new cults springing up everywhere in American intellectual circles (Oppenheimer, Aldous Huxley, Gerald Heard, Henry Miller, and many others seduced by ancient Oriental philosophies) nor yet the existence in the great cities of millions of young "rebels without a cause" going about in gangs, nor yet again the twenty million individuals unable to support modern life without absorbing drugs as dangerous as morphine and opium. The problem of finding a *purpose* in life did not

*[Union of Soviet Socialist Republics from 1945 until dissolution in 1991. —Ed.]

seem to exist for them. When all American families possess two cars, they will then have to buy a third. When the market for television sets is saturated, motorcars will have to be equipped with them.

And yet, compared to French sociologists, economists and thinkers, Mr. Eugene Varga and the editors of *Fortune* are more advanced. They are not paralyzed by the complex of decadence. They do not indulge in morbid pleasures, or believe that the world is absurd and life not worth living. They firmly believe in the virtues of progress, and are confident that man's domination over nature will increase indefinitely. They have energy and a certain grandeur, and their outlook is broad, if not very elevated. To say that Mr. Varga is in favor of free enterprise and the editors of *Fortune* are all progressists might seem outrageous; and yet, from a strictly doctrinal, European point of view, it is true. Mr. Varga is not a communist; *Fortune* is not capitalist, according to our narrow, provincial ideas. What the Russian and the American in this case have in common is ambition, the will to power and an unshakeable optimism. These are the forces at work in science and technology, which will demolish the old sociological order established in the nineteenth century. Even if Western Europe became involved in and was destroyed by some Byzantine struggle (which God forbid!) the forward march of humanity would still go on, bursting open the old structure of society and setting up a new form of civilization between the two new poles of militant thought represented by Chicago and Tashkent,* while the vast hordes in the East and in Africa would launch out into industry.

While one of our best French sociologists sheds tears over *Le Travail en Miettes* (Work in Crumbs), the title of one of his books/ American syndicates are studying the twenty-hour week. And while Parisian so-called avant-garde intellectuals are wondering whether Marx is not perhaps a back number, or whether existentialism is or is not a revolutionary form of humanism, the Sternfeld Institute in Moscow is examining the possibility of settling human beings on the moon. While Mr. Varga awaits

*A 2,000-year-old city in Uzbekistan.

t[George Friedmann, founder of a human work sociology, spent his life studying the relationship between workers and machinery. —Ed.]

the collapse of the United States announced by the Prophet, American biologists are preparing to create life artificially. While the problem of coexistence is still being debated, communism and capitalism are being transformed by the most sweeping technological revolution this planet has ever known. Our eyes are in the back of our heads; it is time to put them in their right place.

The last sociologist with any imagination or drive was no doubt Lenin. He had accurately defined the communism of 1917 as "socialism plus electricity." After nearly half a century, the definition still holds good for China, Africa, and India but is obsolete as regards the modern world. Russia awaits the thinker who will describe the new order: communism plus atomic energy, plus automation, plus the synthetic creation of fuel and food from water and air, plus the physics of solid bodies, plus the conquest of the stars, etc., etc. John Buchan, after attending the funeral of Lenin, announced the coming of another Seer who would promulgate a "four-dimensional communism."

If the U.S.S.R. lacks a sociologist of sufficient eminence, America is no better off. The reaction against the "red historians" at the end of the nineteenth century has led economic observers to indulge in uninhibited praise of the great capitalist dynasties and powerful institutions. This is a healthy reaction up to a point, but a short-sighted one. Critics of the "American way of life" are rare, and their attitude is "literary" and purely negative. None of them seems to have enough imagination to see, beyond this "solitary crowd," a civilization that belies its external forms, or to sense the collapse of old values and the advent of new myths. And yet the astonishing and abundant production of what is known as "science fiction" points to the emergence of a new spirit, leaving adolescence behind, unfolding on a planetary level, preoccupied with cosmic speculations and adopting an entirely new approach to the question of the destiny of mankind within the vast Universe. But this kind of literature, having so much in common with the oral tradition of the storytellers of ancient times and so clearly indicating a profound change in people's mental habits, is not taken seriously by the sociologists.

As regards European sociology, it is still quite provincial in outlook,

and preoccupied with inessentials. It is therefore not surprising that the more sensitive sections of society take refuge in a philosophy of despair. Everything is absurd, and the H-bomb has put an end to history. It is easier to live with this philosophy, which appears to be at once sinister and profound, than to attempt the arduous task of analyzing the world of reality. It is a temporary sickness of mind among civilized people who have not adapted the ideas they have inherited about such things as the freedom of the individual, human personality, happiness, etc., to the new set of values envisaged by the civilization of the future. It is a sign of nervous fatigue affecting the human spirit at a time when, fully occupied in coping with its own conquests, it is important that it should not give up the struggle, but change its own structure. After all, it is not the first time in the history of humanity that human consciousness has had to switch to another level. All operations are painful; but if there is to be any future, it is worth investigating. And, at the rate things are moving today, our criterion should not be the immediate past. Our immediate future is as different from anything we have known as the nineteenth century was from the Maya civilization. We must therefore proceed by projecting ourselves farther and farther into space and time instead of making trivial comparisons within an infinitely small period where the past we have just been living in bears no resemblance to the future, and where the present has no sooner come into being than it is swallowed up by this unusable past.

The first really fruitful idea is that there has been a change in what our civilization is aiming at. A Crusader from the past revisiting the world would immediately ask why we are not using the atomic bomb against the Infidels. Stalwart-hearted and intelligent, he would in the last resort be less disconcerted by our modern techniques than by the fact that the Infidels still hold half the Holy Sepulcher, the other half being in the hands of the Jews. He would find it harder still to understand why the wealth and power of a powerful and wealthy civilization are not being devoted to the service and glory of Jesus. What would our sociologists have to say to this? That the exclusive aim of all these immense efforts, conflicts, and discoveries has been to raise the "standard of living" of the human race?

He would find that absurd since, for him, such a life would seem to him an aimless one. They would talk to him about Justice, Liberty, and the Rights of Man, and recite to him the humanistic-materialist gospel of the nineteenth century. And our Crusader no doubt would reply: "But liberty to do what? And justice in what cause? And what are the rights of man?" If we want our knight to look upon our civilization as a worthy setting for a human soul, it is useless to talk to him in the retrospective language of our sociologists. We must use a forward-looking vocabulary, and present to him, as evidence of the beginning of a triumphant new crusade, the achievements, material and intellectual, of our progressive world.

Once again, it's a question of saving the Holy Sepulcher—spirit weighed down by matter—and repulsing the Infidel—everything that is unfaithful to the infinite might of the spirit. It is still a religious question: making manifest everything that binds man to his own greatness, and that greatness to the laws of the Universe. We should have to show our Crusader a world in which cyclotrons are like cathedrals, and mathematics like Gregorian plain-chant; where transmutations take place not only in matter, but in the brain; where human beings of all races and colors are on the march; where man in his quest for knowledge extends his antennae into cosmic space, and where the soul of our planet is awakening. Perhaps, then, our Crusader would ask to go back to the past. Perhaps he would feel at home here, but placed as it were, on a different level. Perhaps, on the other hand, he would march eagerly toward the future, just as long ago he marched toward the East, inspired once again by faith, but this time of a different kind.

You see now the adventure on which we are engaged. Make sure your eyes are in their right place! It is time to turn darkness into light!

AN OPEN CONSPIRACY

I *The generation of the workers of the Earth —Are you a behind-the-times modern, or a contemporary of the future?—A poster on the walls of Paris in 1622—The esoteric language is the technical language—A new conception of a secret society—A new aspect of the "religious spirit"*

Griffin, H. G. Wells's *Invisible Man*, said: "People, even cultivated people, have no idea of the forces concealed in scientific books. These volumes contain marvels and miracles."

They have now, however; and the man in the street knows it better than the clever people, always one revolution behind. There are marvels and miracles, and terrifying things too. The powers of science since Wells have extended beyond our planet, and threaten even its existence. A new generation of scientists is born. These are men who believe themselves to be, not disinterested seekers after truth and spectators, but, as Teilhard de Chardin has so finely described them, "ouvriers de la terre" (workers of the earth), who have linked their destiny to that of humanity and made themselves largely responsible for that destiny.

Joliot-Curie hurls bottles of petrol against the German tanks during the fighting for the liberation of Paris. Norbert Wiener, the cybernetician, reprimands the politicians: "We have given you unlimited power, and you have created Bergen-Belsen and Hiroshima!"

These are the "new-look" scientists who have linked their destiny with that of the world itself.*

""The scientist has had to admit that, like any other human being, he is as much a spectator as an actor in the great drama of existence." (Bohr)

They are the direct heirs of the great seekers of the first quarter of our century: the Curies, Langevin, Perrin, Planck, Einstein, etc. It has not been sufficiently proclaimed that the flame of genius during those years rose to greater heights than at any period since the miracle of Greece. These great men had had to wage war against the inertia of the human spirit, and had been violent in their campaigns. "Truth never prevails," said Planck, "but her adversaries always perish in the end." And Einstein: "I do not believe in education. Your only model ought to be yourself, how frightful that model may be." But the struggles these men were engaged in had nothing to do with the Earth and its history, or with day-to-day happenings.

They felt themselves responsible only to truth. And yet political events overtook them. Planck's son was assassinated by the Gestapo, Einstein driven into exile. The present generation, everywhere and in all circumstances, is made aware that the scientist is closely connected with world affairs. Almost all useful knowledge is concentrated in his hands, and very soon all power will be too. He is the key figure in the adventure on which humanity has embarked. Enmeshed by politics, harassed by the police and information services, supervised by the military, he has about an equal chance of ending his career with the Nobel Prize or facing a firing squad. At the same time his work leads him to scorn the trivialities of the individual and the particular, and enables him to think on a planetary, even cosmic level. Between his own power and the powers that be there is a misunderstanding. Only an arrant coward could hesitate between the risk he runs himself and the risks to which he exposes the world. Kurchatov broke the seal of silence and revealed what he knew to the British physicists at Harwell. Pontecorvo fled to Russia to carry on his work there. Oppenheimer got into trouble with his government. The American atomic scientists took sides against the army and published their extraordinary Bulletin: the cover drawing represented a clock whose hands move toward midnight every time some formidable experiment or discovery falls into the hands of the military.

"This is my prediction for the future," wrote the British biologist J. B. S. Haldane: "whatever hasn't happened will happen! And no one will be safe from it!"

Matter liberates its energy, and the way to the planets is open. Events such as these seem to be unprecedented in history. "We are living at a time when history is holding its breath, and the present is detaching itself from the past like an iceberg that has broken away from its icy moorings to sail across the boundless ocean."*

If the present is detaching itself from the past, this means a rupture, not with all past periods, and not with those that reached maturity, but only with the most recent past, i.e., what we have called "modern civilization." This civilization, which emerged from the welter of ideas circulating in Western Europe in the eighteenth century, reached its highest development in the nineteenth and spread its benefits throughout the world in the first half of the twentieth. It is becoming more and more remote from us. We are conscious of this all the time, and have reached the point of rupture. Our conscience and our intelligence tell us that between being an out-of-date modern and a contemporary of the future there is a big difference.

The ideas on which this modern civilization of ours is founded are outworn. During this period of rupture, or rather of transmutation, we must not be surprised if great changes take place in regard to the role of science and the scientist's mission in life.

What are these changes? A vision from the distant past may enable us to throw some light upon the future. Or, to put it more precisely, it may help us to see more clearly where to look for a new point of departure.

One day, in the year 1622, the inhabitants of Paris woke to find the walls of their city covered with posters bearing the following message: "We, deputies of the principal College of the Brethren of the Rosy Cross (Rosicrucians) are amongst you in this town, visibly and invisibly, through the grace of the Most High to whom the hearts of all just men are turned, in order to save our fellowmen from the error of death." This was considered by most people to be a joke, but, as M. Serge Hutin reminds us today: "The Rosicrucian Brethren were credited with possession of the following

*Arthur Clarke: *The Children of Icarus*.

secrets: the transmutation of metals, the prolongation of life, knowledge of what is happening in distant places, and the application of the occult sciences to the discovery of even the most deeply hidden objects."*

Eliminate the term "occult," and you find yourself confronted with the powers that modern science possesses or is on the way to possess. . . . According to the legend, already firmly established at that time, the Rosicrucians claimed that man's powers over nature and over himself would become limitless, that immortality and control of all natural forces were within his grasp, and that he would be able to know everything that happened in the Universe.

There is nothing absurd in this, and the progress of science has to some extent justified these claims. Therefore the poster of 1622, couched in modern terms, might well appear on the walls of Paris today, or in a newspaper, if there was to be a congress of scientists to warn men of the dangers to which they are exposed, and the necessity of adopting a new approach to all their social and moral activities. Certain statements by Einstein, charged with emotion; a speech by Oppenheimer, a leading article in the bulletin of the American atomic scientists have exactly the same undertones as this Rosicrucian manifesto. Here, for example, is a recent Russian pronouncement. Referring to the conference on radioisotopes held in Paris in 1957, the Soviet writer Vladimir Orlov wrote as follows: "The 'alchemists' of today would do well to remember the statutes of their predecessors in the Middle Ages, now preserved in a Parisian Museum, in which it is laid down that no man shall devote himself to alchemy who is not 'pure in heart and inspired by the loftiest intentions.'"

The notion of a secret international society composed of men of the highest intelligence, spiritually transformed by the profundity of their knowledge, desirous of protecting their scientific discoveries against officialdom and the curiosity and greed of other men, and reserving for themselves the right to use their discoveries at the right moment, or else to conceal them for a number of years or to allow only an insignificant fraction of them to be published—such a notion is both an extremely

*Serge Hutin: *Histoire de la Rose-Croix (Story of the Rosy Cross)*, Paris.

ancient and an ultramodern one. It would have been inconceivable in the nineteenth century, or even twenty-five years ago. Today it is quite conceivable. I would even dare to state that, on a certain level, such a society exists today. Some of us who have been received at Princeton (I am thinking especially of my friend Rajah Rao) may have formed the same opinion. Though there is nothing to prove that the secret Rosicrucian society existed in the seventeenth century, we have every reason to believe that a society of this nature is being formed today by the pressure of events, and that there is bound to be one in the future. We should explain, however, what is meant by secret society, the idea of which, seemingly so remote, has its own significance today.

To return to the Rosicrucians, the historian Serge Hutin tells us that: "They then represented a group of human beings who had reached a higher state than the mass of humanity, and thus possessed similar internal characteristics which enabled them to recognize one another at all times."

This definition, in our opinion at least, has the merit of being free from high-falutin' occult terminology. That is because we have a clear, almost scientific, practical and optimistic idea of what is meant by a "higher state."*

Scientific research has reached the stage where we can envisage the possibility of artificial mutations that will improve living beings, including man himself. "Radioactivity," according to a British biologist, "may create monsters, but it will also give us geniuses." The aim of the alchemist's researches was the transmutation of the operator himself; perhaps it is also that of the modern scientist. We shall see presently that, up to a point, this has already happened in the case of certain contemporary scientists.

Advanced studies in psychology seem to have proved the existence of a state of hyperconsciousness different from sleep and wakefulness, in which a man's intellectual faculties may be increased tenfold. To the psychology of the subconscious, which we owe to psychoanalysis, must now

*See part 3 of this work: "That Infinity Called Man. . . ."

be added a psychology of the heights, which opens up a vista of superintellectuality. Genius may be merely one of the stages through which man must pass in order to achieve the fullest use of his faculties.

In normal life, we only use a tenth of our potential resources of attention, prospection, memory, intuition, and coordination. We may well be on the point of discovering, or rediscovering the keys that will enable us to open within ourselves doors behind which a mass of new knowledge is awaiting us. In this context, the idea of an imminent mutation in humanity is nearer reality than it is to some occult dream.

We shall be dealing at length with this point later. No doubt there are already among us the products of this mutation, or at all events men who have already taken some steps along the road on which we shall all be traveling one day.

According to tradition,* since the term "genius" can hardly embrace all the possible higher potentialities of the human mind, the Rosicrucians were supposed to have been of another order of intelligence, elected by cooption. It is, perhaps, truer to say that the Rosicrucian legend lends support to a reality: a permanent secret society of men of exceptional faculties—an open conspiracy, in fact.

The Rosicrucian Society probably came naturally into being, consisting of men of superior intelligence seeking similar spirits with whom it would be possible to converse. This suggests an Einstein, who could only be understood by five or six men in the whole world, or a few hundred mathematicians and physicists capable of discussing usefully the implications of the laws governing even numbers.

The Rosicrucians were concerned exclusively with the study of nature: but such a study was illuminating only to minds of a different caliber from that of ordinary men. If such minds are brought to bear on a study of nature, they will attain to a knowledge of all things and perfect wisdom. This new, dynamic idea attracted both Newton and Descartes. Their names have more than once been associated with the Rosicrucians.

*A less reliable translation would suggest that the Rosicrucians were the heirs of civilizations that have disappeared.

Does this mean that they were affiliated members? Such a question is meaningless. We are not thinking of an organized society, but of the establishment of the necessary contacts between exceptional minds, and a common language, not secret, but merely inaccessible to ordinary men at a given epoch in time.

If far-reaching discoveries regarding the nature of matter and energy and the laws which govern the Universe have been made and worked on by civilizations that have disappeared, and if some of them have been preserved throughout the ages (which is by no means certain), this could only have been done by people of superior intelligence and in a language necessarily incomprehensible to the ordinary man. If, however, we reject this hypothesis we can nevertheless imagine, from one age to another, a succession of beings of exceptional gifts able to communicate with one another. Such beings are well aware that it is not in their interests to display their powers openly. If Christopher Columbus had been a man of this caliber he would have kept his discovery secret. Obligated as they are to observe some degree of clandestinity, these men can establish satisfactory contacts only with their equals. One has only to think of a discussion between doctors by a patient's bed in a hospital, not a word of which, though clearly audible, can be understood by the sick man; the point of my argument will then be readily grasped without it being necessary to confuse the issue by talking about occultism, initiation, etc. Finally, it is obvious that this intellectual elite, being anxious not to attract attention if only to avoid meeting with obstruction, would have something better to do than play at being conspirators. If they form a society it is because they may have no choice in the matter; and if they have a language of their own this is because the ideas expressed in this language are inaccessible to ordinary minds. This is the only sense in which we can accept the idea of a secret society. The other secret societies, the ones that are on record and of which there are many, all more or less powerful and picturesque, are in our opinion, nothing but imitations, like children copying grown-ups.

So long as men cherish the dream of getting something for nothing, money without working, knowledge without study, power without knowledge, and virtue without asceticism, so long will pseudosecret and

initiatory societies continue to flourish, with their imitative hierarchies and their mumbo-jumbo that imitates the real secret language, the language of technicians.

We have chosen the example of the 1622 Rosicrucians because the genuine members of that sect, according to tradition, did not claim to have derived their knowledge from some mysterious form of initiation, but from the study of the *Liber Mundi*, the Book of the World and of Nature. The Rosicrucian tradition is therefore the same as that of modern science. We are beginning today to understand that a profound and rational study of this book of nature calls for qualities other than mere observation and what we referred to just now as the scientific spirit, and indeed for something other than what we call intelligence. At the stage we have reached in scientific research our minds and intelligence will have to surpass themselves and rise to transcendent heights; the human, all-too-human, will no longer suffice. It is perhaps to a similar conclusion, arrived at centuries ago by men of superior intelligence, that we owe the legend, if not the fact of the Rosicrucian sect. The out-of-date modern is a rationalist. The contemporary of the future is more religiously minded. Too much modernism separates us from the past; a little futurism brings us nearer to it.

"Among the young atomic scientists," wrote Robert Jungk (in *Brighter Than a Thousand Suns*) "some looked upon their work as a kind of intellectual exercise of no particular significance and involving no obligations, but for others, their researches seemed like a religious experience."

Our Rosicrucians in 1622 visited Paris "invisibly." What is remarkable today, when police and espionage loom large, is that the great scientists manage to communicate with each other without allowing governments to discover what they are up to. The fate of the world could be discussed openly by ten scientists in the presence of Khrushchev and the President of the United States without these gentlemen being able to understand a single word. An international society of research workers who kept aloof from politics would have every chance of being undetected; and the same would apply to a society that confined its interventions to a few very special cases. Even its means of communication might never be traced. The radio might easily have been discovered in the seventeenth century, and

rudimentary crystal sets could have been used by initiates. Similarly, modern research on parapsychological media has led to practical applications in the sphere of telecommunications. The American engineer, Victor Enderby, wrote recently that if results had been obtained in this field, they had been kept secret at the express wish of the inventors.

We are again struck by the fact that Rosicrucian tradition makes allusion to certain machines, which official science at that date had not been able to produce, such as perpetual lamps, instruments for recording sounds and images, etc. The legend describes apparatus found in the tomb of the symbolic "Christian Rosenkreutz," which might have been made in 1958, but not in 1622. This shows that the Rosicrucian doctrine was concerned with the domination of the Universe through science and technique, and not at all through initiation or mysticism.

In the same way, we can quite well imagine in our own times a society with a secret technology of its own. Political persecution, social restrictions, the growth of a moral sense, and the feeling that they bear a terrible responsibility will make it more and more imperative for scientists to work in secret. But this clandestinity will in no way hamper research. It is unthinkable that rockets and enormous machines for splitting the atom will in future be the scientist's only instruments. All the really great discoveries have been made with the simplest of apparatus and the most modest installations. It may well be that there are certain places in the world at this moment where there is a great concentration of intellects and a corresponding degree of this new form of clandestinity. We are entering an epoch that strongly resembles the beginning of the seventeenth century, and a new manifesto, like that of 1622, is perhaps in preparation. Maybe it has already appeared without our noticing it.

What estranges us from this way of thinking is the fact that the ancients always expressed themselves in religious terms. As a result, our approach is exclusively literary, or "spiritual." This is where we show that we are "modern," and not belonging to the future.

Finally, we are impressed by the repeated affirmations of the Rosicrucians and alchemists that the object of the science of transmutations is the transmutation of the human mind itself. This has nothing to

do with magic, or with celestial favors; it means that when certain realities have been discovered, the observer will be obliged to look at everything from a different angle. When we remember the very rapid developments in the thinking of the greatest atomic scientists, we begin to understand what the Rosicrucians were trying to say.

We are living at a time when science, at its highest power, has entered the spiritual Universe and has transformed the mind of the observer himself, raising it to a plane which is no longer that of scientific intelligence, now proved to be inadequate.

What our atomic scientists have been through is comparable to the experience described in the alchemists' books and in the Rosicrucian tradition. The spiritual language is not the stammering that precedes scientific language, but rather the full consummation of the latter. What is happening to us now may well have happened long ago, on another plane of consciousness, so that the Rosicrucian legend and the realities of today have a common point of contact. We can understand tomorrow better if we look at the ancient world through fresh eyes.

We are no longer living in an age where progress is assessed exclusively in terms of technical and scientific advances. Another factor has to be considered, the same that was envisaged by the Unknown Elite in olden days who showed that the *Liber Mundi* was concerned with "something different." An eminent physicist, Heisenberg, writes today that: "The space in which man's spiritual being develops is in a different dimension from that in which it was moving in previous centuries."

Wells died a disappointed man. His whole life had been sustained by his faith in progress. But before he died he saw this progress take on a terrifying aspect. He did not trust it any more. The most formidable methods of destruction had just been invented, and science threatened to destroy the world. In 1946 the aging Wells wrote, in despair: "Man has reached the limit of his possibilities." It was then that this old man, whose genius had anticipated almost everything, ceased to be a contemporary of the future.

We are now beginning to perceive that humankind has reached the limit of only one of his possibilities; others have been revealed. New paths

have been opened up which have been alternately hidden and exposed by the tides of the ocean of time. Wolfgang Pauli, the world-famous mathematician and physicist, used to adopt a narrow scientific approach in the best traditions of the nineteenth century. In 1932, at the Copenhagen Congress, in his icy skepticism and lust for power he seemed like some Faustian Mephistopheles. In 1955 he had so widened his outlook that he became the eloquent advocate of a long-neglected method of seeking salvation from within.

This kind of evolution is typical, and has happened to most of the great atomic scientists. It does not mean a revival of a moralistic attitude or a vague religiosity. On the contrary; it signifies an improvement in the observer's approach and a new conception of the nature of knowledge. "In view of the division of the activities of the human mind into different compartments which have been strictly maintained for centuries," says Wolfgang Pauli, "I envisage a method whose aim would be to reconcile contraries in a synthesis incorporating a rational understanding and a mystical experience of their unity. No other objective would be in harmony with the mythology, whether avowed or not, of our epoch."



*The prophets of the Apocalypse—A Committee of Despair—A
Louis XVI machine-gun—Science is not a Sacred Cow—Monsieur
Despotopoulos would like to arrest progress—The legend of the Nine
Unknown Men*

On the threshold of modern times, the second half of the nineteenth century, there was in existence a band of violently reactionary thinkers. For them the "mystique" of social progress was nothing but a swindle; as for scientific and technical progress, this was leading the world to ruin. It was Philippe Lavastine, a new incarnation of the hero of Balzac's "Chef-d'Œuvre Inconnu" ("Unknown Masterpiece") and a disciple of Gurdjieff, who told me about them. At that time, when I was reading Rene Guenon,

chief of the antiprogessists, and was seeing a lot of Lanza del Vasto who had just returned from India, I was inclined to agree with these reactionary thinkers.

The ancients, no doubt, were as wicked as we are, but they knew it. And so they were wise enough to put up protective railings. A papal bull condemned the use of the tripod as a means of strengthening the archer's bow; this machine, supplementing the natural force of the archer, would make fighting inhuman. This bull remained in force for two hundred years. Roland de Roncevaux, smitten by the slings of the Saracens, exclaimed: "Cursed be the coward who invented arms capable of killing from a distance." Nearer our own times, in 1755, a French engineer named Du Perron presented the young Louis XVI with a "military organ" which, when a lever was pulled, discharged twenty-four bullets simultaneously. A memoire was attached to this instrument, the forerunner of the modern machine-gun. The weapon was considered by the King and his ministers, Malesherbes and Turgot, to be so deadly that the offer was refused, and the inventor was deemed to be an enemy of humanity.

In our desire to emancipate everything, we have also emancipated war. Whereas it used to be an occasion for self-sacrifice and salvation for a few, it now spells ruin for all.

These were more or less my views around 1946, and I was thinking of preparing an anthology of "reactionary thinkers," whose influence at that time was overshadowed by that of the romantic progressists. These "writers in reverse," these prophets of the Apocalypse crying in the desert, were Blanc de Saint-Bonnet, Emile Montagut, Albert Sorel, Donoso Cortes, etc. Following the same line of revolt as these "fathers" of the movement I brought out a pamphlet entitled *Le Temps des Assassins* (The Time of Assassins), and my contributors included notably Aldous Huxley and Albert Camus. The American press gave some publicity to this pamphlet which vigorously denounced science, the army and the politicians, and pleaded for a second Nuremberg to judge all the technicians of destruction.

I feel today that things are not quite so simple, and that a different and higher view must be taken of irreversible history. And yet in the

uneasy post-war years around 1946 this line of thought shone like a beacon over the ocean of anxieties that were torturing the intellectuals who had no desire to be either victims nor executioners. And it was true that, after Einstein's telegram, things had gotten worse. "What the scientists have got in their briefcases is terrifying," said Khrushchev in 1960. But a kind of lassitude set in, and after a number of solemn and useless protests, people turned their attention to other things. Like the condemned man in his cell, they were waiting to know whether they had been reprieved or not. In any case there was a general feeling of revolt against a science which was capable of annihilating the world, and of skepticism as to whether technical progress could do much to save the situation. "They'll end by blowing up the world."

Since Aldous Huxley's furious diatribes in *Counterpoint* and *Brave New World*, scientific optimism was at a discount. In 1951 the American chemist Anthony Standen published a book called *Science Is a Sacred Cow* in which he protested against the tendency to idolize science. In October 1953 a celebrated professor of law in Athens, Mr. O. J. Despotopoulos, appealed to UNESCO in a manifesto demanding that scientific research should cease, or at least be kept secret. "It ought," he suggested, "to be in future entrusted to a council of scientists, elected by a world vote, and consequently having authority to keep silence." Utopian as it may seem, this idea is none the less interesting. It points to something that might, in the future, be possible and, as we shall see presently, reechoes one of the great themes discussed in bygone civilizations. In a letter I received from Mr. Despotopoulos in 1955, he outlined his ideas as follows:

Natural science is certainly one of the most meritorious conquests in human history. But the moment it liberates forces capable of destroying the whole human race it ceases from a moral standpoint to be what it used to be. It has become almost impossible to distinguish between pure science and its technological applications. One cannot therefore speak of science *qua* science as being a good thing in itself. Or rather, in some of its more important branches, it has now become a negative value in so far as it no longer conforms to

ordinary moral standards and is free to exercise its dangerous activities in order to satisfy the lust for power of the politicians. This adoration of progress and freedom where scientific research is concerned is wholly pernicious. What we propose is this: the codification of the conquests of natural science up to now, and the creation of a Council of World Scientists with powers to prohibit absolutely or partially any progress it may achieve in the future. Such a measure, no doubt, would be tragically severe, even cruel, since the activity it seeks to curtail is one of the noblest human impulses, and it is impossible to underestimate the difficulties inherent in such a solution. But there is no other that could be so efficacious. The objections are easily foreseen: a return to the Middle Ages, to barbarism, etc.; but these do not really carry any weight. Our intention is not to retard intellectual advancement, but to protect it; not to impose restrictions for the benefit of any social class, but in the interests of humanity as a whole. There lies the problem. Anything else can only lead to divisions and time wasted in trying to tackle problems of lesser importance.

These ideas were favorably received in the British and German press, and dealt with very fully in the bulletin of the atomic scientists in London. They have, in fact, much in common with certain proposals put forward at international conferences on disarmament. There is reason to believe, moreover, that in other civilizations science, though not inexistent, was kept secret. Such would seem to have been the origin of the marvelous legend of the Nine Unknown Men.

This tradition goes back to the time of the Emperor Asoka, who reigned in India from 273 BC. He was the grandson of Chandragupta who was the first to unify India. Ambitious like his ancestor whose achievements he was anxious to complete, he conquered the region of Kalinga which lay between what is now Calcutta and Madras. The Kalingans resisted and lost 100,000 men in the battle.

At the sight of this massacre Asoka was overcome. Forever after he experienced a horror of war. He renounced the idea of trying to inte-

grate the rebellious people, declaring that the only true conquest was to win men's hearts by observance of the laws of duty and piety, because the Sacred Majesty desired that all living creatures should enjoy security, peace, and happiness and be free to live as they pleased.

A convert to Buddhism, Asoka, by his own virtuous example, spread this religion throughout India and his entire empire, which included Malaya, Ceylon, and Indonesia. Later Buddhism penetrated to Nepal, Tibet, China, and Mongolia. Asoka nevertheless respected all religious sects. He preached vegetarianism, abolished alcohol and the slaughter of animals. H. G. Wells, in his abridged version of his *Outline of World History*, wrote: 'Among the tens of thousands of names of monarchs accumulated in the files of history, the name of Asoka shines almost alone, like a star.'

It is said that the Emperor Asoka, aware of the horrors of war, wished to forbid men ever to put their intelligence to evil uses. During his reign, natural science—past, and present—was vowed to secrecy. Henceforward, and for the next two thousand years, all researches, ranging from the structure of matter to the techniques employed in collective psychology, were to be hidden behind the mystical mask of a people commonly believed to be exclusively concerned with ecstasy and supernatural phenomena. Asoka founded the most powerful secret society on earth: that of the Nine Unknown Men.

It is still thought that the great men responsible for the destiny of modern India, and scientists like Bose and Ram believe in the existence of the Nine, and even receive advice and messages from them.

One can imagine the extraordinary importance of secret knowledge in the hands of nine men benefiting directly from experiments, studies, and documents accumulated over a period of more than two thousand years. What can have been the aim of these men? Not to allow methods of destruction to fall into the hands of unqualified persons, and to pursue knowledge which would benefit mankind. Their numbers would be renewed by cooption, so as to preserve the secrecy of techniques handed down from ancient times.

Examples of the Nine Unknown Men making contact with the outer world are rare. There was, however, the extraordinary case of one

of the most mysterious figures in Western history: the Pope Sylvester II, known also by the name of Gerbert d'Aurillac. Born in the Auvergne in 920 (d. 1003), Gerbert was a Benedictine monk, professor at the University of Rheims, Archbishop of Ravenna, and Pope by the grace of Otho III. He is supposed to have spent some time in Spain, after which a mysterious voyage brought him to India where he is reputed to have acquired various kinds of skills that stupefied his entourage. For example, he possessed in his palace a bronze head, which answered *yes* or *no* to questions put to it on politics or the general position of Christianity. According to Sylvester II* this was a perfectly simple operation corresponding to a two-figure calculation, and was performed by an automaton similar to our modern binary machines. This "magic" head was destroyed when Sylvester died, and all the information it imparted carefully concealed. No doubt an authorized research worker would come across some surprising things in the Vatican Library.

In the cybernetics journal *Computers and Automation* of October 1954 the following comment appeared: "We must suppose that he (Sylvester) was possessed of extraordinary knowledge and the most remarkable mechanical skill and inventiveness. This speaking head must have been fashioned 'under a certain conjunction of stars occurring at the exact moment when all the planets were starting on their courses.' Neither the past, nor the present nor the future entered into it, since this invention apparently far exceeded in its scope its rival, the perverse 'mirror on the wall' of the Queen, the precursor of our modern electronic brain. Naturally, it was widely asserted that Gerbert was only able to produce such a machine because he was in league with the devil and had sworn eternal allegiance to him."

Had other Europeans any contact with this society of the Nine Unknown Men? It was not until the nineteenth century that this mystery was referred to again in the works of the French writer Jacolliot.

Jacolliot was French Consul at Calcutta under the Second Empire. He wrote some quite important prophetic works, comparable, if not supe-

*See Vol. CXXXIX of Migne's *Patrologie latine*.

rior to those of Jules Verne. He also left several books dealing with the great secrets of the human race. A great many occult writers, prophets, and miracle workers have borrowed from his writings, which, completely neglected in France, are well known in Russia.

Jaccoliot states categorically that the society of Nine did actually exist. And, to make it all the more intriguing, he refers in this connection to certain techniques, unimaginable in 1860, such as, for example, the liberation of energy, sterilization by radiation, and psychological warfare.

Yersin, one of Pasteur and de Roux's closest collaborators, was entrusted, it seems, with certain biological secrets when he visited Madras in 1890, and following the instructions he received was able to prepare a serum against cholera and the plague.

The story of the Nine Unknown Men was popularized for the first time in 1927 in a book by Talbot Mundy who for twenty-five years was a member of the British police force in India. His book is half fiction, half scientific inquiry. The Nine apparently employed a synthetic language, and each of them was in possession of a book that was constantly being rewritten and containing a detailed account of some science.

The first of these books is said to have been devoted to the technique of propaganda and psychological warfare. "The most dangerous of all sciences," wrote Mundy, "is that of moulding mass opinion, because it would enable anyone to govern the whole world."

It must be remembered that Korjybski's *General Semantics* did not appear until 1937 and that it was not until the West had had the experience of the last World War that the techniques of the psychology of language, i.e. propaganda, could be formulated. The first American college of semantics only came into being in 1950. In France almost the only book that is at all well known is Serge Tchocotine's *Le Viol des Foules* (The Rape of the Masses), which has had a considerable influence in intellectual-political circles, although it deals only superficially with the subject.

The second book was on physiology. It explained, among other things, how it is possible to kill a man by touching him, death being caused by a reversal of the nerve impulse. It is said that Judo is a result of "leakages" from this book.

The third volume was a study on microbiology, and dealt especially with protective colloids.

The fourth was concerned with the transmutation of metals. There is a legend that in times of drought temples and religious relief organizations received large quantities of fine gold from a secret source.

The fifth volume contains a study of all means of communication, terrestrial and extraterrestrial.

The sixth expounds the secrets of gravitation.

The seventh contains the most exhaustive cosmogony known to humanity.

The eighth deals with light.

The ninth volume, on sociology, gives the rules for the evolution of societies, and the means of foretelling their decline.

Connected with the Nine Unknown Men is the mystery of the waters of the Ganges. Multitudes of pilgrims, suffering from the most appalling diseases, bathe in them without harming the healthy ones. The sacred waters purify everything. Their strange properties have been attributed to the fact that they contain bacteriophages. But why should these not be formed in the Bramaputra, the Amazon or the Seine? Jacolliot in his book advances the theory of sterilization by radiation, a hundred years before such a thing was thought to be possible. These radiations, he says, probably come from a secret temple hollowed out in the bed of the Ganges.

Avoiding all forms of religious, social, or political agitations, deliberately and perfectly concealed from the public eye, the Nine were the incarnation of the ideal man of science, serenely aloof, but conscious of his moral obligations. Having the power to mold the destiny of the human race, but refraining from its exercise, this secret society is the finest tribute imaginable to freedom of the most exalted kind. Looking down from the watchtower of their hidden glory, these Nine Unknown Men watched civilizations being born, destroyed and reborn again, tolerant rather than indifferent, and ready to come to the rescue—but always observing that rule of silence that is the mark of human greatness.

Myth or reality? A magnificent myth, in any case, and one that has issued from the depths of time—a harbinger, maybe, of the future?

!!! *Fantastic realism again—Past techniques—Further consideration on the necessity for secrecy—We take a voyage through time—The spirit's continuity—The engineer and the magician once again—Past and future—The present is lagging in both directions—Gold from ancient books—A new vision of the ancient world*

We are neither materialists nor spiritualists: these distinctions no longer have any meaning for us. Quite simply, we seek reality while avoiding the conditioned reflex of the modern man (in our opinion behind the times) who turns away as soon as this reality takes on a fantastic air. We have turned ourselves into barbarians again so as to conquer this reflex, exactly as the painters did in order to tear away the screen of conventions erected between their vision and things as they are. Like them, too, we have opted for methods that may seem elementary, barbaric, even childish at times. We take up a position vis-a-vis the elements and methods of knowledge like that of Cezanne in front of his apple, or van Gogh in his field of corn. We refuse to exclude any facts, or aspects of reality on the grounds that they are not "respectable," or that they go beyond the frontiers fixed by current theories.

Gauguin did not hesitate to paint a red horse, nor Manet to introduce a naked woman among the guests in the *Dejeuner sur l'herbe* (The Lunch on the Grass); nor do Max Ernst, Picabia, and Dali exclude from their canvases figures sprung from dreams and the world that lives in the submerged depths of our mind. Our method will meet with derision, revolt, and sarcasm: we shall not be hung in the Academy. What is now accepted from painters, poets, cineasts, and decorators is not yet acceptable in our domain. Science, psychology, and sociology are beset with taboos. Ideas about sacrosanctity are no sooner got rid of than they come back in no time, under various disguises. But, let's face it, science is not a sacred cow: she can quite well be hustled along to clear the road.

Let us now recapitulate. In this part of our work, entitled *Future Perfect*, our reasoning has been along these lines:

It may be that what we call esotericism, the keystone of secret societies and religions, is a remnant, which we find very difficult to understand

or deal with, of a very ancient branch of knowledge, of a *technical nature*, relating to both mind and matter. This idea will be expanded later on.

The so-called "secrets" may not be fables, legends, or games, but precise technical systems—keys to open up and reveal the forces contained in man and in things.

Science is not a technique. Contrary to what might be supposed, technique in many cases does not come after science, but precedes it. Technique means doing. Science shows that nothing can be done.

Then the barriers of impossibilities begin to crumble. We do not, of course, pretend that science is useless. The reader will see how highly we value science, and with what wonder and admiration we observe it undergoing a transformation. We simply believe that in the distant past techniques may well have preceded it.

It is possible that techniques used long ago may have endowed men with powers too terrible to be divulged.

There could be two reasons for secrecy:

- (a) Caution. "He who knows holds his tongue." Beware lest the keys fall into evil hands.
- (b) The fact that the possession and ability to handle techniques and skills of this kind calls for a degree of intellectual acuity above the ordinary, and the exercise of intelligence and a command of language on a different plane, so that there can be no communication at ordinary human level. Thus secrecy results from the nature of the thing kept secret, and is not necessarily imposed by those who know.

A similar state of affairs exists in our modern world. The rapid development of techniques in the world of science makes secrecy not only desirable but essential. Great dangers call for great discretion. As knowledge advances, the more it is surrounded by secrecy. Scientists and technicians form themselves into guilds.

The language of knowledge and power is incomprehensible to the outside world. Physicomathematical research presupposes a different kind

of mental structure. At the highest level, those who, in Einstein's phrase, have "the power to make far-reaching decisions on good and evil," constitute a real "cryptocracy" (or secret autocracy).

The vision we have of the knowledge possessed by the ancients owes nothing to "spiritualist" theories. Our way of looking at the present and the immediate future allows for the possibility of magic in spheres where it is assumed that there is a rationalistic explanation for everything. All we are seeking is illumination of a kind that would enable us to see the whole human adventure in the context of eternity, and we are ready to use any means that will help us to achieve this end.

Basically, in this part of the book, as elsewhere, our theme is the following:

Man no doubt has the possibility of establishing his relationship with the Universe as a whole. You will remember the paradox in Langevin's story about the traveler to the stars. Andromeda is three million light-years from the earth. But a traveler moving at a speed near to that of light would only be a few years older on arriving. According to the unitary theory of Jean Charon, for example, it is not inconceivable that during this journey the Earth, too, would not have grown any older. Thus man would appear to be in contact with the whole of creation, space and time being in reality not what they seem. On the other hand, physicomathematical research, at the stage where Einstein left it, is an attempt on the part of human intelligence to discover the law governing the whole body of the forces that permeate the Universe (gravitation, electromagnetism, light, and nuclear energy).

An attempt, that is to say, to achieve a unitary vision, an effort of the mind to attain a point where the continuity of things will become apparent. And why should the mind feel this desire, unless it had a presentiment that such a point exists, and that it is capable of reaching this position? "You would not be looking for me if you had not already found me."

On another plane, but in the same order of ideas, what we are seeking is a global view revealing the continuity of all the progress made in the sphere of human intelligence and human knowledge. This explains why

we shall be passing in rapid succession from magic to progress in technique, from the Rosicrucians to Princeton, from the Maya civilization to the next mutation of man, from the Seal of Solomon to the periodic table of the elements, from civilizations that have disappeared to others still unborn, from Fulcanelli to Oppenheimer, from sorcery to the electronic brain, etc. . . . We shall travel so fast that space and time will burst out from their shells and we shall catch a glimpse of permanent continuity.

There is dream travel and real travel. We have chosen reality. It is in this sense that this book is not fiction. We have built apparatus—in the shape of demonstrable correspondences, valid comparisons, and undisputed analogies. Apparatus that works, rockets that go off. And there have been times when it seemed to us that our minds had reached the point from which it is possible to survey the whole of human endeavor. Civilizations and the high peaks of human knowledge and organization are like rocks in the ocean. We can only catch a glimpse of them as the water strikes them; all we see is the wave as it breaks and the flying spray. But what we are seeking is the place from which it will be possible to contemplate the whole vast ocean in its calm and mighty continuity and harmonious unity.

We must now return to our reflections on techniques, science, and magic. They will help to clarify our ideas on secret societies (or rather "open conspiracies") and prepare the way for future studies, one on Alchemy and the other on Vanished Civilizations.

When a young engineer goes into industry, he quickly distinguishes two separate worlds. On the one hand, the laboratory, with its well-defined laws governing experiments that can be repeated and the image it presents of a comprehensible world. On the other hand, there is the "real" Universe where laws do not always apply, and where events cannot always be foreseen, or impossible things happen. If he is strong minded, our engineer's reaction is one of anger and passion, together with a desire to "violate this bitch, matter." Those who adopt this attitude usually have tragic lives.

Think of Edison, Tesla, Armstrong. A demon drives them. Werner

von Braun tries out his rockets on London and massacres thousands of people only to be arrested in the end by the Gestapo for having proclaimed: "After all, I don't care a damn about Germany winning the war; what I want is to conquer the Moon!"*

It has been said that the real tragedy today is politics. This is an out-of-date view. The real tragedy is the laboratory. It is to these "magicians" that we owe technical progress. Technique, in our opinion, has nothing to do with the practical application of science. On the contrary, it is moving against science. The eminent mathematician and astronomer Simon Newcomb demonstrated that a machine heavier than air could never fly. Two bicycle-repair-shop men proved him to be wrong. Rutherford and Millikan showed that it would never be possible to make use of the reserves of energy in the nucleus of an atom. The answer was the bomb at Hiroshima. Science teaches that a mass of homogeneous air cannot be separated into hot air and cold air. Hilsch[†] showed that all that is needed is to drive this mass of air through a specially constructed tube.

Science erects barriers of impossibilities. The engineer, like the magician under the eyes of the Cartesian explorer, passes through these barriers by means of what the physicists call the "tunnel effect." He is drawn by a magic attraction. He wants to see behind the wall—go to Mars, capture thunder, manufacture gold. He seeks neither gain nor glory; his aim is to catch out the Universe and expose its mysteries. In the Jungian sense, he is an archetype. Because of the miracles he tries to perform, the fatality which hangs over him and the painful end which so often awaits him, he is the son of the heroes of the Sagas and Greek Tragedy.[‡]

Like the magician, he cultivates secrecy and obeys that law of similarity that Frazer discovered in his study of magic in *The Golden Bough*. At first, invention is an imitation of natural phenomena. The flying machine resembles a bird, the automaton is like a man. And yet resemblance to the object, creature, or phenomenon whose powers it is designed to capture is almost always useless, and even harmful to the successful working of the

*Walter Doroberger, *The Secret Army of Pennemunde*.

†*Technique mondiale (Technical Record)*, Paris, 1957.

‡Edwin Armstrong, "The Inventor as Hero" (article in *Harper's Magazine*).

inventor's apparatus. Nevertheless, again, like the magician, the inventor derives from the resemblance a sense of power and pleasure, which acts as an incentive.

It is possible, in many cases, to retrace the transition from magical imitation to scientific technology. Here is an example:

An ancient method of hardening steel practiced in the Near East was to plunge a red-hot blade into the body of a prisoner. This is a typical act of magic: the object being to transfer the adversary's warlike qualities to the sword. This practice was known to the Crusaders in the West, who had noticed that Damascus steel was in fact harder than European steel. As an experiment, steel was dipped into water in which animal skins had been immersed. The same result was obtained. In the nineteenth century it was discovered that these results were due to the presence of organic nitrogen. In the twentieth century, when the problem of liquefying gases had been solved, the method was perfected by immersing steel in liquid nitrogen at a low temperature. In this form nitration has been adopted in our technology.

Another connection between magic and technology can be found in the "charms" which the old alchemists used to pronounce while engaged in their work. This was probably a method of measuring time in the darkness of the laboratory. Photographers often recite regular incantations while developing their film, and we have heard one of these being recited at the top of the Jungfrau while a film that had been exposed to cosmic rays was being developed.

Finally, there is still another connection, even closer and very striking, between magic and technology, and that is the way in which inventions tend to appear simultaneously. Most countries keep a record of the day, and even the hour when a patent is applied for; and it has often been remarked that inventors working far apart and who do not even know of each other's existence have applied for the same patent at exactly the same time.

This phenomenon can scarcely be explained by a vague idea that "inventions are in the air," or that "inventions appear as soon as they are needed." If this is an example of extrasensory perception, of communi-

cation between minds engaged on the same research, the phenomenon calls for a serious statistical study. Such an inquiry would perhaps help to explain another fact, namely that identical magic techniques are to be found in most ancient civilizations in many different parts of the world.

We are living under the impression that technical inventions are a specifically temporary phenomenon. This is because we never take the trouble to go and consult ancient documents. There is not a single scientific research center working on the past. Old books are read, if they are read at all, by only a very few scholars whose interests are mainly literary or historical. Consequently they pay scant attention to anything of a scientific or technical nature. Is this lack of interest in the past due to the fact that we are too much taken up with preparing for the future? I am not so sure. French intellectuals seem to be held back by nineteenth-century standards. The avant-garde writers are not interested in science, and attention generally is still focused on a sociology belonging to the era of the steam engine and a revolutionary humanism as out-of-date as the musket. The extent to which France is still living in the 1880s is unbelievable. Is her industry more go-ahead?

In 1955 the first world atomic conference was held at Geneva. Rene Alleau found himself responsible for the distribution throughout France of documents relating to the peaceful uses of atomic energy.

The sixteen volumes containing the experimental results obtained by scientists in every country were the most important publications in the history of science and technology. Five thousand industries with a potential long- or short-term interest in nuclear energy received a letter announcing this publication. Only twenty-five firms replied.

No doubt it will be necessary to wait until the younger generations have reached positions of responsibility before France recovers her mental alertness and flexibility. It is for these generations that this book is written. Those who are really interested in the future should also be interested in the past, and as ready to look for what they are seeking in both directions—backward as well as forward.

We know nothing, or next to nothing, about the past. There are

unknown treasures still slumbering in libraries. We who pretend to "love humanity" prefer to think of the progress of knowledge as being discontinuous with hundreds of thousands of years of ignorance to set against a few centuries of wisdom. The idea that there suddenly came a "century of enlightenment"—an idea that has been accepted with the most disconcerting naivety—had the effect of plunging into obscurity all other periods in our history. If old books could be studied through fresh eyes, all that would be changed. We should be amazed at the wealth they contain. And still we should have to remind ourselves, as Newton's contemporary, Francis Atterbury, remarked, that "more old books have been lost than have been preserved."

To undertake a study of this kind, through fresh eyes, has been the aim of our friend Rene Alleau, who is both historian and technician. He has outlined a method and obtained some results. Up to the present he does not seem to have been encouraged in any way to pursue this task, which is more than one man alone could possibly cope with. In December 1955, at my request, he gave a lecture at a meeting of Automobile Engineers, under the chairmanship of Jean-Henri Laboiirdette, the gist of which was as follows:

"What has remained of the thousands of manuscripts in the library at Alexandria founded by Ptolemy Soter, and all those documents on the science of the ancients, which can never be replaced? Where are the ashes of the 200,000 volumes in the library at Pergamo? What has become of the Pisistratus collections in Athens, or of the library of the Temple of Jerusalem, or of the one in the sanctuary of Phtah at Memphis? What treasures were contained in the thousands of books which in 213 BC were burnt by the Emperor Chou-Hoang-Ti for purely political reasons? As a result of all this, the position today with regard to all these ancient books is as if we were looking at an enormous temple of which only a few stones are still standing. But if we examine these fragments and these inscriptions carefully, we shall discover they contain truths far too profound to be attributed merely to the intuition of the ancients.

"In the first place, contrary to what is generally accepted, the methods of rationalism were not invented by Descartes. Take a look at the

texts: 'He who seeks the truth,' wrote Descartes, 'must, as far as possible, doubt everything.' This saying is well known, and it sounds very new. If, however, we look at the second book of Aristotle's *Metaphysics*, we find this: 'He who seeks to acquire knowledge must first know how to doubt, for intellectual doubt helps to establish the truth.' Moreover, it is clear that Descartes borrowed not only this striking observation from Aristotle, but nearly all the famous rules for intellectual guidance which are a basis for the experimental method. This proves, in any case, that Descartes had read Aristotle, which is something many of our modern Cartesians have never done. The latter might also be aware that someone wrote: 'If I make a mistake, I conclude that I exist; for he who does not exist cannot make a mistake, so that the fact of having made a mistake is proof that I exist.' Unfortunately, this was not said by Descartes, but by Saint Augustine.

"As to the skepticism which any observer ought to feel, it is impossible to go further than Democritus, who refused to admit the validity of any experiment at which he personally had not been present, and on the results of which he had not set his personal seal as a guarantee of its authenticity. This seems to me to be very far removed from the naivety with which the Ancients are often reproached. Of course, you will say, the philosophers of antiquity had a genius for pure knowledge and erudition, but, after all, what did they really know about science?

"Contrary, again, to what the modern textbooks say, it was not Democritus or Leucippus or Epicurus who first initiated and formulated atomic theories. Sextus Empiricus informs us that Democritus himself had learnt them from tradition, especially from Moschus the Phoenician who, it seems (an important point to note) had declared that the atom was divisible.

"It will be seen, then, that the earlier theory was also more correct than the views of Democritus and the Greek atomists concerning the indivisibility of atoms. In this particular instance it seems clear that this was a case of some confusion having arisen due to a misinterpretation of theories of very ancient origin, rather than of new and original discoveries.

"Again, in the sphere of cosmology, it is amazing to reflect that although there were no telescopes in those days, it often happened that the most ancient astronomical observations were the most accurate. For example, in regard to the Milky Way, it was thought by Thales and Anaximenes to be made up of stars, each one of which was a world containing a sun and planets, these worlds being situated in the immensity of space. It is clear that Lucretius was familiar with the theory of the uniformity of the speed of bodies falling in a vacuum, and of an infinite space filled with an infinity of worlds. Pythagoras, before Newton, had formulated the law of the force of attraction varying inversely as the square of the distance between objects. Plutarch, in attempting to explain gravitation, attributed it to a reciprocal attraction between all bodies, thus accounting for the fact that the Earth causes all terrestrial bodies to gravitate toward it, just as the Sun and the Moon draw to their center everything pertaining to them and by their force of attraction, retain each body in its own particular sphere.

"Galileo and Newton admitted openly their debt to ancient science. Copernicus, also, in the preface to his works addressed to Pope Paul III, stated explicitly that it was his reading of ancient authors that gave him the idea of the movement of the Earth. Moreover, the admission of these borrowings does not in any way detract from the glory of Copernicus, Newton, or Galileo, who all belonged to that species of superior beings whose disinterestedness and generosity have nothing in common with the modern author's self-sufficiency and cult of originality at all costs. A humbler and more profoundly genuine attitude is exemplified in the story of Marie Antoinette's *modiste** exclaiming, as she deftly touched up an ancient hat: 'There is nothing new except what has been forgotten.'

"The history of inventions, like that of the sciences, is enough to prove the truth of this bright remark. 'The fate of most discoveries,' wrote Fournier, 'is determined by that "fleeting moment" which the Ancients thought was as unapproachable as a goddess once it had been allowed to

*[One who makes and sells dresses and hats. Marie Antoinette's *modiste* was named Rose Bertin. —*Ed.*]

escape. Unless the idea that starts a train of thought, or the word that leads to the solution of a problem, or the significant fact are caught on the instant, an invention may have been lost forever or, at all events, delayed for several generations. The only way of ensuring its triumphant return is the chance that a new idea may rescue the old one from oblivion, or else a fortunate plagiarism perpetuated by an inventor secondhand; where inventions are concerned, woe to the first-comer, and glory and profit to the one who comes after.' It is reflections such as these that justify the title of my lecture.

"For, in my opinion, it should be possible to a large extent to replace chance by determinism, and the hazards of sporadic periods of invention by the guarantees offered by a vast system of historical documentation based on carefully controlled experiments. With this end in view, I propose to set up an organization, not for the purpose of establishing the priority of patents (which, in any case, ceased in the eighteenth century), but to provide a technological service that will simply study ancient processes and endeavor to adapt them, if possible, to the requirements of modern industry.

"Had such an organization existed before, it might, for example, have drawn attention to a little book, of which no notice was taken when it was published in 1618, entitled *Histoire naturelle de la fontaine qui brule pres de Grenoble* (The true story of the burning fountain near Grenoble). Its author was a doctor from Tournon, named Jean Tardin. Had anybody taken the trouble to study this document, gas could have been used for lighting at the beginning of the seventeenth century. For not only did Jean Tardin study the natural gasometer in the fountain; he reproduced in his laboratory the same phenomenon he had observed in nature. He put coal into a sealed tube, subjected it to a high temperature, and produced in this way the flames whose origin he was seeking. He explained clearly that the basis of this fire was bitumen, which could be broken down into a gas that would give off an 'inflammable exhalation.' As it turned out, it was not until somewhere around 1797 that the Frenchman Lebon, before the Englishman Winsor, patented his 'thermo-lamp.' And so, through a failure to reexamine ancient documents, a discovery that might have had

considerable industrial and commercial repercussions was forgotten and, therefore, for all practical purposes, lost.

"In the same way, nearly a hundred years before the first optic signals discovered by Claude Chappe in 1793, a letter from Fenelon to Jean Sobieski, secretary to the King of Poland, dated November 26, 1695, mentions experiments recently carried out, not only in optic telegraphy, but also in telephony by means of a loudspeaker.

"In 1636 an unknown author, Schwenter, in his *Delassements physio-mathematiques* was already investigating the principle of the electric telegraph and the possibility of 'two persons being able to communicate with one another by means of a magnetic needle.' Now, Oersted's experiments in this field date from as late as 1819. Here, again, there was a lapse of nearly two centuries during which the original discovery was forgotten.

"Let me recall briefly a few little-known inventions: the diving bell is described in the manuscript of *Alexander's Romance* in the Royal Print Room in Berlin: date, 1320. The manuscript of the German poem, *Salman und Morolf*, written in 1190 (Stuttgart Library) contains a draw-

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ing of an underwater vessel; according to the inscription, the ship was made of leather and navigable in stormy weather. Finding himself one day surrounded by hostile galleys and in danger of being captured, the inventor submerged his vessel and lived for fourteen days at the bottom of the sea, breathing through a tube floating on the surface. In a work written by Ludwig von Hartenstein, circa 1510, there is a drawing of a diver's outfit, with two apertures for the eyes covered with glass. At the top there is a long tube with a tap to allow the intake from outside. To the right and left of the drawing are shown the indispensable accessories for the descent and return, namely leaden soles and a stepladder.

"Here is another example of a forgotten discovery: an unknown writer, born at Montebourg, near Coutances, in 1729, published a work entitled *Giphantie*, an anagram of the first part of the author's name, Tiphaigne de le Roche. In it is described not only black-and-white, but color photography, as follows: 'The image is imprinted instantaneously on the exposed sheet (toile), which is then at once removed and placed in a dark room. An hour later the prepared surface has dried, and you have a picture all the more

precious in that no work of art can imitate its truthfulness.' The author adds: 'it is first of all necessary to examine the nature of the sticky substance which intercepts and retains the light rays; secondly, to overcome the difficulty of preparing and employing it; and, thirdly, to study the action of the light and of this dried substance.' And yet it was not until a century later, on January 17, 1839, that Daguerre's discovery was announced by Arago to the French Academie des Sciences. Moreover, it should be mentioned that the properties of certain metallic bodies capable of capturing an image were described in a treatise by Fabricius, *De rebus metallicis*, published in 1566.

"Another example is vaccination, described long ages ago in one of the Vedas, the Sactaya Grantham. This text was cited by Moreau de Jouet on October 16, 1826, in his *Memoire sur la variolide* (Memoir of Smallpox) presented to the Academie des Sciences: 'Collect the fluid from the pustules on the point of a lancet and insert it into the arm, so that the fluid mixes with the blood: This will produce fever, but the disease will then be very mild and there will be no cause for alarm.' Then follows an exact description of all the symptoms.

"What about anesthetics? On this subject it would have been possible to study a work by Denis Papin, written in 1681, entitled: *Le Traite des operations sans douleur* (The Treatise of Operations without Pain), or else to repeat the old Chinese experiments with Indian hemp, or again to employ for this purpose mandrake wine, well known in the Middle Ages, and completely forgotten in the seventeenth century, the effects of which were studied by a certain Doctor Auriol of Toulouse, in 1823. No one has ever taken the trouble to check the results obtained.

"And penicillin? Here we can mention first an empirical remedy used in the Middle Ages, namely applications of Roquefort cheese; but there is also a record of something still more extraordinary. Ernest Duchesne, a student at the Ecole de Same Militaire at Lyons, presented on December 17, 1897, a thesis entitled: *Contribution to a study of hostile influences in micro-organisms—the antagonism between moulds and microbes*. This work describes experiments showing the action of *penicillium glaucum* on bacteria. Yet this thesis attracted no attention. I would stress particularly this flagrant example of a discovery being forgotten

so near to our own times when bacteriology was in a flourishing state.

"Examples of this kind are innumerable, and each one could be the subject of a whole lecture. I will take now the case of oxygen, the effects of which were studied in the fifteenth century by an alchemist named Eck de Sulsbach, as Chevreul pointed out in the *Journal de Savants* in October 1849. Moreover, Theophrastus had already stated that a flame is sustained by an ethereal body (*un corps aeriforme*), an opinion shared by Clement of Alexandria.

"I will pass over the extraordinary anticipations of Roger Bacon, Cyrano de Bergerac, and others, because it would be too easy to attribute them to pure imagination. I prefer to stick to facts that can be verified. As regards the automobile, I would point out that in Nuremberg in the seventeenth century a certain Johann Hautch constructed carriages with sprung suspension. In 1645 a vehicle of this type was tested in the grounds of the Temple, but I believe that the Society founded to exploit this invention never came into being. Possibly it met with obstacles like those encountered by the first Parisian Transport Society, due, I would remind you, to the initiative of Pascal who caused it to be subsidized and patronized by one of his friends, the Due de Roannes.

"Even in the case of still more important discoveries than these, we underestimate the influence of data supplied by the Ancients. Christopher Columbus admitted openly how much he owed to the old philosophers, poets, and sages. It is not generally known that Columbus copied out twice the chorus in the second act of Seneca's tragedy, *Medea*, in which the author speaks of a world destined to be discovered in future centuries. This copy can be examined in the MS. of *Las profecias* in the Library at Seville. Columbus also remembered Aristotle's observations regarding the roundness of the Earth in his treatise *De Coelo*.

"Joubert was right when he remarked that 'nothing makes men so impudent and conceited as ignorance of the past and a scorn for old books.' As Rivarol so well expressed it: 'Every State is a mystery ship with its anchor in the sky,' so it could also be said, in speaking of time, that the ship of the future has its anchors in the sky of the past. Forgetfulness alone threatens us with the worst shipwrecks.

"An extreme example of this forgetfulness is seen in the story, which would be incredible if it were not true, of the gold mines in California. In June 1848 Marshall discovered for the first time some nuggets in a water-course near which he was supervising the construction of a mill. Now it happened that Fernando Cortez had already been there when he was looking for some Mexicans who were reported to be in possession of treasure of considerable value. Cortez turned the district upside down, searched all the huts, but never thought of picking up some sand, while for three centuries bands of Spanish missionaries roamed all over the gold-bearing soil, seeking their Eldorado farther and farther away. And yet, in 1737, more than a hundred years before Marshall's discovery, readers of the *Gazette de Hollande* might have found out that the gold and silver mines of Sonora were workable since their newspaper gave their exact position. Moreover in 1767 a book was on sale in Paris entitled *The Civil and Natural History of California* in which the author, Buriell, described the gold mines and quoted the evidence of navigators with regard to the nuggets. Nobody paid any attention to this article, or to the work, or to these facts, which, a century later, were effectively to launch the great 'Gold Rush.' Nor does anyone read today the records of the old Arab explorers, although they contain valuable information regarding mines.

"This forgetfulness extends to everything. Long research and careful checking have convinced me that Europe and France possess treasures that are hardly exploited at all—namely, the ancient documents in our great libraries. All industrial techniques, however, ought to be organized in three dimensions: experience, science, and history. To eliminate or neglect the latter is a sign of pride, or else of naivety. It also means preferring to run the risk of finding what does not yet exist rather than of trying rationally to adapt what does exist to what one desires to obtain. Before investing large sums, an industrialist should be in possession of all the technological elements relating to his problem. It is obvious, however, that merely seeking for priorities in patents is quite an inadequate way of ascertaining the state of technical proficiency at any given period in history. In point of fact, industries are much older than science; they ought, therefore, to be perfectly acquainted with the history of their technical

processes about which they are often less well informed than they think.

"The Ancients, using very simple techniques, obtained results that we can imitate but would often find it difficult to explain, despite all our resources of theoretical knowledge. This simplicity was the most valuable contribution made by ancient science.

"Yes, you will say; but what about nuclear energy? To this I will reply by a quotation which I think should give us serious food for thought. In a very rare book, unknown even to many specialists, that appeared more than eighty years ago under the title *Les Atlantes*, the author, writing under the pseudonym of Roisel, described the results of fifty-six years of research and the study of ancient science. In describing the scientific knowledge with which he credits the inhabitants of Atlantis, Roisel makes the following statement quite astounding when you consider the date at which he was writing: 'The consequence of this incessant activity was the appearance of matter, of that other equilibrium whose rupture would also be the cause of violent cosmic phenomena. If, for some unknown reason, our solar system were to disintegrate, its constituent atoms, becoming instantly active on achieving independence, would shine in space with an ineffable light, which would announce from afar destruction on a vast scale and the hopes of a new world.' This last example, I think, is enough to make us realize the profound truth of Mile Bertin's remark (quoted above): 'There is nothing new except what has been forgotten.'

"Let us consider now how far a systematic probing into the past can benefit industry in a practical way. When I suggested that we ought to take the liveliest interest in the achievements of the Ancients, I do not mean for the sake of erudition alone. All we need do, when concrete documents arise in industry, is to examine old scientific and technical documents to find out whether they contain either significant facts that have been overlooked, or technical processes that have been forgotten but are none the less worth studying and directly relevant to the case in point. Thus, plastic materials, which we imagine to have been a recent invention, might have been discovered much earlier if we had repeated certain experiments made by the chemist Berzelius.

"With regard to metallurgy, I would draw your attention to a rather

significant fact. When I first began to study certain chemical processes as practiced by the Ancients, I was somewhat surprised not to be able to reproduce in the laboratory some metallurgical experiments which seemed to be very clearly described. I tried in vain to understand the reason for my failure, for I had carefully followed the instructions and the proportions indicated. Then, on reflection, I realized that I had none the less made a mistake. I had used a flux (or fusible?) that was chemically pure, whereas those the Ancients employed were impure, i.e., salts obtained from natural products and consequently capable of provoking catalytic actions. In the event, the experiment proved that this was the case. Specialists will understand what important perspectives are opened up by these observations. Economies in fuel and energy could be achieved by adapting to metallurgy certain processes known to the Ancients, nearly all of which are based on the action of catalyzers. In this respect my experiments have been confirmed not only by the work of Dr. Menetrier on the catalytic action of oligoelements, but by the research carried out by the German, Mittasch, into the part played by catalysis in the chemistry of the Ancients. From different sources similar results have been obtained. This convergence seems to show that in technology the time has come to take into account the fundamental importance of the notion of quality and its role in the production of all observable quantitative phenomena.

"The Ancients were equally familiar with metallurgical processes which seem to have been forgotten, e.g., the immersion of copper in certain organic solutions. They obtained in this way instruments that were extraordinarily hard and penetrating. They were no less skillful in melting this metal, even as an oxide (*^meme a l'etat d'oxyde*'). I will cite only one example. A friend of mine, a specialist in mine prospecting, discovered, northwest of Agades in the middle of the Sahara, copper ore bearing traces of fusion, and the dregs of a crucible with some metal remains still in it. This was not a sulfide, but an oxide; that is to say, a body the reduction of which in modern industry raises problems that could not be solved over a simple nomad's fire.

"In the field of alloys, one of the most important in industry today, the Ancients were very well informed. Not only did they know how to

produce, directly from a complex of ores, alloys possessing remarkable properties—a process, incidentally, of great interest to Soviet industry at the moment—but they also made use of special alloys such as electrum, which we have never had the curiosity to study seriously, although we know the formulae for its manufacture.

"I will only allude briefly to possible developments in the field of medicine and pharmaceuticals, still almost unexplored and open to limitless research. I will merely stress the importance of the question of the treatment of burns, a matter of increasing urgency in view of the frequency of car and airplane accidents. Now it is a fact that it was in the Middle Ages, devastated as they were by incessant conflagrations, more than at any other time in history, that the best remedies against burns were discovered, though these recipes have now been completely forgotten. In this connection, it should be known that some of the old pharmaceutical products not only alleviated pain, but even prevented scars from forming and helped to regenerate the injured cells and tissues.

"With regard to dyes and varnishes, there is no need to remind you of the exceedingly high quality of the products prepared according to ancient formulae. The admirable colors used by painters in the Middle Ages have not, as is commonly believed, been lost; I know of at least one manuscript in France which gives the secret of their composition. No one has ever thought of adapting or verifying these formulae. And yet our modern painters, if they were alive in a hundred years' time, would not recognize their pictures, because the colors employed today will not last. It would seem, for example, that van Gogh's yellows have already lost their extraordinary and characteristic luminosity.

"On the subject of mines I will merely mention the close connection between medical research and mine prospecting. The use of plants for therapeutic purposes, which we call phytotherapy, was well known to the Ancients and is, in fact, connected with a new science—biogeochemistry. The aim of this discipline is to reveal positive anomalies in respect of traces of metals found in plants, which indicate the presence of mineral deposits. In this way it is possible to discover specific affinities in certain plants for certain metals, and these data can be used for mine

prospecting as well as for therapeutic purposes. This is yet another typical example of a fact which in my opinion, is the most important in the history of techniques—namely, *the convergence of the various scientific disciplines*, which implies a need for constant syntheses.

"Among other fields of research having practical results in industry I would mention that of fertilizers—a vast domain in which the chemists of an earlier age obtained results, which are for the most part unknown. I am thinking more especially of what they used to call 'the essence of fecundity,' a product composed of certain salts mixed with digested or distilled manures.

"Glassmaking in the ancient world is another matter of which we still know very little. The Romans used glass flooring, for example, and there is no doubt that a study of the processes employed by the old glassmakers might be of great assistance in solving certain ultramodern problems such as the dissemination of rare soils and of palladium in glass, which would make it possible to obtain fluorescent tubes of black light.

"As regards the textiles industry, despite the triumph of plastics, or rather because of it, the best policy would be to concentrate on the production, for the luxury trade, of tissues of very high quality which might perhaps be dyed after the manner of the Ancients; or else an effort might be made to manufacture that strange material called *Pilema*. This consisted of wool or cotton tissues treated with certain acids, and was not only fireproof, but also could not be cut or pierced by steel. The process was known to the Gauls who used the material for breastplates.

"The furniture industry, too, owing to the high price of plastic facings, might solve this problem advantageously by adapting certain ancient processes, for example, the soaking of timber in a solution which considerably increased its resistance to various physical and chemical agents. Building contractors, too, would do well to make a study of special cements whose ingredients are described in treatises dating from the fifteenth and sixteenth centuries: in many respects, they are much superior to our modern cements.

"Soviet industrialists have been using recently, in the cutlery trade, ceramics that are harder than metal. This hardening process could also be studied in the light of old methods of tempering steel.

"Finally, though I do not wish to press this point unduly, I would suggest that if research in physics could be directed to a study of the problems of terrestrial magnetic energy, this might have the most far-reaching consequences. There are some very ancient texts dealing with this subject, which have never been seriously examined or verified, despite their undoubted interest.

"Whether we are concerned mainly with past experience or future possibilities, I believe that from a profoundly realistic point of view, we should do better to ignore the present. Such a statement may seem paradoxical, but a moment's thought will make it clear that the present is nothing but a point of contact between the lines of past and future. Taking our stand firmly on the experience of our ancestors, we should look forward, rather than down at our feet, and not attach undue importance to that brief interval of disequilibrium during which we are passing through space and time. The fact that we are moving proves this, and we must rely on the lucidity of our vision to keep the balance at all times between what has been and what will be."

iV *The concealment of knowledge and power—The meaning of revolutionary war—Technology brings back the guilds—A return to the age of the Adepts—A fiction writer's prediction, *The Power-House*—From monarchy to cryptocracy—The secret society as the government of the future—Intelligence itself a secret society—A knocking at the door*

In a very strange article, but one which I think reflects the views of many French intellectuals, Jean-Paul Sartre refused purely and simply to admit the H-bomb's right to exist. Existence, according to the theory of this philosopher, precedes essence. But here is a phenomenon whose essence he doesn't approve of: therefore he denies its existence. A singular contradiction! "The H-bomb," wrote Sartre, "is against history."

How can a fact of civilization be "against history"? What is history?

For Sartre, it is the movement that must necessarily bring the masses to power. What is the H-bomb? A reserve of power to which only a few have access. A very narrow society of scientists, technicians, and politicians can decide the destiny of humanity. Therefore, so that history can mean what we have said it means, let us abolish the H-bomb. . . . Here is an example of the apostle of social progressism demanding that progress should be halted. A sociology with its roots in the nineteenth century asking to go back to the age in which it was born. Let there be no misunderstanding. For us it is not a question either of approving the fabrication of weapons of destruction or of decrying the thirst for justice that inspires all that is purest in human societies; it is a question of looking at things from a different angle.

1. It is true that the existence of the "ultimate weapon" is an appalling danger for humanity. But the fewer the people who control such weapons, the less likely are they to be used. Human society in the modern world survives only because decisions are made by a very small number of men.
2. Nothing can be done with these "ultimate" weapons except develop them further. In the realm of avant-garde operational research the frontiers between good and evil are continually shrinking. Every discovery at the level of basic structures is *at the same time* both positive and negative. Moreover, as techniques progress, they do not become more complicated: on the contrary, they get simpler, moving on to a plane where elementals are involved. The number of operations diminishes, and less equipment is required. In the end men will hold the key to universal forces in the hollow of their hand. A child will be able to make and handle it. The more simplification becomes synonymous with power, the more necessary will it become to hide what is going on behind higher barriers in order to preserve the continuity of life.
3. This occultation, moreover, happens automatically, as real power passes to the scientists and scholars. The latter have their own language and their own ways of thinking. This is not an artificial

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barrier. Their language is different because their thought is on a different level. The scientists have convinced the rich that they would be better off, and the ruling classes that they would become more powerful if they invoked their help. And they have rapidly won for themselves a position beyond wealth and beyond governments. How has this been done? In the first place, by making everything infinitely complicated. When intellectuals wish to gain control they complicate as much as possible the system they wish to destroy so as to render it defenseless, as the spider enmeshes its victims in its web. The so-called "rulers," the propertied and governing classes, are no longer anything but intermediaries in an epoch which is itself intermediary.

4. While "ultimate" weapons are produced in ever greater numbers the character of war is changing. An uninterrupted combat goes on in the form of guerrillas, palace revolutions, ambushes, *maquis* (underground movement), articles, books, and speeches. Instead of ordinary wars there are revolutionary wars. These new forms of war correspond to a change in the aims and aspirations of humanity. Wars used to be waged for material ends; revolutionary wars are fought to change the conditions in which men live. Formerly men destroyed one another in order to acquire territory, while the spoil was shared between the conquerors. Today, throughout this incessant struggle, resembling nothing so much as a dance of insects interlocking their antennae, it would seem that humanity was seeking some sort of union, a grouping of forces, a unity that would change the face of the Earth. Instead of wanting to enjoy things, today, men want to *do* them. The intellectuals, who have not forgotten to prepare for psychological warfare, also have a hand in this profound change of attitude. The revolutionary war corresponds to the birth of a new spirit: the workers' spirit. The spirit of the *ouvriers de la Terre*. It is in this sense that history represents a Messianic movement of the masses. This movement coincides with the concentration of knowledge in the hands of a few. This is the phase we are now going through in our campaign

for a growing integration of man into the Universe as a whole, and a continuous spiritualization of the mind.

Let us descend to concrete cases, and we shall find ourselves once more in the era of secret societies. When we ascend again to consider more important, and consequently less visible facts, we shall see that we are also returning to the age of the Adepts. The Adepts (or Initiates) spread their knowledge among a group of societies organized to keep new techniques secret. It is not impossible to imagine a world run on these lines in the very near future. Except for the fact that history does not repeat itself. Or, rather, if it does pass the same point, it does so on a higher level of the spiral.

Throughout history, the preservation of techniques has always been one of the objects of the secret societies. The Egyptian priests were the jealous guardians of the laws of plane geometry. Recent researches have established the existence at Baghdad of a society that possessed the secret of the electric battery and the monopoly of galvanoplastics two thousand years ago. The Middle Ages saw the formation in France, Germany, and Spain of technicians' guilds. Consider the history of alchemy: the secret method of coloring glass red by introducing gold at the moment of fusion; the secret of Greek Fire—a mixture of coagulated linseed oil and gelatin, the forerunner of napalm. Not all the secrets of the Middle Ages have been recovered, e.g., that of a flexible mineral glass, or the simple method of obtaining *la lumiere froide* (cold light), etc.

We also observe the apparition of groups of technicians preserving secrets of manufacture, either artisan techniques for making such things as harmonicas or glass ball bearings, or industrial techniques, e.g., for the production of synthetic gasoline. In the great American atomic centers the physicists wear badges indicating the level of their qualifications and the extent of their responsibilities, and may only speak to those who wear the same badge as themselves. They form clubs, and friendships and attachments are formed within the same category.

In this way, closed circles come into being very similar to the guilds of the Middle Ages, whether the subject of study be jet airplanes, cyclotrons, or electronics. In 1956 thirty-five Chinese students on leaving the

Massachusetts Institute of Technology asked to return to their country. They had not been working on military problems, but it was considered that they knew too much and they were forbidden to leave the country. The Chinese Government, anxious to secure the return of these enlightened young people, proposed in exchange to send back some American airmen who had been detained on charges of espionage.

The safe-keeping of techniques and scientific secrets cannot be entrusted to the police. Or, rather, security officials today are obliged to know something about the sciences and techniques which it is their duty to protect. These specialists are trained to work in nuclear laboratories, and nuclear physicists are to be responsible for their security. This leads to the creation of a caste more powerful than governments and political police.

To complete the picture, one has only to think of the groups of experts who are prepared to work for the country that offers the most advantageous terms. These are the new mercenaries, the "hired men-at-arms" of our civilization in which the *condottiere* (mercenary leaders) wear white overalls. South Africa, Argentina, and India are their best hunting grounds where they win for themselves positions of real authority.

If we turn now to the less visible but more important facts, we shall see that we are witnessing a return to the age of the Adepts. "Nothing in the Universe can resist the cumulative ardor of a sufficiently large number of enlightened minds working together in organized groups": Teilhard de Chardin told this in confidence to George Magloire.

More than fifty years ago John Buchan, who was an important figure in British politics, wrote a short story, which was at the same time a message intended for the ears of a few enlightened individuals. In this story, entitled (and not by chance) "The Power-House," the hero meets a distinguished gentleman who, in the course of a seemingly casual conversation, puts forward some very disturbing ideas:*

"Of course there are many key-points in civilization," I said, "and the loss of them would bring ruin. But those keys are strongly held."

*Extract from "The Power-House" by John Buchan (London: Longmans Green & Co.).

"Not as strongly as you think. Consider how delicate the machinery is growing. As life grows more complex, the machinery grows more intricate, and therefore more vulnerable. Your so-called sanctions become so infinitely numerous that each in itself is frail. In the Dark Ages you had one great power—the terror of God, and His Church. Now you have a multiplicity of small things, all delicate and fragile, and strong only by our tacit agreement not to question them."

"You forget one thing," I said, "the fact that men really are agreed to keep the machine going. That *is* what I call the 'goodwill of civilization.'"

"You have put your finger on the one thing that matters. Civilization is a conspiracy. What value would your police be if every criminal could find a sanctuary across the Channel, or your law courts, if no other tribunal recognized their decisions? Modern life is the silent compact of comfortable folk to keep up pretenses. And it will succeed till the day comes when there is another compact to strip them bare."

"We won't dispute on the indisputable," I said. "But I should have thought that it was in the interest of all the best brains of the world to keep up what you call the conspiracy."

"I wonder," he said slowly. "Do we really get the best brains working on the side of the compact. Take the business of government. When all said is said, we are ruled by amateurs and the second-rate. The methods of our departments would bring any private firm to bankruptcy. The methods of Parliament—pardon me—would disgrace any board of directors. Our rulers pretend to buy expert knowledge, but they never pay the price for it that a business man would pay, and if they get it they have not the courage to use it. Where is the inducement for a man of genius to sell his brains to our insipid governors?"

"And yet knowledge is the only power—now as ever. A little mechanical device will wreck your navies. A new chemical combination will upset every rule of war. It is the same with our commerce.

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One or two minute changes might sink Britain to the level of Ecuador, or give China the key of the world's wealth. And yet we never dream that these things are possible. We think our castles of sand are the ramparts of the Universe."

I have never had the gift of the gab, but I admire it in others. There is a morbid charm in such talk, a kind of exhilaration, of which one is half ashamed. I found myself interested, and more than a little impressed.

"But surely," I said, "the first thing a discoverer does is to make his discovery public. He wants the honor and glory, and he wants money for it. It becomes part of the world's knowledge, and everything is readjusted to meet it. That was what happened with electricity. You call our civilization a machine, but it is something far more flexible. It has the power of adaptation of a living organism."

"That might be true if the new knowledge really became the world's property. But does it? I read now and then in the papers that some eminent scientist had made a great discovery. He reads a paper before some Academy of Science, and there are leading articles on it and his photograph adorns the magazines. That kind of man is not the danger. He is a bit of the machine, a party to the compact. It is the men who stand outside it that are to be reckoned with, the artists in discovery who will never use their knowledge till they can use it with full effect. Believe me, the biggest brains are without the ring which we call civilization."

Then his voice seemed to hesitate.

"You may hear people say that submarines have done away with the battleship, and that aircraft have annulled the mastery of the sea. That is what our pessimists say. But do you imagine that the clumsy submarine or the fragile airplane is really the last word of science?"

"No doubt they will develop," I said, "but by that time the power of the defense will have advanced also."

He shook his head. "It is not so. Even now the knowledge, which makes possible great engines of destruction, is far beyond the capacity of any defense. You see only the productions of second-rate folk who

are in a hurry to get wealth and fame. The true knowledge, the deadly knowledge is still kept secret. But, believe me, my friend, it is there."

He paused for a second; and I saw the faint outline of the smoke from his cigar against the background of the dark. Then he quoted me one or two cases, slowly, as if in some doubt about the wisdom of his words.

It was these cases that startled me. They were of different kinds—a great calamity, a sudden breach between two nations, a blight on a vital crop, a war, a pestilence. I will not repeat them. I do not think I believed in them then, and now I believe less. But they were horribly impressive, as told in that quiet voice in that somber room on that dark June night. If he was right, these things had not been the work of Nature or accident but of a devilish art. The nameless brains that he spoke of, working silently in the background, now and then showed their power by some cataclysmic revelation. I did not believe him, but, as he put the case, showing with strange clearness the steps in the game, I had no words to protest. At last I found my voice:

"What you describe is super-anarchy, and yet it makes no headway. What is the motive of those diabolical brains?"

He laughed. "How should I be able to tell you? I am a humble inquirer, and in my researches I come on curious bits of facts. But I cannot pry into motives. I only know of the existence of great extra-social intelligences. Let us say they distrust the machine. They may be idealists and desire to make a new world, or they may simply be artists, loving for its own sake the pursuit of truth. If I were to hazard a guess, I should say that it took both types to bring about results, for the second to find the knowledge and the first the will to use it."

A souvenir came back to me. It was of a hot upland meadow in Tyrol, where among acres of flowers and beside a leaping stream I was breakfasting after a morning spent in climbing the white crags. I had picked up a German on the way, a small man of the Professor class, who did me the honor to share my sandwiches. He conversed fluently but quaintly in English, and he was, I remember, a Nietzschean and a hot rebel against the established order.

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"The pity," he cried, "is that the reformers do not know, and those who know are too idle to reform. Some day there will come the marriage of knowledge and will, and then the world will march."

"You draw an awful picture," I said to my host. "But if those extra-social brains are so potent, why after all do they effect so little? A dull police officer, with the machine behind him, can afford to laugh at most experiments in anarchy."

"True," he said, "and civilization will win until its enemies learn from it the importance of the machine. The compact must endure until there is a counter-compact. Consider the ways of that form of foolishness which today we call nihilism or anarchy. A few illiterate bandits in a Paris slum defy the world, and in a week they are in jail. Half a dozen crazy Russian intellectuals in Geneva conspire to upset the Romanoffs, and are hunted down by the police of Europe. All the Governments and their not very intelligent police forces join hands, and, hey presto! there is an end of the conspirators. For civilization knows how to use such powers as it has, while the immense potentiality of the unlicensed is dissipated in vapor. Civilization wins because it is a worldwide league; its enemies fail because they are parochial. But supposing. . . ."

Again he stopped and rose from his chair. He found a switch and flooded the room with light. I glanced up, blinking to see my host smiling down on me, a most benevolent and courteous old gentleman.

"I want to hear the end of your prophecies," I said. "You were saying . . . ?"

"I said: supposing anarchy learned from civilization and became international. Oh, I don't mean the bands of advertising donkeys who call themselves the International Union of Workers and such-like rubbish. I mean if the real brain stuff of the world were internationalized. Suppose that the links in the cordon of civilization were neutralized by other links in a far more potent chain. The Earth is seething with incoherent power and unorganized intelligence. Have you ever reflected on the case of China? There you have millions of quick brains stifled in trumpery crafts. They have no direc-

tion, no driving power, so the sum of their efforts is futile, and the world laughs at China. Europe throws her a million or two on loan now and then, and she cynically responds by begging the prayers of Christendom. And yet, I say, supposing . . ."

"It's a horrible idea," I said, "and, thank God, I don't believe it possible. Mere destruction is too barren a creed to inspire a new Napoleon, and you can do with nothing short of one."

"It would scarcely be destruction," he replied gently. "Let us call it iconoclasm, the swallowing of formulas, which has always had its full retinue of idealists. And you do not want a Napoleon. All that is needed is direction, which could be given by men of far lower gifts than a Bonaparte. In a word, you want a Power-House, and then the age of miracles will begin."

When one reflects that Buchan wrote these lines about 1910, and then looks back on all the upheavals the world has endured since then and the mass movements which are sweeping through China, Africa, and India, one may well wonder whether, after all, one or more of these powerhouses has not been active. This view will only appear romantic to superficial observers, i.e., to historians wedded to the theory that "facts explain events," which, in the last resort, depends on the way in which you choose your facts.

Elsewhere in this book we shall be describing a powerhouse which failed, but only after it had plunged the world into a bath of blood and fire: the Fascist powerhouse. Nor can one doubt the existence of a Communist powerhouse, or question its prodigious efficiency. "Nothing in the Universe can resist the cumulative ardor of a sufficiently large number of enlightened minds working together in organized groups." I repeat my quotation, the truth of which is startling in this context.

Our ideas about secret societies are academic; we take a conventional view of extraordinary facts. If we want to understand the world of the future, we shall have to reconsider and refresh our ideas about secret societies by making a more thorough study of the past and discovering a point of view which will render intelligible the phase of history through which we are now passing.

It is possible, even probable, that the secret society will be the future form of government in the new world of the *"esprit ouvrier"* (mind of the working class). Let us take a quick glance at the way things have developed. The monarchies claimed to possess supernatural powers. Kings and nobles and ministers and all the other authorities try to appear more than natural, and to arouse astonishment and admiration by their way of dressing, living, and behaving. They do everything they can to attract notice; they encourage pomp and ceremony. And they are always on view, infinitely approachable and infinitely different. Remember the French king Henri IV with his: *"Ralliez-vous a mon panache blanc"* (Follow my white plume!). And sometimes in summer the king bathed naked in the Seine, in the heart of Paris. Louis XIV was a sun, but anybody at any time was free to enter the palace and be present at his table. Always exposed to the public view, demigods decked in gold and feathers, continually attracting attention and living two lives, one private and the other public. After the Revolution, abstract theories prevailed, and governments concealed themselves. The authorities made a point of being "like everyone else," but at the same time adopted a haughty attitude. On the personal, as well as on the factual plane, it became difficult to define exactly what the government consisted of. Modern democracies lend themselves to a thousand and one "esoteric" interpretations. Some intellectuals assert that America is governed by a handful of industrial tycoons, England by the City bankers, France by the Freemasons, etc. With the advent of governments thrown up by revolutionary wars, power is almost completely hidden. Observers of the Chinese revolution, the war in Indo-China, the Algerian War, the special agents in the Soviet world, are all impressed by the way in which power is submerged in the mystery of the Masses, by the secrecy surrounding the responsible authorities, by the impossibility of knowing "who is who" and "who decides what."

A veritable "cryptocracy" has taken over. We have no time now to analyze this phenomenon, but a volume might well be written about what we have called the "cryptocracy." In a novel by Jean Larteguy, who took part in the revolution of Azerbaidjan, the war in Palestine, and the Korean War, a French captain is taken prisoner after the defeat of Dien-Bien-Phu:

Glatigny found himself in a tunnel-shaped shelter, long and narrow. He was sitting on the ground, his naked back propped against the earth walls. Opposite him a *nha-que* (peasant) squatting on his heels, was smoking some foul tobacco rolled in an old piece of newspaper.

The *nha-que* was bare-headed, and wearing a khaki uniform without any badges of rank. He had no sandals, and was wiggling his toes voluptuously in the warm mud. Between puffs he said a few words, and a supple-jointed *bo-doi* (soldier), looking like a "boy," leaned toward Glatigny:

"The battalion commander, he ask where is French major commanding post."

Glatigny's reaction was that of a regular Army officer; he could not believe that this *nha-que* squatting there smoking stinking tobacco was in command, like himself, of a battalion, and had the same rank and responsibilities. . . . He must, then, have been one of the officers of the 308th Division, the best and the most efficiently staffed in the whole Popular Army. So it was this peasant from the rice plantations who had beaten him—him, Glatigny, descendant of one of the great military dynasties of the West. . . .

Paul Mousset, the well-known journalist, and a war correspondent in Indo-China and Algeria, once said to me: "I have always thought that the 'boy,' or the small shopkeeper were perhaps the ones who wielded the greatest authority The new world camouflages its leaders, like those insects that resemble twigs or leaves. . . ."

After the downfall of Stalin, the political experts were unable to agree as to the identity of the real ruler of the U.S.S.R. Just as they were telling us at last that it was Beria, the news came of his assassination. No one could possibly name the real rulers of a country with authority over a thousand million souls and extending over half the inhabited areas of the globe.

The threat of war is what reveals the true form of governments. In June 1955, America had planned an operation simulating actual war conditions in the course of which the Government left Washington to carry on "somewhere in the United States." In the event of this refuge

being destroyed, arrangements had been made for this government to transfer its powers to a "shadow government" that had been already constituted. This latter consisted of senators, deputies, and experts whose names could not be disclosed. Thus the way to a cryptocracy, in one of the most powerful countries on this planet, was officially indicated.

Should war break out, we should no doubt see the regular governments replaced by "shadow" governments installed, perhaps for the United States in some caves in Virginia, and for the U.S.S.R. on a floating station in the Arctic. And from that moment it would be treason to disclose the identity of the countries' rulers. Equipped with electronic brains to reduce administrative staff to a minimum, secret societies would organize the gigantic conflict between the two great blocs of humanity. It is even conceivable that these governments might be situated outside our world, in artificial satellites revolving around the Earth.

We are not indulging in philosophy-fiction or history-fiction, but in a fantastic realism. We are skeptical with regard to many points about which others, who are considered to be "reasonable" men, are less so. We are not in any way trying to focus attention on some empty kind of occultism, or to suggest a semicrazy, semimagical interpretation of facts. Nor are we proposing some form of religion. We believe only in human intelligence, and we believe that, at a certain level, intelligence itself is a kind of secret society. We believe that its powers are unlimited when it can develop to its fullest extent, like an oak tree growing freely in the forest, instead of being dwarfed like a plant in a pot.

It is therefore in the light of the discoveries we have just been making, and of others, still stranger, which we shall soon be confronted with, that we should try to reconsider our conception of a secret society. Here, as elsewhere, we have been able only to outline briefly the general direction of future researches and reflections. And we are well aware that the view we take of things may well seem mad: this is because we are saying rapidly and brutally what we have to say, like a man knocking on a sleeper's door when time is running short.

THE EXAMPLE OF ALCHEMY

*An alchemist in the Cafe Procope in —A conversation about
Gurdjieff—A believer in the reality of the philosopher's stone—/ change
my ideas about the value of progress—What we really think about alchemy:
neither a revelation nor a groping in the dark—Some reflections on the
"spiral" and on hope*

It was in March 1953 that I met an alchemist for the first time. It was at the Cafe Procope in Paris, which was then coming into fashion again. A famous poet, during the time I was writing my book on Gurdjieff, had arranged the meeting, and I was often to see this singular man again, though I never succeeded in penetrating his secrets.

My ideas about alchemy and alchemists were rudimentary and derived from popular literature on the subject, and I had no idea that alchemists still existed. The man seated opposite me at Voltaire's table was young and elegant. After a thorough classical education he had studied chemistry. He was then earning his living in business and knew a lot of artists, as well as some society people. I do not keep a regular diary, but sometimes, on important occasions, I jot down my impressions and make comments. That night, when I got home, I wrote as follows:

How old can he be? He says thirty-five. That seems surprising. He has white, curly hair, trimmed so as to look like a wig. Lots of deep wrinkles in a pink skin and full features. Few gestures, but slow, calculated and effective when he does make them. A calm, keen smile; eyes that laugh, but in a detached sort of way. Everything about him

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suggests another age. In conversation, highly articulate and completely self possessed. Something of the sphinx behind that affable, timeless countenance. Incomprehensible. And this is not merely my personal impression. A. B. who sees him nearly every day, tells me he has never, for a second, found him lacking in a "superior degree of objectivity."

The reasons why he rejects Gurdjieff:

1. Whoever feels an urge to teach is not living his own doctrine completely and has not attained the heights of initiation.
2. In Gurdjieff's teaching there is no material point of contact between the pupil who has been convinced of his own insignificance and the energy he must succeed in acquiring in order to become a real being. This energy—this "will to will" as Gurdjieff puts it—the pupil is supposed to find in himself and nowhere else. Now this approach is partially false, and can only lead to despair. This energy exists outside man, and must be captured. The Roman Catholic swallows the host—a ritual way of intercepting this energy. But if you have no faith? In that case, have a fire—that is all the alchemy is. A real fire. Everything begins and everything happens through contact with matter.
3. Gurdjieff did not live alone but always had a crowd around him. "There are roads in solitude and rivers in the desert," but there are no roads and no rivers in a man who is always mixed up with other men.

I asked him some questions about alchemy, which he must have thought completely foolish. Without showing it, he replied:

"Matter is everything: contact with matter, working with matter, working with the hands." He made a great point of this:

"Are you fond of gardening? That's a good start; alchemy is like gardening. Do you like fishing? Alchemy has something in common with fishing. Woman's work and children's games.

"Alchemy cannot be taught. All the great works of literature which have come down to us through the centuries contain elements of this teaching. They are the product of truly adult minds which have spoken to children, while respecting the laws of adult knowledge. A great work is never wrong as regards basic principles. But the knowledge of those principles and the road that led to this knowledge must remain secret. Nevertheless, there is an obligation on first-degree searchers to help one another."

Around midnight I asked him about Fulcanelli, author of *Le Mystere des Cathedrales* (The Mystery of the Cathedrals) and *Les Demeures philosophales* (The Dwellings of Philosophers), and he gave me to understand that Fulcanelli is not dead: "It is possible to live infinitely longer than an unawakened man could believe. And one's appearance can change completely. I know this; my eyes know it. I also know that there is such a thing as the philosopher's stone. But this is matter on a different level, and not as we know it. But here, as elsewhere, it is still possible to take measurements. The methods of working and measuring are simple, and do not require any complicated apparatus: women's work and children's games. . . ."

He added: "Patience, hope, work. And whatever the work may be, one can never work hard enough. As to hope: in alchemy hope is based on the certainty that there is a goal to attain. I would never have begun had I not been convinced that this goal exists and can be attained in this life."

Such was my first contact with alchemy. If I had begun to study it in the books of "magic," I do not think I should have got very far for lack of time, and because I have little taste for literary erudition. No sense of vocation either—such as an alchemist (though he does not know yet that he is one) feels when for the first time he turns the pages of some old treatise. My vocation is not for doing, but for understanding; I am a spectator rather than an actor. I think, like my old friend Andre Billy, that "to be able to understand is as fine a thing as to be able to

sing," even if one's understanding is only of brief duration.*

I am a man in a hurry, like most of my contemporaries. I had the most recent contact imaginable with alchemy: a conversation in a bistro at Saint-Germain-des-Pres. Later, when I was trying to grasp the real meaning of what that "young" man had told me, I met Jacques Bergier, who doesn't work in a dusty old garret full of antiquated books, but in places where the life of our century is concentrated—a laboratory and an information bureau. Bergier, too, was seeking something along the lines of alchemy, but not with the idea of making a pilgrimage into the past. This extraordinary little man, completely preoccupied with the secrets of atomic energy, had taken this path as a short cut. I dashed at supersonic speed, hard on his heels, through ancient texts compiled by wise men in love with leisureliness, intoxicated with patience. Bergier enjoyed the confidence of some of those men who still engage in alchemy. He was also in touch with modern scientists.

I soon became convinced, from what he told me, that there is a close connection between traditional alchemy and avant-garde science. I saw how intelligence was building a bridge between two worlds. I ventured on to this bridge, and found that it held. This made me very happy and relieved me of my anxieties. Having for a long time taken refuge in anti-progressist thought, along Hindu lines and influence by Gurdjieff, seeing the world of today as a prelude to the Apocalypse, full of despair at the prospect of a disastrous end to everything and not very sure of myself in my proud isolation, suddenly I saw the old past and the future shaking hands. The alchemists' metaphysics, thousands of years old, had concealed a technique which at last, in the twentieth century, had become almost comprehensible. The terrifying modern techniques opened up metaphysical horizons very like those of ancient times. My retreat from reality was nothing but false romanticism. On either side of the bridge, men's immortal souls had kindled the same fires.

"In his *Ballad of Reading Gaol* Oscar Wilde makes the discovery that mental inattention is the worst crime, and that intense mental concentration reveals not only the complete coherence of all the events in a man's life, but also, no doubt, on a vaster scale, the complete concordance and harmony between everything in Creation. And he exclaims: "Everything understood is good." I know of no finer saying.

In the end I came to believe that in the far distant past, men had discovered the secrets of energy and matter. Not only in thought, but by manipulation; not only spiritually but technically.

Now the modern mind, by a different approach and by the methods that I had long found distasteful, of pure reason and irreligion and by methods that displeased me, was in its turn preparing to discover the same secrets, with a mixture of curiosity, enthusiasm, and apprehension. It was face to face with essentials in the spirit of the best tradition.

I then perceived that the opposition between age-old "wisdom" and contemporary "madness" was the invention of feeble and backward minds, a compensatory product for intellectuals incapable of keeping up with the times.

There are several ways of gaining access to essential knowledge. Our age has its own methods; older civilizations had theirs. And I am not speaking only of theoretical knowledge.

Finally I realized that, with modern techniques being apparently more efficient than those of yesterday, this essential knowledge that the alchemists (and other wise men before them) no doubt possessed, would reach us with still greater force and weight and would be more dangerous and more demanding. We are getting to the same point as the Ancients, but on a different level. Rather than condemn the modern spirit in the name of the initiatory wisdom of the Ancients, or repudiate this wisdom on the grounds that real knowledge only began with our civilization, we should do better to admire and even venerate the power of the mind, which, under different aspects, traverses the same point of light, mounting upwards in a spiral ascent. Instead of condemning, repudiating, and choosing, we ought to love. Love is everything: both rest and movement at the same time.

And now for the results of our researches on alchemy. It will only be a brief resume, naturally, for even if we had the time and the ability (which perhaps we do not possess), it would take us ten or twenty years to make a really conclusive contribution to the subject. Nevertheless, what we have accomplished and the way in which we have done it, are enough to make our little study very different from the works on alchemy that have appeared hitherto.

The reader will find little new information on the history and philosophy of this traditional science; my object has been to throw some new light on some unsuspected links between the dreams of the old "chemist-philosophers" and the realities of modern physics. Let us, then sum up our conclusions as follows:

Alchemy, in our view, could be one of the most important relics of a science, a technology, and a philosophy belonging to a civilization that has disappeared. What we have discovered in alchemy in the light of contemporary knowledge does not lead us to believe that techniques so subtle, so complicated, and so precise can have been the result of a "divine revelation" fallen from Heaven. Not that we reject altogether the notion of a revelation. But in what we have read about the saints and the great mystics we have never noticed that God spoke to men in technical language: "Place thy crucible, O my Son, tinder polarized light! Rinse out the slag in water thrice distilled!"

Nor do we believe that the alchemists developed their techniques by blind gropings, or through the insignificant tinkering of ignorant amateurs or the fantastic dreams of fanatics, to arrive at what we can only call the disintegration of the atom. Rather we are tempted to believe that alchemy contains the fragments of a science that has been lost, fragments that, in the absence of their context, we find it difficult to understand or to make use of. Progress from this point must necessarily be halting, but in a definite direction. There is also a profusion of technical, moral, and religious interpretations. Finally, on those in whose hands these fragments are preserved, there is an imperious obligation to maintain secrecy.

We believe that our civilization on acquiring in different conditions and with a different approach, knowledge that is perhaps a legacy from a previous civilization, would perhaps have much to gain by a serious study of ancient lore with a view to hastening its own progress.

Finally, we believe that the alchemist, on concluding his operations with matter, feels, as the legend relates, a kind of transmutation taking place within himself. The things that happen in his crucible are also happening in his mind or in his soul. His condition changes.

All the traditional texts stress this phenomenon and evoke the

moment when the "Great Work" is accomplished and the alchemist becomes an "awakened man." It would seem that these old texts describe in this way the final stage of all real knowledge of the laws of matter and of energy, including technical knowledge. This is the knowledge toward which our civilization is now heading with all speed. It does not seem to us unreasonable to suppose that men will be called upon, in the near future, to "change their condition," just as the alchemist, according to the legend, underwent a kind of transmutation. Unless, of course, our civilization should be entirely destroyed on the brink of its reaching its goal as other civilizations before it have perhaps disappeared. Even so, in our last second of lucidity, we should not despair, remembering that if the adventure of the mind repeats itself, it is always one step higher on the spiral. We would then entrust to other epochs the mission of conducting this adventure to its final stage, the center of immobility, and go down to destruction with hope in our hearts.

II

A hundred thousand books that no one reads—Wanted: a scientific expedition to the land of the alchemists—The inventors—Madness from mercury—A code language—Was there another atomic civilization?—The electric batteries of the museum at Baghdad—Newton and the great Initiates—Helvetius and Spinoza and the philosopher's stone—Alchemy and modern physics—A hydrogen bomb in an oven—Transformation of matter, men, and spirits

More than a hundred thousand books and manuscripts on alchemy are known to exist. This vast literature, to which the finest minds have contributed and which solemnly affirms its attachment to facts and practical experiments, has never been systematically explored. The current intellectual climate, Catholic in the past, rationalist today, has always maintained in regard to these texts an attitude of ignorance or scorn. A hundred thousand books and manuscripts perhaps contain some of the secrets of energy

and matter. If this is not true, they proclaim it nevertheless. Kings and princes and republics have encouraged innumerable expeditions to distant lands, and have financed scientific researches of every kind. Never, however, has a team of decoders, historians, linguists, and scholars, physicists, chemists, mathematicians, and biologists been assembled in an alchemist library with the task of discovering what these old treatises contain that is true and can be put to practical use. It seems inconceivable. The fact that such mental obtuseness is possible and that civilized human societies like ours, devoid of prejudices of any kind, can forget the presence in their attics of a hundred thousand books and manuscripts labeled "Treasure" should be enough to convince the most skeptical among us that we are living in a fantastic world.

The scanty research that has been done on alchemy has been carried out either by mystics seeking in texts the confirmation of their spiritual attitudes, or else by historians completely out of touch with science and technology.

The alchemists speak of the necessity of distilling water to be used in the preparation of the elixir many thousands of times. We have heard an expert historian declare such an operation to be completely crazy. He knew nothing whatever about heavy water and the methods employed to convert ordinary water into heavy water. We have heard a learned scientist affirm that since endless repetitions of the process of refining and purifying metals and metalloids do not in any way alter their properties, the recommendations of the alchemists in this connection could only be considered as a kind of mystic lesson in patience, a ritual gesture, like telling the beads of a rosary. And yet it is by just such a refining process and the technique described by the alchemists known today as "zone fusion," that the germanium and silicon used in transistors is prepared. We know now, thanks to the work done on these transistors, that by purifying a metal very thoroughly and then introducing minute quantities, some millionths of a gram, of impurities carefully selected, the substance thus treated is endowed with new and revolutionary properties. It is unnecessary to go on citing examples indefinitely, but we wish to stress the desirability of undertaking a really methodical study of alchemist literature. This would

be an immense task demanding many years of work and hundreds of research workers drawn from every branch of the sciences. Neither Bergier nor myself have been able even to draft the outline of such a study, but if our book ever inspired some Maecenas to sponsor this undertaking, we shall not have wasted our time completely.

In our brief survey of alchemist texts we observed that they are for the most part "modern" compared to other occult works of the same date. Moreover, alchemy is the only parareligious activity that has made a real contribution to our knowledge of reality.

Albert le Grand (1193-1280) succeeded in producing potassium lye, and was the first to describe the chemical composition of cinnabar, white lead, and minium.

Raymond Lull (1235-1315) prepared bicarbonate of potassium.

Theophrastes Paracelsus (1493-1541) was the first to describe zinc, hitherto unknown. He also introduced the use in medicine of chemical compounds.

Giambattista della Porta (1541-1615) produced tin monoxide.

Johann-Baptiste Van Helmont (1577-1644) recognized the existence of gases.

Basil Valentin (whose real identity is still unknown) discovered, in the seventeenth century, sulfuric acid and hydrochloric acid.

Johann Rudolf Glauber (1604-1668) discovered sodium sulfate.

Hennig Brandt (d. 1692) discovered phosphorus.

Johann Friedrich Boetticher (1682-1719) was the first European to make porcelain.

Blaise Vigenere (1523-1596) discovered benzoic acid.

These are some of the alchemist achievements which enriched humanity at a time when chemistry was progressing.* While other sciences were developing, alchemy seems to follow, and sometimes precede this progress.

**Le Miroir de la Magie (The Magic Mirror)*, by Kurt Seligmann, Fasquelle, Paris.

Le Breton, in his *Clefs de la Philosophie Spagyrique** (1722) has some more than ordinarily intelligent things to say about magnetism, and frequently anticipates modern discoveries. Pere Castel, in 1728 when ideas about gravitation were beginning to circulate, speaks about this and its relation to light in terms which, two centuries later, seem astonishingly similar to Einstein's ideas:

I have said that if one took away the Earth's gravity one would take away light at the same time. For indeed, light and sound and all other qualities perceptible to our senses proceed from and are, as it were, a result of the mechanical structure, and consequently the gravity of natural bodies which are luminous or sonorous in proportion to their degree of gravity and buoyancy.

In the alchemist literature of our own century we often find the latest discoveries in nuclear physics before they have appeared in university publications; and it is probable that the treatises of tomorrow will be dealing with the most advanced and abstract theories in physics and mathematics.

There is a clear distinction between alchemy and the pseudosciences, such as radiesthesia which introduces in its publications waves and rays after they have been discovered by "official" science. There is thus every reason for believing that alchemy is capable of making an important contribution to future knowledge and techniques based on the structure of matter.

We have also noticed in the literature of the alchemists a great many texts that bear the stamp of madness. Attempts have been made to explain this dementia by psychoanalysis.* More often, since alchemy contains a metaphysical doctrine and presupposes a mystical attitude, historians, amateurs, and above all the devotees of occultism endeavor to interpret these unbalanced writings as being in the nature of supernatural revela-

*[**Keys to Spagyric Philosophy** —Ed.]

tjung, *Psychology and Alchemy*, or **Herbert Silberer**, *Problemes du Mysticisme* (**Problems of Mysticism**).

tions or inspired prophecy. After careful consideration, it seemed reasonable to classify these texts as the work of "madmen," placing them apart from the other technical and philosophical ones. It also seemed to us that there might be a practical, simple, and satisfactory explanation for the madness afflicting some of these practitioners and adepts. The alchemists often used mercury in their experiments; its fumes are toxic, and chronic poisoning induces delirium. Theoretically, the receptacles they employed were hermetically sealed, but not every adept may have known the secret of this method of sealing, and in this way more than one of these "chemist-philosophers" may have succumbed to madness.

Finally we were impressed by the codelike appearance of alchemist writings. Blaise Vigenere, mentioned above, invented the most perfect codes and the most ingenious methods of ciphering, some of which are still in use today. Now it is probable that Vigenere learned this art while trying to interpret the alchemists' texts.

Rene Alleau writes:

To take a clearer example, consider the game of chess, whose rules and principles are relatively simple but permit of an infinite number of combinations. If we look on the whole body of alchemical treatises on alchemy as so many games annotated in a conventional language, we shall have to confess in all honesty that we know neither the rules of the game nor the cypher employed. Alternatively, we assume that the code language is composed of signs that anyone can understand, which is precisely the immediate illusion that a well-composed cryptogram should create. We therefore conclude that it would be prudent nor to allow ourselves to believe that their meaning is clear, but to study these texts as if they were in an unknown language. Apparently these *messages* are addressed only to other players, other alchemists who, we must assume, already possess, by some other means than written tradition, the necessary key to an exact comprehension of this language.*

"Aspects de Ulchimie Traditionelle (Aspects of Traditional Alchemy), Ed. de Minuit, Paris.

Alchemist manuscripts have been found dating from the very earliest times, Nicolas de Valois in the fifteenth century deduced from this that transmutations and the secret techniques of the liberation of energy were known to men before the invention of writing. Architecture preceded writing, and was perhaps a form of writing. And, in fact, there is a very close connection between alchemy and architecture. One of the most significant alchemist texts, by Esprit Gobineau de Montluisant, is entitled: *Explications tres curieuses des enigmes et figures hieroglyphiques qui sont au grand portail de Notre-Dame de Paris*. (Most curious explanations of the hieroglyphic enigmas and figures on the great west door of Notre-Dame in Paris.)

The works of Fulcanelli include, notably, *Le Mystere des Cathedrales* and detailed descriptions of *Les Demeures Philosophales*. Certain medieval buildings are believed to be examples of the age-old custom of transmitting through architecture the message of alchemy dating back to the most remote antiquity.

Newton believed in the existence of a chain of Initiates going back to very early times who knew the secrets of transmutations and the disintegration of matter. The English atomic scientist, Da Costa Andrade, in a speech delivered at the Newton Tercentenary Celebrations at Cambridge in July 1946, made it clear that he thought the discoverer of the laws of gravitation perhaps belonged to this chain and had only revealed to the world a small part of his knowledge:

I cannot hope to convince the skeptical that Newton had some power of prophecy or special vision, had some inkling of atomic power; but I do say that certain passages do not read to me as if all he meant was that the manufacture of gold would upset world trade—"Because the way by which mercury may be so impregnated has been thought fit to be concealed by others that have known it, and therefore may possibly be an inlet to something more noble, not to be communicated without immense danger to the world, if there should be any verity in the Hermetic writings"—and a little further on—"there being other things beside the transmutation of metals (if those great pretenders brag not) which none but they understand." In

pondering what these passages may import, consider the no greater reticence with which he speaks of his optical discoveries. . . .

To what past age did these great Masters invoked by Newton belong, and from what remote past did they themselves derive their science?

"If I have seen further," said Newton, "it is by standing on the shoulders of giants."

Atterbury, who was a contemporary of Newton's, wrote as follows:

Modesty teaches us to speak of the Ancients with respect, especially when we are not very familiar with their works. Newton, who knew them practically by heart, had the greatest respect for them, and considered them to be men of genius and superior intelligence who had carried their discoveries in every field much further than we today suspect, judging from what remains of their writings. More ancient writings have been lost than have been preserved, and perhaps our new discoveries are of less value than those that we have lost.

Fulcanelli believed that alchemy was the connecting link with civilizations that disappeared thousands of years ago and of which the archaeologists know nothing. Of course no archaeologist or historian of high repute will admit that civilizations have existed in the past more advanced than ours in science and techniques. But advanced techniques and scientific knowledge simplify enormously the machinery, and traces of what they accomplished are perhaps staring us in the face without our being able to recognize them for what they are. No serious historian or archaeologist who has not had a very thorough scientific education could carry out the researches and explorations that would be likely to throw any light on these matters. The strict segregation of the various disciplines, necessitated by the fabulous advances in modern science, has perhaps concealed from us other fabulous discoveries of an earlier age.

We know that it was a German engineer, engaged to build sewers for the city of Baghdad, who discovered among some bric-a-brac in the local museum, labeled vaguely "ritual objects," electric batteries—manufactured

ten centuries before Volta under the Sassanid Dynasty. So long as archaeology is only practiced by archaeologists, we shall never know if the "mists of antiquity" were luminous or obscure.

Johann-Friedrich Schweitzer, alias Helvetius, a violent antialchemist, relates that on the morning of December 27, 1666, he was visited by a stranger. He was a man of honest and serious appearance, dressed in a simple cloak, like a Mennonite. After asking Helvetius whether he believed in the philosopher's stone (to which the famous doctor replied in the negative) the stranger opened a little ivory box "containing three pieces of a substance resembling glass or opal." He then declared that this was the famous stone, and that this very small amount was sufficient to produce twenty tons of gold. Helvetius held a fragment in his hand and, having thanked his visitor for his kindness, begged him to let him have a small piece. The alchemist bluntly refused, adding rather more courteously, that even in exchange for Helvetius's entire fortune he could not part with even the smallest piece of this mineral for a reason he was not permitted to disclose. When asked to prove his statement by performing a Transmutation, the stranger replied that he would come back in three weeks' time and would show Helvetius something that would astonish him. He returned punctually on the day specified, but refused to operate, declaring that he was forbidden to reveal his secret. He did, however, condescend to present Helvetius with a small fragment of the stone "no larger than a mustard seed." And when the doctor expressed doubts as to whether so minute a quantity could produce any effect whatever the alchemist broke the morsel in two, threw away half, and offered him the other half saying: "This is all you need."

At this the learned doctor was obliged to confess that when the stranger first visited him he had succeeded in appropriating a few particles of the stone and that they had changed some lead, not into gold, but into glass. "You ought to have covered your fragment with some yellow wax," replied the alchemist, "that would have helped it to penetrate the lead and transform it into gold." The man promised

to return the next morning at nine o'clock to perform the miracle—but he never came, either that day or the next. Thereupon the wife of Helvetius persuaded him to try the experiment himself:

Helvetius followed the stranger's instructions. He melted down three drachmas of lead, wrapped the stone in wax and threw it into the liquid metal. It turned to gold! "We took it immediately to a goldsmith who declared that he had never seen a finer piece of gold, and offered us fifty florins for an ounce." Helvetius, concluding his report, informed us that he still possessed the ingot of gold, a tangible proof of the transmutation. "May the Holy Angels of God watch over him (the alchemist) as a source of blessings for Christianity. Such is our constant prayer, for him and for us."

The news traveled like lightning. Spinoza, who can hardly be considered as simple-minded, wished to verify the story in every detail. He went to see the goldsmith who had examined the gold, and the account he gave was more than favorable: during the fusion some silver present in the mixture was also transformed into gold. The goldsmith, named Brechtel, was employed by the Due d'Orange as his minter, and certainly knew his trade. It seems difficult to believe that he had been the victim of a hoax, or that he had wished to deceive Spinoza. The latter then went to Helvetius who showed him the gold, and the crucible used in the experiment. Some scraps of the precious metal were still adhering to the inside of the receptacle; like the others, Spinoza was convinced that the transmutation really had taken place.*

Transmutation, for the alchemist, is a secondary phenomenon, performed merely as a demonstration. It is difficult to form an opinion as to the reality of these transmutations, although various reports, such as those of Helvetius or van Helmont, for example, are very impressive. It could be argued that the conjurer's art knows no limitations, but is it likely that 4,000 years of research and 100,000 volumes and manuscripts would have been devoted to an imposture? We have another suggestion to make, as

**Le Miroir de la Magie*, by Kurt Seligmann.

will be seen presently. We make it in all diffidence, because the weight of established scientific opinion is formidable. We shall try to describe the work of the alchemist culminating in the fabrication of the "stone," or "projection powder," and we shall see that the interpretation of certain operations conflicts with our present knowledge of the structure of matter. But there is nothing to show that our knowledge of nuclear phenomena is complete or definitive. Catalysis, for example, may play an altogether unexpected part in these phenomena.*

It is not impossible that certain natural mixtures produce, under the influence of cosmic rays, nucleocatalytic reactions on a large scale resulting in a massive transmutation of elements. This may well provide a key to the mystery of alchemy and explain why the alchemist repeats his experiments indefinitely, until the right cosmic conditions are obtained.

To this it will be objected: if transmutations of this kind are possible, what becomes of the energy liberated? If all this were true, the alchemists must often have destroyed the towns they lived in and vast areas of their homeland as well, thus causing appalling catastrophes.

To which the alchemists reply: it is precisely because such catastrophes have occurred in the distant past that we are afraid of the terrible energy contained in matter and therefore keep our science secret. Moreover, the Great Work is only attained through progressive phases, and whoever after scores of years of experimenting and living an austere life learns how to unleash the forces of nuclear energy, learns also what precautions to take to prevent a catastrophe.

Is this argument valid? Perhaps. Physicists today admit that, in certain conditions, the energy of a nuclear transmutation might be absorbed by special particles they call neutrinos, or antineutrinos. It would appear that some proofs of the existence of the neutrino have been forthcoming. There are, perhaps, certain types of transmutation which liberate only a small amount of energy, or in which energy is liberated in the form of neutrinos. We shall return to this question later.

*Scientists in several countries are now working on the use of particles (produced by powerful accelerators) as catalyzing agents in the fusion of hydrogen.

M. Eugene Canseliet, a disciple of Fulcanelli and one of the leading specialists on alchemy, was greatly struck by a passage in a study which Jacques Bergier had written as a preface to one of the classics in the *Bibliothèque Mondiale* (World-Wide Library), an anthology of sixteenth-century poetry. In this preface Bergier alluded to the alchemists and their cult of secrecy. This is what he wrote: "On this particular point it is difficult not to agree with them. If there is a recipe for producing hydrogen bombs on a kitchen stove, it is clearly preferable that this recipe should not be disclosed."

M. Eugene Canseliet's comment on this was as follows: "Above all, it is most important that this remark should not be dismissed as a mere pleasantry. You are quite right, and I am in a position to state that it is possible to produce an atomic fission by means of an ore, which is relatively common and cheap, and that this can be done with no other apparatus than a good stove, a coal-fusing oven, some Meker burners and four bottles of butane gas."

It is, in fact, conceivable that even in nuclear physics important results can be obtained by simple means. This is the direction in which all science and technology are moving today.

"We can do more than we know," said Roger Bacon. He added, however, a remark that might well be an alchemist's saying: "Though everything is not permitted, everything is possible."

For the alchemist, it must never be forgotten that power over matter and energy is only a secondary reality. The real aim of the alchemist's activities, which are perhaps the remains of a very old science belonging to a civilization long extinct, is the transformation of the alchemist himself, his accession to a higher state of consciousness. The material results are only a pledge of the final result, which is spiritual. Everything is oriented toward the transmutation of man himself, toward his deification, his fusion with the divine energy, the fixed center from which all material energies emanate. The alchemist's is that science "with a conscience" of which Rabelais speaks. It is a science that tends to exalt man rather than matter; as Teilhard de Chardin puts it: "The real aim of physics should be to integrate Man as a totality in a coherent representation of the world."

"Know, O all ye investigators of this Art," wrote a master alchemist,* "that the Spirit is all, and that unless within this Spirit another like Spirit is enclosed, no good will come of anything."

In which a little lew is seen to prefer honey to sugar—In which an alchemist who might be the mysterious Fulcanelli speaks of the atomic danger in t^j, describes the atomic pile and evokes civilizations now extinct—In which Bergier breaks a safe with a blow-lamp and carries off a bottle of uranium under his arm—In which a nameless American major seeks a Fulcanelli now definitely vanished—In which Oppenheimer echoes a Chinese sage of a thousand years ago

It was in 1933. The little Jewish student had a pointed nose and wore round spectacles through which shone a pair of cold and lively eyes. His round skull was covered with a thin down of hair. A frightful accent, which was not improved by a stutter, made his speech sound comically like the confused splashing of ducks in a pond. When one got to know him better one had the impression that a hungry, alert, sensitive, and incredibly quick intelligence was dancing inside this uncouth little man, full of mischief and as lacking as a child in any kind of *savoir vivre*, like a big, red balloon at the end of a string.

"So you want to be an alchemist?" said the venerable old Professor to the student, Jacques Bergier, who sat, hanging his head, on the edge of his chair, with a briefcase stuffed with papers on his knee. The old Professor was one of France's most distinguished chemists. "I don't understand you, sir," said the student, feeling nettled. He had a prodigious memory, and remembered having seen, at the age of six, a German print depicting two alchemists at work amidst a confusion of test tubes, pliers, crucibles, and bellows. One of them, in rags, was tending the ore, open-mouthed, while

**La Tourbe des Philosophes (The Peat of Philosophers), in Bibliotheque des Philosophes Chimiques (Library of Chemical Philosophers), 1741.*

the other, with his beard and hair awry, was scratching his head and staggering about in a corner of the workshop.

The Professor consulted his files: "During the last two years of your studies I see that you took a special interest in M. Jean Thibaud's free course of lectures on nuclear physics. This course does not lead to any diploma or certificate, yet you persist in your desire to continue with these studies. Had you been a physicist I could have understood your curiosity. But your subject is chemistry. Are you expecting, by any chance, to learn how to manufacture gold?"

"Sir," replied the little student raising his hands, "I believe in the future of nuclear chemistry. I believe that transmutations will be used in industry in the near future."

"That seems quite crazy to me."

"But sir ..."

Sometimes he stopped at the beginning of a sentence and then went on repeating his opening words like a gramophone that has got stuck, not because he had nothing to say, but because his thoughts were turning to the forbidden realms of poetry. He knew by heart many thousands of lines, and all the poems of Kipling.

"But, sir, even if you do not believe in transmutations, you must surely believe in nuclear energy. The immense potential resources of the nucleus . . ."

"Tut, tut," said the Professor. "That's childish and elementary. What the physicists call nuclear energy is an integration constant in their equations. It's a philosophical idea, nothing more. Consciousness is man's chief motive power. But it's not consciousness that drives a locomotive. So all this talk about machines being powered by nuclear energy.... No, no, my boy . . ."

The young man swallowed hard.

"Come back to earth and think of your future. What you are obsessed by at the moment, because to me you seem scarcely more than a child, is one of man's oldest dreams—the alchemist's dream. Read Berthelot again. He has given a very good account of this myth of the transmutation of matter. Your studies here have not been particularly brilliant. Let me give

you some advice: get yourself a job in industry as soon as possible. What about sugar? Three months in a sugar factory will bring you back to realities, and that's what you need. I'm speaking to you now as a father."

The unworthy son stammered his thanks and departed, nose in air and hugging his bulging briefcase. He was an obstinate type; he felt he ought to profit from this conversation, but that honey was better than sugar. He would go on studying nuclear problems—and read everything he could about alchemy.

And this is how my friend Jacques Bergier decided to continue with studies that had been dismissed as useless, and which others described as mad. The vicissitudes of life, the war, and concentration camps kept him away for a time from nuclear studies, yet he was able to make some contributions that were highly thought of by the specialists. In the course of his researches the dreams of the alchemists and the realities of mathematical physics coincided more than once. But great changes have taken place in the world of science since 1933, and my friend had less and less the impression that he was plowing a lonely furrow.

From 1934 to 1940 Jacques Bergier worked with Andre Helbronner, one of the most remarkable men of our time. Helbronner, who was assassinated by the Nazis at Buchenwald in March 1944, had been the first Professor at the Faculty to teach physical chemistry. This science, midway between two disciplines, has since given rise to many other sciences: electronic, nuclear, and "stereotronic."*

Helbronner had been awarded the gold medal of the Franklin Institute for his discoveries on colloidal metals. He was also interested in the liquefaction of gases, aeronautics, and ultraviolet rays. In 1934 he devoted himself to the study of nuclear physics and created, with a group of industrialists, a nuclear research laboratory where, until 1940, some very interesting results were obtained. Helbronner was, in addition, often called upon to advise the judiciary as an expert in all matters pertaining to the

"This is an entirely new science concerned with the transformation of energy in solids. One of its applied forms is the transistor.

transmutation of elements; and it was in this way that Jacques Bergier had an opportunity of meeting a certain number of pseudo-chemists, impostors, or visionaries, and one genuine alchemist of real distinction.

My friend never knew this alchemist's real name and, even if he had, would have been careful not to disclose his identity. The man of whom we are speaking disappeared some time ago without leaving any visible traces, to lead a clandestine existence, having severed all connection between himself and the century in which he lived. Bergier can only guess that he may have been the man who, under the pseudonym of Fulcanelli, wrote about the year 1920, two strange and admirable books: *Les Demeures Philosophales* and *Le Mystere des Cathedrales*, already referred to. These books were published through the good offices of M. Eugene Canseliet, who never revealed the author's name.* They are certainly among the most important works in the literature of alchemy. They are an expression of the most profound knowledge and wisdom, and several great men of our acquaintance profess the greatest veneration for the legendary name of Fulcanelli.

M. Canseliet writes,

Could he, having attained to the summit of all knowledge, refuse to obey the command of Destiny? No man is a prophet in his own country. This old saying perhaps provides an occult explanation of the upheaval in the solitary and studious life of the philosopher caused by the spark of revelation. Under the action of this divine flame, the man as he used to be is entirely consumed. Name, family, country, all illusions, all mistakes, all trivialities crumble into dust. And from these ashes, like the Phoenix of the poets, a new personality is born. This, at least, is what philosophical tradition would have us believe. My master knew it. He disappeared when the fateful hour struck and the sign was accomplished. Who would dare to defy the law? If the same thing that compelled my master to shun all worldly

*These two books have been reissued by Omnium Litteraire, 72 Avenue des Champs-Elysees, Paris. The first edition is dated 1925 and had long been out of print, the rare copies still in circulation being snapped up by collectors at a very high price.

acclaim should happen to me today, despite the anguish of a painful but inevitable separation I should act in exactly the same way.

M. Eugene Canseliet wrote those lines in 1925. The man who had entrusted him with the publication of his works was about to change his habits and way of life. One afternoon, in June 1937, Jacques Bergier thought there was good reason to believe that he was in the presence of Fulcanelli.

It was at the request of Andre Helbronner that my friend met this mysterious personage in the prosaic surroundings of a test laboratory at the offices of the Gas Board in Paris. The following is an exact account of the conversation that then took place:

"M. Andre Helbronner, whose assistant I believe you are, is carrying out research on nuclear energy. M. Helbronner has been good enough to keep me informed as to the results of some of his experiments, notably the appearance of radioactivity corresponding to plutonium when a bismuth rod is volatilized by an electric discharge in deuterium at high pressure. You are on the brink of success, as indeed are several other of our scientists today. May I be allowed to warn you to be careful? The research in which you and your colleagues are engaged is fraught with terrible dangers, not only for yourselves, but for the whole human race. The liberation of atomic energy is easier than you think, and the radioactivity artificially produced can poison the atmosphere of our planet in the space of a few years. Moreover, atomic explosives can be produced from a few grams of metal powerful enough to destroy whole cities. I am telling you this as a fact: the alchemists have known it for a very long time."

Bergier tried to interrupt with a protest. Alchemists and modern physics! He was about to make some sarcastic remark, when his host interrupted him:

"I know what you are going to say, but it's of no interest. The alchemists were ignorant of the structure of the nucleus, knew nothing about electricity, and had no means of detection. Therefore they have never been able to perform any transmutation, still less, liberate nuclear energy. I shall not attempt to prove to you what I am now going to say, but I ask you to repeat it to M. Helbronner: certain geometrical arrangements of

highly purified materials are enough to release atomic forces without having recourse to either electricity or vacuum techniques. I will merely read to you now a short extract.

He then picked up Frederick Soddy's *The Interpretation of Radium* and read as follows: "I believe that there have been civilizations in the past that were familiar with atomic energy, and that by misusing it they were totally destroyed."

He then continued: "I would ask you to believe that certain techniques have partially survived. I would also ask you to remember that the alchemists' researches were colored by moral and religious preoccupations, whereas modern physics was created in the eighteenth century for their amusement by a few aristocrats and wealthy libertines. Science without a conscience. . . . I have thought it my duty to warn a few research workers here and there, but have no hope of seeing this warning prove effective. For that matter, there, is no reason why I should have any hope."

Bergier has never been able to forget the sound of that precise incisive voice, speaking with such authority.

He ventured to put another question: "If you are an alchemist yourself, sir, I cannot believe you spend your time fabricating gold like Duriikovski or Dr. Miethé. For the last year I have been trying to get information about alchemy, and find myself surrounded by imposters or hearing what seems to be fantastic interpretations. Now can you, sir, tell me what is the nature of your researches?"

"You ask me to summarize for you in four minutes four thousand years of philosophy and the efforts of a lifetime. Furthermore, you ask me to translate into ordinary language concepts for which such a language is not intended. All the same, I can tell you this much: you are aware that in the official science of today the role of the observer becomes more and more important. Relativity, the principle of indeterminacy, shows the extent to which the observer today intervenes in all these phenomena. The secret of alchemy is this: there is a way of manipulating matter and energy so as to produce what modern scientists call 'a field of force.' This field acts on the observer and puts him in a privileged position vis-a-vis the Universe. From this position he has

access to the realities, which are ordinarily hidden from us by time and space, matter and energy. This is what we call 'The Great Work.'"

"But what about the philosopher's stone? The fabrication of gold?"

"These are only applications, particular cases. The essential thing is not the transmutation of metals, but that of the experimenter himself. It's an ancient secret that a few men rediscover, once in a century."

"And what becomes of them then?"

"I shall know, perhaps, one day."

My friend was never to see this man again—the man who under the name of Fulcanelli has left an indelible trace. All that we know of him is that he survived the war and disappeared completely after the Liberation. Every attempt to find him failed.*

Now the scene changes to a July morning in 1945. Still pale and famished-looking, Jacques Bergier, clad in khaki, is engaged in breaking into a safe with a blow lamp. Yet another transformation. For the past few years he has been in succession a secret agent, a terrorist, and a political deportee. The safe in question stood in a beautiful villa on Lake Constance, the property of the director of a great German business concern. When opened, the safe yielded up its mystery: a bottle containing an extremely heavy powder. The label was inscribed: "Uranium, for atomic applications."

It was the first formal proof of the existence in Germany of a project for an atomic bomb sufficiently advanced to require large quantities of pure uranium. Goebbels was not far wrong when, from his bunker under bombardment, he spread through the streets of a devastated Berlin the rumor that the secret weapon was about to explode in the face of the invaders.

Bergier reported his discovery to the Allied authorities. The Americans were skeptical and gave out that any inquiry into nuclear energy would

*"The opinion of those who are best qualified to judge is that the man who concealed himself, or is still today hiding behind the famous pseudonym of Fulcanelli, is the most celebrated and without doubt the only genuine (and perhaps the last) alchemist of this century in which the atom is king." Claude d'Yge, in the review *Initiation et Science*, No. 44, Paris.

be pointless. It was a feint: in reality their first bomb had already been exploded secretly at Alamogordo, and an American mission headed by the physicist Goudsmith, was at that moment in Germany looking for the atomic pile that Professor Heisenberg had constructed before the collapse of the Reich.

In France, nothing was known officially, but there were signs, of which the most significant, in the eyes of those able to read between the lines, was the fact that the Americans were paying fabulous prices for any manuscripts or documents dealing with alchemy.

Bergier reported to the provisional government that research on nuclear explosives was probably being carried on in Germany, as well as in the United States. The report was no doubt consigned to the wastepaper basket, but my friend still kept his bottle, which he used to show to all and sundry, saying: "You see that? You need only put a neutron inside to blow up the whole, of Paris!" This little man with the comic accent was certainly a joker, and people were amazed that anyone who had just come back from Mauthausen had managed to keep a sense of humor. But the joke did not seem quite so funny after Hiroshima. The telephone in Bergier's room began to ring incessantly, and all sorts of official bodies asked for copies of the report. The American intelligence services begged the owner of the famous bottle to contact urgently a certain Major who refused to give his name. Other authorities insisted that the bottle should be removed to some place outside the Paris area. In vain Bergier explained that the flask certainly did not contain pure uranium 235, and that, even if it did, the uranium was certainly not "critical." Otherwise, it would have exploded long ago. However, his toy was taken from him, and he never heard it referred to again. To console him, he was presented with a report from the "Direction Generale des Etudes et Recherches," containing all that this organization, a branch of the French Secret Service, knew about nuclear energy. The report was labeled: "Secret," "Confidential," and "Not to be circulated," but all it contained were some clippings from the magazine *Science et Vie* (Science and Life).

To satisfy his curiosity it only remained for him to meet the famous anonymous Major, some of whose adventures had been related by Professor

Goudsmith in his book *Alsos*. This mysterious officer, endowed with a macabre sense of humor, had camouflaged his unit under the guise of an organization for locating the graves of fallen American soldiers. He was in a state of agitation, and appeared to be harassed by Washington. He wanted first to know everything that Bergier had been able to learn or guess about German nuclear projects. But, above all, it was essential for the safety of the world, the Allied cause, and the promotion of the Major, to discover immediately the whereabouts of Eric Edward Dutt and the alchemist known as Fulcanelli.

Dutt, whose antecedents had been looked into by Helbronner, was an Indian who claimed to have had access to some very ancient manuscripts. He declared that he had learned from them certain methods for the transmutation of metals, and that he had, by means of a condenser discharge across a conductor of boride of tungsten, obtained traces of gold in the resulting deposit. Similar results were later to be obtained by the Russians, but this time by using powerful particle accelerators.

Bergier was not able to be of much service to the free world, or to the Allied cause, or to the Major. Eric Edward Dutt, a collaborator, had been shot by the French counterespionage services in North Africa. As for Fulcanelli, he had definitely disappeared.

Nevertheless, the Major, as a token of his gratitude, showed Bergier the proofs of Professor H. D. Smyth's report *On the Military Uses of Atomic Energy* before publication. This was the first serious document to deal with this question and tended surprisingly to confirm certain affirmations made by the alchemist in 1937.

The atomic pile, an essential instrument for the manufacture of the bomb, was actually "a geometrical arrangement of highly purified substances." As Fulcanelli had stated, this instrument used neither electricity nor a vacuum technique. Smyth's report also alluded to radiant poisons and radioactive gases and dust, all highly toxic, which it was relatively easy to prepare in large quantities. The alchemist had spoken of the possibility of poisoning the entire planet.

How had it been possible for an obscure mystic, a solitary investigator to foresee or have knowledge of all these things?

On looking through the proofs of the report my friend remembered this passage in Albert le Grand's *De Alchima*: "Should you have the misfortune of working for kings and princes, they will never cease asking you: 'How is the Great Work progressing? When at last are we going to see something worth while?' And, in their impatience they will call you good-for-nothing and rascal, and make all sorts of trouble for you. And if you are unsuccessful, you will feel the full force of their displeasure. If, on the other hand, you succeed, they will keep you prisoner in perpetual captivity with the intention of making you work for their advantage."

Was this why Fulcanelli had disappeared and why alchemists throughout the ages had always maintained secrecy about their work?

The advice given first and last in the Harris papyrus was: "Keep your lips sealed!"

Years after Hiroshima, on January 17, 1955, Oppenheimer made this statement: "In a very profound sense and in a way that cannot be lightly dismissed, we scientists have sinned."

And a thousand years earlier a Chinese alchemist wrote: "It would be a terrible sin to reveal to the soldiers the secrets of your art. Beware! Do not allow even an insect to be in the room where you are working."

IV *The modern alchemist and the spirit of research—Description of what an alchemist does in his laboratory—Experiments repeated indefinitely—What is he waiting for?—The preparation of darkness—Electronic gas—Water that dissolves—Is the philosopher's stone energy in suspension?—The transmutation of the alchemist himself—This is where true metaphysics begin*

The modern alchemist is a man who reads treatises on nuclear physics. He is convinced that transmutations and still more extraordinary phenomena can be obtained by manipulations and with the aid of comparatively simple apparatus. It is among contemporary alchemists that the spirit of

the isolated seeker is to be found, and the preservation of such a spirit is very important at the present time. For it is generally believed today that no progress in science is possible without large-scale teamwork, vast apparatus, and considerable financial backing. And yet the fundamental discoveries, such as radioactivity and wave mechanics, were made by men working in isolation. America, where everything is done on a big scale, with large teams of workers, is now sending its agents all over the world in search of original minds. The Director of American scientific research, Dr. James Killian, declared in 1958 that it was undesirable to trust entirely in collective research, and that an appeal should be made to solitary workers with original ideas of their own. Rutherford did some of his fundamental work on the structure of matter with old tins and bits of string. Jean Perrin and Mme. Curie, before the war, sent their assistants to the Flea Market on Sundays to look for material. Of course big, well-equipped laboratories are necessary, but it would be advisable to ensure some cooperation between these laboratories and these teams and these solitary workers. The alchemists, however, would refuse the invitation. Their rule is secrecy; their ambition of a spiritual nature. "There can be no doubt," wrote Rene Alleau, "that the manipulations of the alchemists help to maintain an inner asceticism." If alchemy contains some science, this science is only a means of gaining access to knowledge. It is consequently most important that it should not be generally known, otherwise it would become an end in itself.

What is the alchemist's working material? The same as that used for high-temperature mineral chemistry: furnaces, crucibles, scales, measuring instruments with, in addition, modern apparatus for detecting nuclear radiation—Geiger counters, scintillometers, etc.

Such a stock-in-trade may seem hopelessly inadequate. An orthodox physicist would never admit that it is possible to produce a cathode emitting neutrons with such simple and inexpensive apparatus. If our information is correct, alchemists do in fact succeed in doing this. In the days when the electron was considered to be the fourth state of matter, extremely elaborate and costly machinery was invented to produce elec-

tronic currents. Later on, in 1910, Elster and Gaitel showed that it was enough to heat lime in vacuo to a dull red heat.

We do not know all the laws of matter. If alchemy is a more advanced form of knowledge than our own science, it employs simpler methods.

We know several alchemists in France, and two in the United States. There are some in England, in Germany, and in Italy. E. J. Holmyard says he met one in Morocco. Three have written to us from Prague. The scientific press in the U.S.S.R. appears to be taking a great interest in alchemy, and is undertaking historical researches.

We are now going to give, for what we believe to be the first time, an accurate description of what an alchemist actually does in his laboratory. We do not claim to reveal every detail of the methods employed, but we believe we can throw some light upon these methods, which will not be without interest. Nor do we forget that alchemy's ultimate aim is the transmutation of the alchemist himself, and that his operations are only steps in his slow progress toward "spiritual liberation." We are now going to try to give some fresh information about these operations.

The alchemist in the first place spends many years deciphering old texts, which to the reader, deprived of any guiding Ariadne's thread, are like a labyrinth where everything has been done deliberately and systematically to throw the uninitiated into a state of inextricable mental confusion. With the help of patience, humility, and faith he gradually begins to understand these texts. Having got so far, he is ready to begin actual alchemic operations. These we are going to describe, but there is one thing of which we have no knowledge. We know what happens in an alchemist's laboratory, but we do not know what happens in the alchemist himself, in his mind and heart. It may be that everything is connected. It may be that spiritual energy plays a part in the physical and chemical operations of the alchemist. It may be that a certain method of acquiring, concentrating, and directing this spiritual energy is essential to the success of the alchemists' work. This is not certain, but in this rare context it is impossible not to recall Dante's saying: "I see that you believe these things because I tell you them; but you do not know the reason for them,

and therefore, in spite of being believed, their meaning is still hidden."

Our alchemist begins by preparing in a mortar made of agate a mixture of three ingredients. The first, in a proportion of 95 percent, is some sort of ore: arsenopyrites, for example, an iron ore containing among its impurities arsenic and antimony. The second is a metal: iron, lead, silver, or mercury. The third is an acid of organic origin, such as tartaric or citric acid. He will continue to grind and mix by hand these ingredients for five or six months. He will then proceed to heat the mixture in a crucible, increasing the temperature by degrees and continuing this operation for ten days or so. He must take precautions, for toxic gases are released: mercury vapor and especially arsenohydrogen, which has killed many an alchemist at the beginning of his experiment.

Finally, he dissolves the contents of the crucible by means of an acid, and it was in their search for a solvent that the old alchemists discovered acetic acid, nitric acid, and sulfuric acid.

The dissolution has to be performed under a polarized light, i.e., either weak sunlight reflected in a mirror, or the light of the moon. It is known today that polarized light vibrates in one direction only, whereas ordinary light vibrates in every direction around an axis.

Next the liquid is evaporated and the solid residue recalcined. The alchemist will repeat this operation thousands of times. Why? We do not know. Perhaps he is waiting for the moment when all the most favorable conditions will be fulfilled: cosmic rays, terrestrial magnetism, etc. Perhaps it is in order to obtain a condition of "fatigue" in the structure of matter of which we still know nothing. The alchemist speaks of a "sacred patience" and of the slow condensation of the "universal spirit." But behind this parareligious language there is surely something hidden.

This method of working by repeating indefinitely the same operation may seem mad to a modern chemist who has been taught that there is only one satisfactory experimental method—that of Claude Berthelot. This method is based on concomitant variations. The same experiment is carried out thousands of times, but with one different factor every time: the proportions of one of the ingredients, temperature, pressure, a different catalyzer, etc. The results obtained are noted, and some of the laws

governing the phenomenon deduced therefrom. This is a method that has proved sound, but it is not the only one. The alchemist repeats his operation without any variation until something extraordinary happens. He believes fundamentally in a natural law, somewhat similar to the "principle of exclusion" formulated by the physicist Pauli, a friend of Jung.

Pauli held that in a given system (the atom and its molecules) there cannot be two particles (electrons, protons, mesons) in the same state. Everything in nature is unique. That is why one goes, without any intermediary, from hydrogen to helium, from helium to lithium and so on as the nuclear physicist is advised in the periodic table of elements. When a particle is added to a system, that particle cannot partake of any of the states existing within the system. It assumes another state, and its combination with the existing particles creates a new and unique system.

For the alchemist, just as there can be no two souls, or no two creatures, or no two plants exactly alike (Pauli would add: no two electrons), so there can be no two experiments exactly the same. If an experiment is repeated thousands of times, something extraordinary will happen in the end. We are not competent to say whether the alchemists are right or wrong. We will merely point out that one modern science—the science of cosmic rays—has adopted a very similar method. This science studies the phenomena caused by the arrival, in a machine designed for their direction, or on a plaque, of particles of enormous energy coming from the stars. These phenomena cannot be obtained at will; they must be waited for. Sometimes an extraordinary phenomenon is recorded. Thus, for example, during the summer of 1957, in the course of some experiments being carried out in the United States by Professor Bruno Rossi, a particle charged with an immense amount of energy—greater than had ever been recorded, and coming perhaps from some galaxy other than the Milky Way—was recorded on fifteen hundred Geiger counters simultaneously in a radius of eight square kilometers, creating in its track an enormous shower of atomic debris. It is impossible to imagine a machine capable of producing so much energy. Such a thing had never happened before in living memory, and no one knows if it will ever happen again. It is an exceptional event of this kind, whether cosmic or terrestrial, that our

alchemist is apparently waiting for, to see reflected in his crucible. He might perhaps shorten the period of waiting by using more active means than fire—for example, by heating his crucible in an induction furnace by levitation.* Or, again, by adding radioactive isotopes to the mixture. In this way, he could perform his operation over and over again, not several times a week, but several hundreds of thousands of times in a second, thus multiplying his chances of capturing the "event" necessary for the success of his experiment. But the modern alchemist, like his predecessors, works in secrecy and poverty, and looks upon waiting as a virtue.

To continue our description: after working at the same thing, night and day, for several years, our alchemist finally decides that the first phase is completed. He then adds to his mixture an oxidizing agent, for example, potassium nitrate. His crucible already contains sulfur obtained from pyrites and carbon from the organic acid. Sulfur, carbon, and nitrate: it was in performing this operation that the old alchemists discovered gunpowder.

Over and over again he continues this operation of dissolving and then reheating for months and years without respite, always waiting for a sign. As to the nature of this sign, the books on alchemy differ, but this is perhaps because there are several phenomena that might occur. The sign appears at the moment of melting. For some alchemists it will appear in the form of crystals shaped like stars on the surface of the solution, while in other cases a layer of oxide forms on the surface and then breaks up, revealing the luminous metal in which can be seen a reflection, in miniature, of the Milky Way, perhaps, or some of the constellations. (In this case melting would be done by a high-frequency current.†)

On receiving this sign, the alchemist removes his mixture from the crucible and allows it to "ripen," protected from the air and from damp, until the first days of spring. When he resumes his operations, these will be directed toward what is called in the old texts, "the preparation of darkness." Recent research on the history of chemistry has shown that the

"This method consists of suspending the mixture in a void, so as to have no contact with the furnace wall, by means of a magnetic field.

†The American magazine *Life*, January 1958, published some excellent photographs of an operation of this kind. Jacques Bergier says he has witnessed this experiment.

German monk, Berthold Schwarz (who is generally credited in the West with the invention of gunpowder) never existed. He is a symbolic figure for this "preparation of darkness."

The mixture is now placed in a transparent receptacle, made of rock crystal and closed in a special way. Little is known about this method of sealing, generally known as the Hermes method, hence "hermetic." The procedure will now consist of heating the receptacle, regulating the temperatures with the utmost precision. Inside the closed receptacle there is still the same mixture of sulfur, carbon, and nitrates, which now has to be brought to a certain degree of incandescence but prevented from exploding. There are many instances of alchemists being seriously burned or killed, for the explosions that occur under these conditions are particularly violent and engender temperatures which logically would seem quite improbable.

The object in view is to procure in the receptacle an "essence," a "fluid," which alchemists sometimes call "raven's wing."

This calls for some explanation. This operation has no equivalent in modern physics and chemistry, and yet it is not without analogies. When a metal such as copper is dissolved in liquid ammoniac gas it turns a dark blue color, verging on black in massive concentrations. The same phenomenon occurs if hydrogen under pressure, or organic amines, are dissolved in liquefied ammoniac gas to produce the unstable compound NH which has all the properties of an alkaline metal and is consequently known as "ammonium."

There is reason to believe that this blue-black coloration, resembling the fluid the alchemists call "raven's wing," is the exact color of "electronic" gas. What is electronic gas? It is the term applied by modern scientists to the whole body of free electrons, which constitute a metal and endow it with all its mechanical, electric, and thermal properties. It corresponds in present day terminology to what the alchemist calls the "soul" or the "essence" of metals. It is this soul or essence which is released in the hermetically sealed receptacle the alchemist has been so patiently tending over his furnace.

He heats it, allows it to cool off, heats it again, and continues the

process for months or even years, observing through the rock crystal the formation of what is also sometimes called "the alchemist's egg," i.e., the mixture converted into a blue-black fluid. Finally he opens his receptacle in the dark, lighted only by this kind of fluorescent liquid. On contact with the air, this liquid solidifies and breaks up. In this way he would obtain entirely new substances, unknown in nature and possessing all the properties of pure chemical elements—properties—that is to say, which cannot be separated by chemical means.

Some modern alchemists claim to have obtained in this way new chemical elements in considerable quantities. Fulcanelli is said to have extracted from a kilogram of iron twenty grams of an entirely new substance whose chemical and physical properties do not correspond to any known chemical element. The same operation could be applied to all elements, most of which would yield two new elements for each one treated.

Such a statement is likely to shock an orthodox laboratory worker. For modern theory admits only the two following separations of a chemical element: the molecule of an element can assume several states, e.g., ortho-hydrogen and parahydrogen; or the nucleus of an element can assume a certain number of isotopic states in which the number of neutrons varies. Thus, in lithium 6, the nucleus contains three neutrons, and, in lithium 7, the nucleus contains four.

The techniques for separating the various allotropic states of the molecule and the various isotopic states of the nucleus, necessitate the use of vast and elaborate machinery. By contrast, the alchemist's methods are altogether insignificant: yet he, it seems, would succeed not in altering the state of matter but in creating a new kind of matter; or, at any rate, in decomposing matter and recomposing it differently. All our knowledge of the atom and its nucleus is based on the "Saturnian" model of Nagasoka and Rutherford: the nucleus and its belt, or ring, of electrons. On the face of it, there seems to be no reason why, in the future, some other theory should not enable us to bring about separations and alterations in the state of chemical elements, which today seem inconceivable.

So now our alchemist has opened his crystal receptacle, and obtained, through the cooling on contact with the air of the fluorescent liquid, one

or more new elements. Some dregs remain. These he will wash and rewash for several months with triple-distilled water. Then he will keep this water away from the light and from any variations in temperature.

This water is said to have extraordinary chemical and medical properties. It is the universal solvent, and the elixir of tradition that ensures longevity—the elixir of Faust.*

Here, the alchemic tradition seems to be in harmony with advanced modern science, which takes the view that water is a strongly reactive and highly complex mixture. Researchers who have been studying the question of oligo-elements, notably Dr. Jacques Menetrier, have observed that all metals are, in fact, soluble in water in the presence of certain catalyzers such as glucose, and in certain temperatures. Moreover, water, they suggest, could form actual chemical compounds, hydrates for example, in combination with inert gases such as helium and argon. If it were known which constituent in water was responsible for the formation of hydrates in contact with an inert gas, it would be possible to stimulate the solvent properties of water and in this way to obtain a real universal solvent.

The Russian review, *Knowledge and Strength*, a journal of high standing, wrote in 1957 (No. 11) that this result would perhaps be achieved one day by bombarding water with nuclear radiations, and that the alchemist's universal solvent would become a reality before the end of the century. It also foresaw a number of possible applications, including a boring of a tunnel by means of a jet of activated water.

Our alchemist, then, is now in possession of a certain number of simple bodies unknown in Nature, and of a few flasks full of an alchemic

*Professor Ralph Milne Farley, United States Senator and Professor of Modern Physics at the West Point Military Academy, has drawn attention to the fact that some biologists think that old age is due to the accumulation of heavy water in the organism. The alchemists' elixir of life might then be a substance that eliminates selectively heavy water. Such substances exist in evaporated water. Why, then, should they not be found in a liquid water when treated in a certain way? But could so important a discovery be published without danger? Mr. Farley imagines a secret society of immortals, or quasi-immortals, who have existed for centuries and reproduce themselves by cooption. Such a society, keeping aloof from politics and the affairs of men, would have every chance of remaining undetected. . . .

water capable of prolonging life to a considerable extent by rejuvenating the tissues.

His next step is to try to recombine the simple elements he has obtained. He mixes them in his mortar, and melts them at low temperatures with the aid of catalyzers of which the texts tell us very little. The more one studies the operations of the alchemists, the more difficult to decipher do the texts become. This particular operation will take several years to perform.

In this way, we are told, the alchemist will obtain substances exactly like the metals we know, especially those that are good conductors of heat and electricity. These substances would be alchemic copper, alchemic silver, and alchemic gold. Neither the classical texts nor spectroscopy are able to reveal the novelty of these substances, and yet they are supposed to have new and surprising properties, different from those of existing metals.

If our information is correct, alchemic copper, which looks very like ordinary copper, yet is, in fact, very different, has an infinitely feeble resistance to electricity, comparable to that of the superconductors that the physicists obtain in the neighborhood of absolute zero. If such a copper could be used, it would revolutionize electrochemistry.

Other substances obtained by the alchemist's manipulations are, it seems, still more remarkable. One of them is said to be soluble in glass, at low temperature and before the glass has reached melting point. This substance, on touching the half-melted glass, spreads all over it inside, turning it to a ruby red, and giving off a mauve fluorescence in the dark. The powder obtained by grinding the glass thus treated in a mortar of agate is what the alchemists call the "projection powder," or "philosopher's stone."

"And thus," wrote Bernard, Comte de la Marche Trevisane, "is brought about this precious Stone, excelling all other precious stones, an infinite treasure to the glory of God who lives and reigns forever."

Everyone is familiar with the marvelous legends concerning this stone, or powder, which is said to be able to bring about the transmutation of metals in considerable quantities. It is reputed to be capable of transform-

ing certain base metals into gold, silver, or platinum, but this is only one aspect of its powers. It might even be a sort of reservoir of nuclear energy, controllable to any degree.

We shall return later to the questions raised by the manipulations of the alchemists to which an enlightened modern man must find an answer; for the moment let us halt where the alchemic texts themselves come to an end. The "Great Work" is done. The alchemist himself undergoes a transformation which the texts evoke, but which we are unable to describe, having only the vaguest analogies to guide us. This transformation, it seems, would be, as it were, a promise, or foretaste, experienced by a privileged being, of what awaits humanity after attaining the very limits of its knowledge of the earth and its elements: its fusion with the Supreme Being, its concentration on a fixed spiritual goal, and its junction with other centers of intelligence across the cosmic spaces. Gradually, or in a sudden flash of illumination, the alchemist, according to tradition, discovers the meaning of his long labors. The secrets of energy and of matter are revealed to him, and at the same time he glimpses the infinite perspectives of Life. He possesses the key to the mechanics of the Universe. He establishes a new relationship between his own mind, which from now on is *illuminated*, and the universal Mind eternally deepening its concentration. Could it be that certain radiations from the "projection powder" bring about the transmutation of the psyche?

The manipulation of fire and certain other substances therefore makes possible not only the transmutation of metals, but also the transformation of the experimenter himself. The latter, under the influence of forces emitted by the crucible (that is to say, radiations emitted by nuclei undergoing changes in structure) enters himself into a new state. Mutations take place within him. His life is prolonged, his intelligence and his powers of perception are raised to a higher level. The existence of such persons is one of the foundations of the Rosicrucian tradition.

The alchemist passes to another stage of being, attains a higher degree of consciousness. He alone is "awakened," and to him it seems that all other men are still asleep. He escapes from the rest of humanity—disappears, like Mallory on Everest, having had his moment of truth.

"The philosopher's stone thus represents the first rung on the ladder that helps man to ascend toward the Absolute. Beyond, the mystery begins. On this side there is no mystery, no esoterism, no other shadows than those projected by our desires and, above all, by our pride. But—just as it is easier to content oneself with ideas and words than to do something with one's hands, in suffering and weariness, in silence and solitude, so is it also more convenient to seek refuge in what is called "pure" thought than to struggle singlehanded against the dead weight and darkness of the world of matter. Alchemy forbids her disciples to indulge in any escapism of this kind, and leaves them face to face with the great Enigma. . . . She guarantees nothing except that, if we fight to the end to deliver ourselves from ignorance, truth itself will fight for us and in the end will conquer everything. This, perhaps, will be the beginning of true metaphysics."*

V

There is time for everything—There is even a time for the times to come together

The old alchemic texts affirm that the keys to the secrets of matter are to be found in Saturn. By a strange coincidence, everything we know today in nuclear physics is based on a definition of the "Saturnian" atom. According to Nagasoka and Rutherford, the atom is "a central mass exercising an attraction surrounded by rings of revolving electrons."

It is this "Saturnian" conception of the atom, which is accepted today by scientists all over the world, not as an absolute truth, but as the most fruitful working hypothesis. The physicists of the future, maybe, will consider it absurdly naive. The quantum theory and wave mechanics both apply to the behavior of electrons. But no theory or system of mechanics gives a precise account of the laws that govern the nucleus. It is believed that the latter is composed of protons and neutrons, and that is all.

*Rene Alleau, Preface to *Les Clés de la philosophie spagyrique* (The Keys of the Spagyric Philosophy) by M. Le Breton. Editions Caracteres, Paris.

Nothing is known positively about nuclear forces. They are neither electric nor magnetic nor gravitational. The latest accepted hypothesis connects these forces with particles somewhere between the neutron and the proton, which are known as *mesons*. That is only something to go on until more is known. In two years, or in ten years, other hypotheses will, no doubt, point in a different direction. In any case, it is clear that we are living at a time when scientists have neither the time nor altogether the right to study nuclear physics. All available efforts and material are concentrated on the manufacture of explosives and the production of energy. Fundamental research is relegated to the background. What is urgent is to make the most of what we know already. Power is more important than knowledge. This appetite for power is something that the alchemists have always managed to avoid.

Where, then, do we stand now? Contact with neutrons renders all elements radioactive. Experimental nuclear explosions poison the planet's atmosphere. This poisoning, which follows a geometrical progression, will enormously increase the number of stillborn children, cause cancer and leukemia, ruin plants, upset the weather, produce monsters, destroy our nerves, and finally suffocate us. But governments, whether democratic or totalitarian, will not give up testing—and for two reasons. The first is that public opinion cannot possibly be consulted, for public opinion is not on the planetary level of understanding that alone would enable it to react. The second reason is that there are no governments, only limited liability companies, with humanity as their capital, whose mission is not to make history, but to express the various aspects of historic fatality.

Now, if we believe in historic fatality, we believe that this is only one of the forms of the spiritual destiny of humanity, and that the spiritual destiny is an auspicious one. We therefore do not believe that mankind will perish, even though it may have to suffer a thousand deaths, but that after immense and terrible sufferings it will be born—or reborn—joyfully aware that it is still marching onwards.

Is it true that nuclear physics, used in the interests of power, will, as M. Jean Rostand has said, "squander the genetic capital of humanity"? Yes, perhaps, for a few years; but it is impossible to believe that science

will not find a way of cutting the Gordian knot that it has itself created.

The methods of transmutation known to modern science are powerless to arrest energy and radioactivity. They are transmutations of a strictly limited nature whose harmful effects are nevertheless unlimited. If the alchemists are right, there are simple, economical, and safe ways of producing transmutations on a large scale. These means would entail the "dissolution" of matter and its reconstruction in a different state from what it was originally. No discoveries in modern physics would justify a belief that such a thing is possible. And yet for thousands of years the alchemists have been asserting that it is. The fact is, our ignorance of the nature of nuclear forces and of the structure of the nucleus prevents us from saying that anything is absolutely impossible. If the alchemists' transmutation is really possible, it is because the nucleus has properties of which we know nothing.

The issue is important enough to warrant a really serious study of alchemic literature. Even if such a study does not bring to light irrefutable facts, there is at least a chance that it will suggest a new line of approach. For new ideas are badly needed in nuclear physics in its present state of subjection to power politics, and weighed down as it is by the immensity of the equipment involved.

It is now becoming evident that there are infinitely complex structures in the interior of the neutron and the proton, and that the so-called "fundamental" laws, such as the principle of parity, do not apply to the nucleus. We are beginning to hear about an "antimatter," and of the possible coexistence of several Universes in the midst of our visible Universe, so that anything may be possible in the future, including a vindication of alchemy. It would be fitting and in accordance with the noble traditions of the alchemic language that our salvation should be brought about through the medium of spagyric philosophy. There is time for everything, and there is even a time for the times to come together.

THE VANISHED CIVILIZATIONS

In which the authors introduce a fantastic personage—Mr. Fort—The fire at the "sanatorium of overworked coincidences"—Mr. Fort and universal knowledge—40,000 notes on a gush of periwinkles, a downpour of frogs, and showers of blood—the Book of the Damned—A Certain Professor Kreysler—In praise of "intermediarism" with some examples—The Hermit of the Bronx, or the cosmic Rabelais—Visit of the author to the Cathedral of Saint Elsewhere—Au revoir, Mr. Fort!

In the year 1910 there lived in New York, in a little bourgeois apartment in the Bronx, a little man, neither old nor young, who looked like a very shy seal. His name was Charles Hoy Fort. His hands were round and plump, his figure paunchy and he had no neck, a big head growing bald, a large Asiatic nose, iron-rimmed spectacles and mustaches a la Gurdjieff. He seldom went out, except to go to the Municipal Library where he devoured a quantity of newspapers, reviews, and yearbooks of all different countries and all periods. Around his roll-topped desk were heaped empty shoe boxes and piles of periodicals: the *American Almanac* of 1833; the *London Times* for the years 1880-93; *the Annual Record of Science*; twenty years of the *Philosophical Magazine*, *Les Annales de la Societe Entomologique de France*, the *Monthly Weather Review*, *The Observatory*, the *Meteorological Journal*, etc. . . . He wore a green eyeshade, and when his wife lit the gas stove for dinner he used to go into the kitchen to see that she didn't set the place on fire. That was the only thing that annoyed Mrs. Fort, nee Anna Filan, whom he had chosen for her complete absence of intellectual curiosity and of whom he was very fond.

Until the age of thirty-four Charles Fort, whose parents had a grocer's shop in Albany, had managed to earn a living, thanks to a mediocre talent for journalism and his skill in embalming butterflies. On the death of his parents he sold the shop, and the slender income he derived from the proceeds enabled him at last to devote himself exclusively to his ruling passion, which was the accumulation of notes on improbable and yet well established events.

Red rain over Blankenbergue on November 2, 1819; a rain of mud in Tasmania on November 14, 1902. Snowflakes as big as saucers in Nashville on January 24, 1891; a rain of frogs in Birmingham on June 30, 1892. Meteorites. Balls of fire. Footprints of a fabulous animal in Devonshire. Flying disks. Marks of cupping glasses on mountains. Engines in the sky. Erratic comets. Strange disappearances. Inexplicable catastrophes. Inscriptions on meteorites. Black snow. Blue moons. Green suns. Showers of blood.

He collected in this way twenty-five thousand notes, filed in cardboard boxes. Facts, no sooner recorded than forgotten. And yet—facts.

He called this his "sanatorium of overworked coincidences." Facts no one would speak about. From his files he could hear a "noisy silence" escaping. He felt a kind of affection for these incongruous realities, banished from the realms of knowledge, to which he gave shelter in his humble little office in the Bronx and talked to affectionately as he filed them away. "Little trollops and midgets, humpbacks and buffoons all of you; but the solidity of the procession as a whole: the impressiveness of things that pass and pass and pass and keep on and keep on and keep on coming. . . ."

When he grew tired of passing in review this procession of facts, which science had decided to ignore (a flying iceberg fell in fragments on Rouen on July 5, 1853. Argosies of celestial travelers. Winged beings at a height of 8,000 meters in the sky above Palermo on November 30, 1880. Luminous wheels in the sea. Rains of sulfur, of flesh. Remains of giants in Scotland. Coffins of little creatures from another world in the cliffs at Edinburgh) . . . when he grew tired, he found relaxation in playing all alone interminable games of super checkers on a board of his own invention that had 1,600 squares.

And then one day Charles Hoy Fort realized that all this formidable labor amounted to nothing at all. It was useless, of dubious value, nothing but the pastime of a maniac. He perceived that he had only been treading on the threshold of what he was obscurely seeking, and that he had done none of the things that really needed to be done. This wasn't research, only a caricature of the real thing. And this man who was so afraid of fire consigned all his boxes and files to the flames.

He had just discovered his real nature. This maniac with a passion for extraordinary occurrences and facts was really only interested in general ideas. What had he unconsciously been doing during those half-wasted years? Ensnared in his den, surrounded by butterflies and old papers, he was in fact attacking one of the most powerful prejudices of this century, namely the civilized man's conviction that he knows everything there is to know about the Universe in which he lives. Why, then, did Mr. Charles Hoy Fort hide himself, as if he had something to be ashamed of?

The truth is that the slightest allusion to the fact that the Universe may contain vast areas of the Great Unknown has a disturbing and disagreeable effect on men's minds. Mr. Charles Fort, in fact, was behaving like an erotomaniac: let us keep our vices secret so that society shall not be furious at discovering that it has been allowing large tracts in the field of sexuality to lie fallow. The next stage was to advance from indulgence in a crazy hobby to a declaration of principles, and from being a crank to becoming a prophet. From now on there was real work to be done—revolutionary work.

Scientific knowledge is not objective. Like civilization, it is a conspiracy. Quantities of facts are rejected because they would upset preconceived ideas. We live under an inquisitorial regime where the weapon most frequently employed against nonconformist reality is derision. Under such conditions, then, what can our knowledge amount to? "In the topography of intellection," said Fort, "I should say that what we call knowledge is ignorance surrounded by laughter." Therefore we shall be obliged to claim another freedom in addition to those guaranteed by the Constitution: freedom to disbelieve science. Freedom to disbelieve in evolution (suppose Darwin's work was only fiction?), in the rotation of the Earth, in the existence of such a thing as the speed of light, in

gravitation, etc. To disbelieve everything, in short, except facts. Not carefully selected facts, but facts as they occur—noble or ignoble, bastard or pure-blooded, with all their accompanying oddities and incongruous appendages. Nothing factual must be rejected; the science of the future will discover unknown relationships between facts which seem to us disconnected. Science needs to be galvanized by a spirit of insatiable curiosity; not credulous, but fresh and wild. What the world needs is an encyclopedia of rejected facts and realities that have been condemned, "I'm afraid we shall have to give to civilization upon this Earth some new worlds. Places with white frogs in them."

In the space of eight years our timid little seal man from the Bronx applied himself to learning all the arts and all the sciences—and to inventing another half-dozen or so as his own contribution. Smitten by an encyclopedic fever, he devoted himself to the gigantic task, not so much of learning, as of taking cognizance of everything in life. "I marveled that anybody could be satisfied to be a novelist, or the head of a steel trust, or a tailor, or a governor, or a street cleaner."

Principles, formulae, laws, phenomena of all kinds were devoured and digested at the New York Municipal Library, at the British Museum, and also thanks to an enormous correspondence with all the biggest libraries and bookshops in the world. Result: forty thousand notes divided into thirteen hundred sections, written in pencil on minute scraps of paper in a stenographic language of his own invention. And above all, this wild enterprise was presided over by a man with the gift of being able to consider each subject from the point of view of a superior intelligence confronted with it for the first time. Example: "Astronomy. And a watchman looking at half a dozen lanterns where a street's been torn up. There are gas lights and kerosene lamps and electric lights in the neighborhood: matches flaring, fires in stores, bonfires, house afire somewhere; lights of automobiles, illuminated signs—The watchman and his one little system. . . ."

At the same time he resumes his inquiries into facts that have been rejected, but systematically this time, taking care to check and cross-check all his references. He plans his researches under headings covering astron-

omy, sociology, psychology, morphology, chemistry, and magnetism. He no longer collects; he tries to invent a compass for navigating oceans "on the other side," and to solve the puzzle of other worlds hidden behind this world. He must pluck every trembling leaf from the immense tree of fantasy: screams are heard in the sky over Naples on November 22, 1821; fish fall from the clouds over Singapore in 1861; in Indre-et-Loire, on a certain April 10th there is a cataract of dead leaves: stone hatchets fall on Sumatra in a thunderstorm: living matter descends from the sky; there are kidnappings by supermen from outer space; derelict worlds are floating all around us. . . . "I am intelligent, as contrasted with the orthodox. I haven't the aristocratic disregard of a New York curator of an Eskimo medicine man; I have to dissipate myself in acceptance of a host of other worlds. . . ."

Mrs. Fort was not in the least interested in all this. She did not even see anything strange in it. He never talked about his work, except perhaps to one or two astonished friends, to whom he wrote occasionally. "I think this is a vice we're writing. I recommend it to those who have hankered for a new sin. At first some of our data were of so frightful or ridiculous mien as to be hated or eyebrowed. . . . Then some pity crept in."

With the strain on his eyes there was as a danger of his going blind. He stopped work and meditated for some months, eating nothing but brown bread and cheese. When his eyes were rested he began to expound his own view of the Universe, in which there was no room for dogma, and to arouse the interest of those around him by appealing to their sense of humor. The more he studied the various sciences, the more aware he became of their inadequacies. They needed to be destroyed from the base upwards; the attitude behind them was all wrong. A fresh start would have to be made by reintroducing the rejected facts on which he had assembled a vast documentation. Present them first; explain them afterwards. "I am not convinced that we make a fetish of the preposterous. I think our feeling is that in first gropings there's no knowing what will afterwards be the acceptable. I think that if an early biologist heard of birds that grow on trees, he should record that he had heard of birds that grow on trees. Then let sorting over of data occur afterwards."

Let everything be reported, then one day we may have a revelation.

The very structure of our knowledge needs to be revised. Charles Hoy Fort is full of exciting theories, all tinged with an element of the bizarre. He sees science as a highly sophisticated motorcar speeding along on a highway. But on either side of this marvelous track, with its shining asphalt and neon lightning, there are great tracts of wild country, full of prodigies and mystery.

Stop! Explore in every direction! Leave the high road and wander! Even if you have to make wild and clownlike gestures, as people do when they are trying to stop a car, no matter; it's urgent! Mr. Charles Hoy Fort, the hermit of the Bronx, feels obliged to go through a number of clownish acts which he considers indispensable as quickly and as energetically as possible.

Convinced of the importance of his mission, and able to dispense now with his documentations, he sets out to assemble all his best explosives in 300 pages.

He writes his first book, *The Book of the Damned*, in which he proposes "a certain number of experiments concerning the structure of knowledge." This work was published in New York in 1919 and provoked a revolution in intellectual circles. Before the first manifestations of Dadaism and Surrealism, Charles Fort introduced into science what Tzara, Breton, and their disciples were going to introduce into art and literature: a defiant refusal to play at a game where everybody cheats, a furious insistence that there is "something else." A huge effort, not so much, perhaps, to grasp reality in its entirety, as to prevent reality being conceived in a falsely coherent way. A rupture that had to be. "I am a horsefly that stings the scalp of knowledge to prevent it from sleeping."

The Book of the Damned? "The crackpots' *Golden Bough*"—John Winterich. "One of the monstrosities of literature"—Edmund Pearson. For Ben Hecht, "Charles Fort is the apostle of the exceptional and the high priest of the improbable." Martin Gardner, however, admitted that "his sarcasms are in harmony with the best attested analyses of Einstein and Russell." John W. Campbell asserted that "this work contains the germs of at least six new sciences." "To read Charles Fort," wrote Maynard

Shipley, "is like taking a ride on a comet." While Theodore Dreiser saw in him "the greatest literary personality since Edgar Poe."

It was not until 1955 that *The Book of the Damned* was published in France.* This was done at my instigation but, in spite of an excellent translation and introduction by Robert Benayoun and a message from Tiffany Thayer, President in the United States of the "Society of Friends of Charles Fort," this extraordinary work attracted hardly any attention.'

Bergier and I consoled ourselves for this mishap to one of our most cherished idols by imagining with what relish he would be listening, from the bottom of the super-Sargasso Sea where he has doubtless made his home, to the "noisy silence" reaching him from the country of Descartes.

Our exembalmer of butterflies had a horror of anything fixed or classified or defined. Science isolates phenomena in order to observe them. Charles Fort's great idea was that nothing can be isolated. An isolated object ceases to exist. A swallow-tailed butterfly sucks nectar from a flower. Result: a butterfly plus nectar; a flower minus a butterfly's appetite. Every definition

'Editions des Deux-Rives, Paris; collection "Lumiere interdite," general editor: Louis Pauwels. In 1923 Fort published *New Lands* and afterwards came *Lo!* in 1931 and *Wild Talents* in 1932. These works had a certain vogue in America, England, and Australia. I am indebted to Robert Benayoun for much of my information.

Mr. Tiffany Thayer wrote, among other things, as follows: "The qualities of Charles Fort greatly impressed a group of American writers who decided to pursue, in his honor, the attack which he had launched against the all-powerful priests of the new god: Science, and against all forms of dogma. It was for this purpose that the Charles Fort Society was founded on January 26, 1931. The founder-members included Theodore Dreiser, Booth Tarkington, Ben Hecht, Harry Leon Wilson, John Cowper Powys, Alexander Woolcott, Burton Rascoe, Aaron Sussman, and the secretary, the undersigned, Tiffany Thayer. Charles Fort died in 1932 shortly before the publication of his fourth book, *Wild Talents*. The innumerable notes he had assembled from libraries throughout the world and from his international correspondence were bequeathed to the Charles Fort Society; today they form the nucleus of the archives of this society, which are swollen every day by contributions from members in forty-nine countries, not counting the United States. The Society publishes a quarterly review: *Doubt*. This is also a sort of clearinghouse for all the 'outlawed' facts, i.e., those which orthodox science cannot or will not accept, e.g., the flying saucets. In point of fact, the body of information and statistics on this subject which the Society possesses is the oldest, most extensive, and the most complete in existence. The review *Doubt* also publishes some of Fort's notes."

of a thing in itself is a crime against reality. "In some so-called savage tribes the feeble-minded are held in great respect. It is generally recognized that the definition of an object in terms of itself is a sign of feeble-mindedness. All scientists begin by using this kind of definition, and in our communities scientists are held in great respect."

Here we have Charles Hoy Fort, lover of the unusual, recorder of miracles, engaged in the formidable task of reflecting on reflection. What he is attacking is the mental structure of civilized man. He is completely out of sympathy with the two-stroke motor which is the driving power of modern reasoning. Two strokes: Yes and No, Positive and Negative. Modern knowledge and modern intelligence are based on this binary system: right, wrong, open, closed; living, dead, liquid, solid, etc. . . . Where Fort is opposed to Descartes is in his insistence that we should envisage the general from an angle that would allow the particular to be defined in its relation thereto, in such a way that every object or thing would be seen as intermediaries between other things. What he demands is a new mental structure, capable of recognizing as real the intermediate states between the yes and the no, the positive and the negative. In other words, a system of reasoning which is higher than binary and would be, as it were, a third eye for the intelligence.

To express what this third eye perceives, language (which is a binary product, an organized conspiracy, and limitation) is not sufficient. Fort was therefore constrained to use double-faced adjectives, Janus-epithets such as "real-unreal," "immaterial-material," "soluble-insoluble," etc.

One day when Bergier and I were lunching with him [Fort], a friend of ours invented, out of his head, a grave Austrian Professor, the son of an innkeeper at Magdebourg called Kreyssler. The Herr Professor Kreyssler, he informed us, had undertaken the gigantic task of refashioning the language of the West. Our friend was thinking of publishing in a serious review a study of "The Verbalism of Kreyssler," which would have been a very fruitful mystification. This Kreyssler, then, had tried to loosen the corset of language so that it would find room for the intermediary states neglected in our present mental structure. Let us take an example: backwardness and progress (*"retard"* and *"avance"*). How am I to define the

backwardness of the progress I hoped to make? There is no word for it. Kreyssler proposed: "atard." And for my progress in making up for my backwardness?—"revance."*

Here we are talking about intermediate degrees in time. Now let us take the plunge into psychological states. Love and hate. If I love in a cowardly way, loving only myself through the other person and thus being on the way to hate, is this love? No; it is only "I hate."

If, on the other hand, I hate my enemy, without however losing the thread of unity that binds all creatures, doing my duty as an enemy but reconciling hatred and love, this would be "hatrove." And now for the fundamental intermediates. What is dying, and what is living? So many intermediate states that we refuse to recognize! There is "mouvre" ("delive"), which is not living but merely preventing oneself from dying. And there is "virir" ("lidie") which is really living despite having to die. Finally, the states of consciousness. For example, our consciousness is suspended between sleeping and waking. How often is my consciousness only "wakleeping" ("vemir"), thinking it is awake when it is allowing itself to sleep! If, on the other hand, knowing its inclination to sleep it tries to keep awake, that would be a state of "slakefiilness" ("doriller").

Our friend had just been reading Fort when he presented us with this farcical but ingenious idea. "In general metaphysical terms," said Fort, "our expression is that, like a purgatory, all that is commonly described as 'existence,' which we call 'Intermediateness,' is quasiexistence, neither real nor unreal, but an expression of the attempt to become real, or to generate for or recruit a real existence." Such an enterprise is without a parallel in modern times. It foreshadows the great changes in the structure of the mind that are called for today by the discovery of certain physico-mathematical realities. Where the particle is concerned, for example, time moves in two directions at once. Equations are both true and false. Light is continuous and at the same time interrupted.

"But that all that we call 'Being' is motion; and that all motion is the expression not of equilibrium, but of equilibrating, or of equilibrium

[Possible English equivalents could be: "slowgress" and "back-forwardness" —*Trans.*]

unattained; and that to have what is called being is to be intermediate to Equilibrium and Inequilibrium." These words were spoken in 1919 and echo the observations of a contemporary biologist and physicist, Jacques Menetrier, on the inversion of the entropy:

All phenomena in our intermediary state, or quasistate of being represent a movement toward organization, harmonization, and individualization, in other words, an attempt to attain reality. But all attempts are thwarted by continuity, or by external forces—nonrecognized facts side by side with others that are recognized.

This anticipates one of the most abstract operations in quantum physics: the normalization of functions—an operation which consists in determining the function characterizing a physical object in such a way that it is possible to find this object anywhere in the entire Universe.

"We conceive of all things as occupying gradations, or steps in series between realness and unrealness." That is why it was all the same to Fort whether he started with this fact or that in trying to describe totality. And why choose a rational and reassuring fact rather than a disturbing one? Why exclude? "One measures a circle, beginning anywhere." For example, he drew attention to flying objects. There you have a group of facts from which it possible to begin to understand totality. But he hastens to assert that "gushes of periwinkles would be just as good."

"We are not realists. We are not idealists. We are intermediatists." But how is anyone to make himself understood if he attacks the very roots of understanding, the basic principles of the intellect? By an apparent eccentricity, which is the shock-language of the genuine "centralist" genius: the more far-fetched his images, the surer he is to be able to connect them with the focal point of his profoundest meditations. To a certain extent, Charles Hoy Fort follows Rabelais's example, blending humor and imagery in a chorus loud enough to wake the dead.

I am a collector of notes upon subjects that have diversity, such as deviations from concentricity in the lunar crater Copernicus and a

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sudden appearance of purple Englishmen, stationary meteor radiants; and a reported growth of hair on the bald head of a mummy. But my liveliest interest is not so much in things as in relations of things. I have spent much time thinking about the alleged pseudo-relations that are called coincidences. What if some of them should not be coincidences?

In days of yore, when I was an especially bad young one, my punishment was having to go to the store on Saturdays and work. I had to scrape oil labels of other dealers' canned goods and paste on my parents' label. . . . One time I had pyramids of canned goods containing a variety of fruit and vegetables. But I had used all except peach labels. I pasted the peach labels on peach cans and then came to apricots. Well, aren't apricots peaches? And there are plums that are virtually apricots. I went on either mischievously or scientifically, pasting the peach labels on cans of plums, cherries, string beans, and succotash. I can't quite define my motive, because to this day it has not been decided whether I am a scientist or a humorist.

If there are no positive differences, it is not possible to say what anything is, as positively distinguished from anything else. What is a house? A ham is a house, if one lives in it. If residence constitutes houseness because style of architecture does not, then a bird's nest is a house, and human occupancy is not the standard to judge by, because we speak of dogs' houses; nor material, because we speak of snow houses of Eskimos . . . or things seemingly so positively different as the White House in Washington and a shell on the seashore are seen to be continuous.

White coral islands in a dark blue sea. Their seeming of distinctness: the seeming of individuality, or of positive difference one from another—but all are only projections from the same sea bottom.

The difference between sea and land is not positive. In all water there is some earth; in all earth there is some water. So then that all

seeming things are not things at all, if all are intercontinuous, any more than is a table leg a thing in itself, if it is only a projection from something else: that not one of us is a real person if, physically, we are continuous with environment; if, psychically, there is nothing to us but expression of relation to environment. Our general expression has two aspects: conventional monism, or that all things that seem to have identity of their own are only islands that are projections from something underlying, and have no real outlines of their own.

By "beauty," I mean that which seems complete. Obversely, that the incomplete, or the mutilated, is the ugly. Venus of Milo: to a child she is ugly. When a mind adjusts to thinking of her as a completeness . . . she is beautiful. A hand, thought of only as a hand, may seem beautiful; found on a battlefield—obviously a part—not beautiful. But everything in our experience is only a part of something else that in turn is only a part of still something else—or that there is nothing beautiful in our experience; only appearances that are intermediate to beauty and ugliness—that only universality is complete; that only the complete is the beautiful: that every attempt to achieve beauty is an attempt to give to the local the attribute of the universal.

Fort's profound thinking is thus based on the subjacent unity of every thing and of all phenomena. Yet civilized thought at the end of the nineteenth century opened parentheses everywhere, and our binary system of reasoning can only conceive duality. So, then, we see the crazy wise man of the Bronx in revolt against the exclusionist science of his day, and also against the very structure of our intelligence. It seems to him another kind of intelligence is needed: an intelligence partly mystical, and awakened to an awareness of the presence of Totality. From these premises he goes on to suggest other methods of knowledge. To prepare us for this he proceeds to tear up, or blow up, our set ways of thinking. "I'll send you reeling against the doors that open on to 'something other.'"

And yet Mr. Fort is not an idealist. He militates against our limited realism: we reject reality when it is fantastic. Mr. Fort does not preach a

new religion. On the contrary, he endeavors to surround his teaching with a barrier to prevent the feeble-minded from entering. That "everything is in everything," that the Universe is contained in a grain of sand, he is convinced. But this metaphysical certainty can only be apprehended at the highest level of our reflective intelligence. Brought down to the level of an elementary occultism it would appear ridiculous. It cannot be used to justify the ravings of analogical thinking so dear to those rather suspect esoterics who are continually explaining one thing by something else: the Bible by numbers, the last war by the Great Pyramids, Revolution by cartomancy and my future by the stars—and who see signs everywhere.

"There is probably a connection between a rose and a hippopotamus and yet no young man would ever think of offering his fiancée a bouquet of hippopotami." Mark Twain, denouncing the same false thinking, declared jokingly that the *Spring Song* can be explained by the Tables of the Law since Moses and Mendelssohn are the same name: you have only to replace "-oses" by "-endelssohn." And Charles Fort renews the attack with this caricature: "An elephant can be identified as a sunflower: both have long stems. A camel is indistinguishable from a peanut, if only their humps be considered." There you have a picture of the man—one who carries his solid learning lightly. Let us see now how his thought can be expanded to cosmic dimensions.

Supposing the Earth itself, as such, were not real? What if it were only something intermediary in the Cosmos? Perhaps the Earth has no independent existence, and perhaps life on the Earth is by no means independent of other lives and other existences in space.

Forty thousand notes on all sorts of rains that have fallen on the earth obliged Charles Fort to admit the hypothesis that most of them were not of terrestrial origin. "I suggest that beyond this earth are other lands from which come things as, from America, float things to Europe...."

It should be made quite clear that Fort is certainly not naive. He does not believe everything. He only protests against our habit of denying everything *a priori*. He does not point his finger at truths; he hits out with

his fists to demolish the scientific set up of his day, built up of truths so very imperfect as to resemble errors. If he laughs, it is because there seems to be no reason why man's striving after knowledge should not sometimes be accompanied by laughter, which is also human. Does he invent? dream? extrapolate? A cosmic Rabelais? He admits it:

"This book," he writes, "is fiction, like *Gulliver's Travels*, *The Origin of Species*, Newton's *Principia*, and every history of the United States."

"Black rains and black snows, jet-black snowflakes. . . ." "Slag washed upon the Scottish coast—to have produced so much of it would have required the united output of all the smelting works in the world." "My own notion is of an island near an oceanic trade route: it might receive debris from passing vessels." Why not debris or refuse from interstellar ships?

Sometimes, again, rains contain animal substances, gelatinous matter accompanied by a strong smell of decay. "Will it be admitted that there are vast viscous and gelatinous regions floating about in infinite space?" Could all this be accounted for by food cargoes deposited in the sky by the Great Travelers from other worlds?

"We have a sense of a stationary region overhead in which this Earth's gravitational and meteorological forces are relatively inert, or a region that receives products like this Earth's products, but from external sources."

What about the rains that contain live animals—fish, frogs, tortoises? If they come from elsewhere, then human beings, too, ancestrally speaking, may also come from "elsewhere." . . . Unless they are animals that have been snatched up from the Earth by hurricanes or whirlwinds and deposited in a region in outer space where there is no gravitation, a sort of cold chamber where the objects ravished in this way are indefinitely preserved.

Removed from the Earth, and having crossed the threshold of the gates opening on to "elsewhere," they are assembled in a kind of super-sea of Sargasso in the skies, "Objects caught up in hurricanes may enter a region of suspension over this Earth. . . ."

Those are your data; do with them as you please. . . . Where do the whirlwinds go? Of what do they consist?... A super-sea of Sargasso: derelicts, rubbish, old cargoes from interplanetary wrecks; things cast out into what is called space by convulsions of other planets, things from the times of the Alexanders, Caesars, and Napoleons of Mars or Jupiter or Neptune. Things raised by this Earth's cyclones: horses and barns and elephants and flies, and dodos, pterodactyls, and moas; leaves from modern trees and leaves of the carboniferous era—all, however, tending to disintegrate into homogeneous-looking muds or dusts—red or black or yellow—treasure troves for the paleontologists and for the archaeologists—accumulations of centuries, cyclones of Egypt, Greece, and Assyria. . . .

When lightning is accompanied by thunderbolts, the peasants thought they were meteorites. Scientists exclude meteorites. Peasants believe in "thunderstones"; Scientists exclude thunderstones. It is useless to argue that peasants are out in the fields and that scientists are shut up in laboratories and lecture rooms....

Thunderbolts apparently shaped and covered with marks and signs.... Could it be that other worlds were trying, in this and other ways, to communicate with us, or at any rate, with some of us? "With a sect, perhaps, or a secret society, or certain esoteric ones of this Earth's inhabitants." . . . There are innumerable instances of attempts at this kind of communication. "Because of our experience with suppression and disregard, we suspect, before we go into the subject at all, that astronomers have seen these phenomena; that meteorologists and navigators have seen them; that individual scientists and other trained observers have seen them many times; that it is the System that has excluded data of them."

We would remind readers once again that this was written about 1910. Today the Russians and the Americans are building laboratories to study signals that might be coming to us from other worlds.

Perhaps we have been visited in the distant past? And supposing the paleontologists were wrong, and that the great skeletal remains discovered

by the exclusionist scientists of the nineteenth century had been arbitrarily assembled? Were they the remains of gigantic beings, occasional visitors to our planet? What really obliges us to believe in the prehuman fauna talked about by the paleontologists who know no more about it than we do?

No matter how cheerful and unsuspecting my disposition may be, when I go to the American Museum of Natural History dark cynicisms arise the moment I come to the fossils or old bones that have been found—gigantic things, reconstructed into terrifying but "proper" Dinosaurs. On one of the floors below they have a reconstructed Dodo. It's frankly a fiction . . . but it's been reconstructed so cleverly and so convincingly. . . .

Why, if we have been visited, before, are we not visited now? A simple and immediately acceptable answer would be: Would we, if we could, educate and sophisticate pigs, geese, cattle? Would it be wise to establish diplomatic relations with the hen that now functions, satisfied with mere sense of achievement by way of compensation?

I think we are property. I should say we belong to something; that once upon a time this Earth was no-man's land, that other worlds explored and colonized here and fought among themselves for possession, but that now it's owned by something; that something owns this Earth—all others warned off. Nothing in our own times has ever appeared upon this Earth, from somewhere else so openly as Columbus landed upon San Salvador, or as Hudson sailed up his river. But as to surreptitious visits to this Earth in recent times, or as to emissaries, perhaps, from other worlds, or voyagers who have shown every indication of intent to evade and avoid, we shall have data as convincing as our data of oil, or coalburning aerial super-constructions. But in this vast subject I shall have to do considerable neglecting or disregarding myself. I do not see how I can in this book take up at all the subject of the possible use of humanity to some other mode of existence, or the flattering notion that we can possibly be worth something. Pigs, geese, and cattle. First find out that they are owned. Then find out the whyness of it. I suspect

that, after all, we're useful—that among contesting claimants adjustment has occurred, or that something now has a legal right to us, by force, or by having paid out analogues of beads for us to former, more primitive, owners of us—and that all this has been known, perhaps for ages, to certain ones upon this Earth, a cult, or Order, members of which function like bellwethers to the rest of us, or as superior slaves or overseers, directing in accordance with instructions received—from Somewhere else—in our mysterious usefulness.

In the past, before proprietorship was established, inhabitants of a host of other worlds have dropped here, hopped here, wafted, sailed, flown, motored—walked here, for all I know—been pulled here, been pushed; have come singly, have come in enormous numbers; have visited occasionally, have visited periodically, for hunting, trading, mining, replenishing harems: have established colonies here, have been lost here; far-advanced peoples, or things, and primitive peoples or whatever they were—white ones, black ones, yellow ones. . . .

We are not alone; the Earth is not alone; "I think we're all bugs and mice, and are only different expressions of an all-inclusive cheese" whose odor of fermentation we dimly perceive. There are other worlds behind ours, other lives behind what we call life. We must do away with the parentheses of exclusionism in exchange for the hypotheses of a fantastic Unity. And no matter if we make mistakes, such as drawing a map of America on which the Hudson is set down as a passage leading to Siberia; what is essential, at a time like this when new methods of knowledge and new ways of thinking are being opened up, is that we should have no doubts at all that maps will have to be altered, that the world is not what we thought it was, and that we ourselves, in the depths of our own consciousness will have to change into something different from what we were before.

Other worlds are in communication with the Earth. Proofs of this exist. Those, which we think we can see, are not, perhaps, the right ones. But they exist. The marks of cupping glasses on mountains: do they prove anything? We do not know. At least they stimulate us to look for further signs:

. . . These marks look to me like symbols of communication. But they do not look to me like means of communication between some of the inhabitants of this Earth and other inhabitants of this Earth. My own impression is that some external force has marked, with symbols, rocks of this Earth from far away. I do not think that cup marks are inscribed communications among different inhabitants of this Earth, because it seems too unacceptable that inhabitants of China, Scotland, and America should all have conceived of the same system. Cup marks are strings of cuplike impressions in rocks. Sometimes there are rings around them, and sometimes they have only semicircles. England, France, America, Algeria, Circassia, and Palestine—they are virtually everywhere—except, in the far North, I think. In China cliffs are dotted with them. On a cliff near Lake Como there is a maze of these markings. In Italy, Spain, and India they occur in enormous numbers. Given that a force, say, like electric force, could from a distance, mark such a substance as rocks as, from a distance of hundreds of miles, selenium can be marked by telephotographers. But I am of two minds: the Lost Explorers from Somewhere, and an attempt from Somewhere, to communicate with them: so a frenzy of showering of messages roward this Earth in the hope that some of them would mark rocks near the lost explorers. Or that somewhere upon this Earth, there is an especial rocky surface or receptor or Polar construction, or a steep conical hill upon which for ages have been received messages from some other world; but that, at times, messages go astray and mark substances perhaps thousands of miles from the receptor; that perhaps forces behind the history of this Earth have left upon the rocks of Palestine, England, China, and India records that may some day be deciphered, of their misdirected instructions to certain esoteric ones—Order of the Freemasons, the Jesuits—.

No image can be too fanciful, no hypothesis too extreme: anything can be used to storm the fortress. There are such things as flying engines and space explorers. And suppose they pick up en route, for examination, a few living organisms from the Earth? . . . "I think that we're fished for.

It may be that we are highly esteemed by superepicures somewhere. It makes me more cheerful when I think that we may be of some use after all. I think that dragnets have often come down and have been mistaken for whirlwinds and waterspouts. . . . I think we're fished for, but this is a little expression on the side. . . ."

And now we have reached the depths of the inadmissible, murmurs of our strange Mr. Charles Hoy Fort with quiet satisfaction. He takes off his green eyeshade, rubs his big tired eyes, smooths down his seal's mustache and goes off to the kitchen to see whether his good wife Anna, in cooking the haricots for dinner, is not in danger of setting fire to the shed, the folders, the card index, the museum of coincidences, the conservatory of the improbable, the salon of celestial artists, the office of fallen objects, and to that library of other worlds, that Cathedral of Saint Elsewhere, and the fabulous and shining Jester's costume that Wisdom wears.

Anna, my dear, turn off your gas.

Good appetite, Mr. Fort.

ii *An hypothesis condemned to the stake—Where a clergyman and a biologist become comic figures—Wanted: a Copernicus in anthropology—Many blank spaces on all the maps—Dr. Fortune's lack of curiosity—The mystery of the melted platinum—Cords used as books—The tree and the telephone—Cultural relativity*

As an example of militant action in favor of the greatest possible degree of open-mindedness, and as an initiation into the cosmic consciousness, the works of Charles Fort have been a direct source of inspiration for the greatest poet and champion of the theory of parallel Universes. H. P. Lovecraft, the father of what has come to be known as science fiction, to which he has contributed some ten or fifteen masterpieces of their kind, a sort of Iliad and Odyssey of a forward-marching civilization. To a certain extent, we too have been inspired in our task by the spirit of Charles Fort.

We do not believe everything, but we believe that everything ought to be investigated. Sometimes an inquiry into doubtful facts will throw into their proper perspective facts that are true. Complete results cannot be achieved if anything is omitted. Like Fort, we are trying to repair certain omissions, and are prepared to run the risk of being accused of aberrations. We will leave to others the task of discovering which are the right tracks to follow in our jungle.

Fort studied everything that had apparently fallen from the sky. We are studying all the probable, or less probable, traces left on the Earth by civilizations that have long since disappeared. No hypothesis is excluded: an atomic civilization long before what we call the prehistoric era; enlightenment received from the inhabitants of Another World, etc. . . . Considering that the scientific study of humanity's remote past has scarcely begun and is at present in a state of complete confusion, these hypotheses are no wilder and just as well founded as those which are currently admitted. The important thing, in our opinion, is to throw open the whole question as wide as possible. We are not going to impose upon you a thesis on vanished civilizations, but merely to suggest that you envisage the problem from a new and noninquisitorial point of view.

According to the classical method there are two kinds of facts: the "cursed" ones and the others. For example, the descriptions of flying engines in very ancient sacred texts, the use of parapsychological powers among primitive peoples, or the presence of nickel in coins dating from 235 BC are "cursed" facts.

They are banned; no one will even investigate them. And there are two kinds of hypotheses: the disquieting ones and the others. The frescoes discovered in the caves at Tassili in the Sahara represent, among other things, human figures wearing helmets with long horns from which project spindles outlined in myriads of little points, or dots. Ears of corn, we are told; the symbol of a pastoral civilization. Possibly; but there is nothing to prove it. And suppose this was a way of representing a magnetic field? Shame! A shocking suggestion! Witchcraft! To the stake!

The following is an extreme example of what the classical, or as we call it, the inquisitorial method, may lead to:

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An Indian clergyman, the Rev. Pravanananvanda, and an American biologist, a Professor Strauss of the Johns Hopkins University, have just identified the "Abominable Snowman" as being none other than the brown Himalayan bear. Neither of these gentlemen has seen the animal. They have stated, however, that "since our hypothesis is the only one which is not fantastic, it must be the right one." So it would be a derogation of the scientific spirit to pursue useless researches. All honor to our clergyman and doctor! It only remains for us to inform the Yeti that he is the brown Himalayan bear.

Our method, in keeping with the times we live in, not unlike the Renaissance, is based on the principle of toleration. No more inquisitions. We refuse to exclude facts and reject hypotheses. Sifting lentils is a useful action; gravel is unfit for human consumption. But there is nothing to prove that certain rejected hypotheses and certain "accursed" facts are not nourishing. We are not working on behalf of the weak and the allergic, but for all those who, as the saying goes, have "guts."

We are convinced that the study of past civilizations has been marred by numerous cases of rejected evidence, *a priori* exclusions and inquisitorial executions. The humane sciences have made less progress than physical and chemical science, and the positivist nineteenth-century spirit still reigns supreme, and is all the more exacting because it knows it is doomed.

Anthropology is awaiting its Copernicus. Before Copernicus, the Earth was the center of the Universe. For the classical anthropologist our civilization is the center of all human thought in space and time. Let us pity poor primitive man, engulfed in the darkness of his prelogical mentality. Five hundred years separate us from the Middle Ages, and we are only just beginning to exonerate this epoch from the charge of obscurantism. The century of Louis XV paved the way for modern Europe, and the recent work of Pierre Gaxotte has done much to demolish the view that this century was a stronghold of egoism erected to arrest the flow of history. Our civilization, like any other, is a conspiracy.

Sir James Frazer's *Golden Bough* is a standard and authoritative work containing a description of the folklore of every country. Not for a

moment did it enter his head that he was dealing with anything but some touching superstitions and picturesque customs.

Savages suffering from infectious illnesses eat *Penicillum notatum* (a kind of mushroom); this must be a form of imitative magic whereby they seek to increase their vigor by consuming this phallic symbol. Their use of digitaline is no doubt another superstition. The science of antibiotics, operations done under hypnosis, creating artificial rain by scattering salts of silver, for examples, ought to be enough to remove the label of "naive" attached to certain primitive practices.

Sir James Frazer, confident of belonging to the only civilization worthy of the name, refuses to envisage the possibility of "inferior" peoples possessing technical skills, which, though different from our own, are nonetheless real, and his *Golden Bough* is like one of those illuminated maps of the world designed by artists who only knew the Mediterranean and used to fill up the blank spaces with drawings and inscriptions: "Here is the country of the Dragons," "Here the Island of Centaurs...." And did not the nineteenth century too, in every domain, make haste to camouflage all the blank spaces everywhere—even on geographical maps? There is in Brazil, between the Rio Tapajos and the Rio Xingu, an unknown land as big as Belgium. No explorer has ever approached El Yafri, the forbidden city of Arabia. A Japanese division under arms in New Guinea disappeared one day in 1943 without leaving any trace. And if the two Great Powers who share the world between them ever reach agreement, the real map of the planet will have some surprises in store for us.

Ever since the H-bomb, the military have been secretly listing the whereabouts of underground caves: an extraordinary subterranean labyrinth in Sweden; caves beneath the soil of Virginia and Czechoslovakia; a hidden lake under the Balearic Islands. . . . Blank spaces on the physical world, blanks on the world of humanity. We do not know everything about man's powers or the resources of his intelligence and psychic make up, and we have invented Islands of Centaurs and Dragon Lands: prelogical mentality, superstition, folklore, imitative magic.

Hypothesis: some civilizations have gone much further than we have in exploiting parapsychological powers.

Answer: there are no parapsychological powers.

Lavoisier proved that meteorites did not exist by stating: "It is impossible for stones to fall from the sky because there are no stones in the sky." Simon Newcomb proved that it would be impossible for airplanes to fly since an airship heavier than air was an impossibility.

Dr. Fortune went to New Guinea to study the Dobu tribe. They are a people of magicians, whose peculiarity it is to believe that their magical techniques are valid everywhere and for everyone. When Dr. Fortune went away, one of the natives presented him with a charm that had the power of conferring invisibility, saying: "I often use it for stealing pork in broad daylight. Follow my instructions carefully, and you will be able to pinch anything you want in the shops in Sydney." . . . "Naturally," remarked Dr. Fortune, "I never tried it out." Remember the saying of our friend, Charles Fort: "In the topography of the intelligence, knowledge could be defined as ignorance accompanied by derision."

Nevertheless, a new school of anthropology is coming into being, and M. Levi-Strauss has aroused indignation by boldly declaring that the Negritos are probably more advanced than we are in psychotherapy. A pioneer of this new school, the American William Seabrook, went to Haiti just after the First World War to study the Voodoo cult. Not to observe it from the outside, but to take an active part in this magic and enter this other world with an open mind. Paul Morand* has written the following magnificent tribute to him:

Seabrook is perhaps the only white man of our time to have received the baptism of blood. He did so without skepticism and without fanaticism. His attitude toward mystery is that of a man of today. Science in the last ten years has brought us to the brink of the Infinite: there, anything might happen in future—interplanetary travel, discovery of the fourth dimension, radio communication with God. Our superiority over our forefathers must be admitted in so far as from now on we are ready for anything, less credulous and more ready to believe.

*Preface to *The Magic Island*, by William Seabrook.

The farther we go back into the origins of the world, and the more closely we study primitive peoples, the more often we discover that their traditional secrets coincide with the present state of scientific research. It is only recently that the Milky Way has been considered as the source and origin of the stellar world: the Aztecs, however, expressly affirmed it, and no one believed them. Savages have preserved what science is rediscovering today. They believed in the unity of matter long before the hydrogen atom was isolated. They believed in tree-men and iron-men long before Sir J. C. Bose measured the sensitivity of plants and poisoned metal with cobras' venom. "Human faith," said Huxley in *Essays of a Biologist*, "has passed from the Spirit to spirits, and then from spirits to gods and from gods to God." It could be added that from God we return to the Spirit.

But if we are to show that the traditional secrets of the "primitives" coincide with our present researches, it will be necessary to establish communications between anthropology and recent advances in the physical, chemical, and mathematical sciences. The simple traveler, intelligent, full of curiosity and with a historical and literary background, is in danger of missing some of the most important discoveries. Exploration up to now has been only a branch of literature, a subjective activity indulged in as a luxury. When it develops into something else, we shall then perhaps perceive that there have been, in remotest antiquity, civilizations endowed with a technical equipment as important and extensive as ours, though of a different nature.

J. Alden Mason, an eminent and very orthodox anthropologist, asserts and produces reliable evidence to support his claim, that ornaments made of melted platinum have been found on the high plateaus in Peru. Now platinum's melting point is 1730°C, and to work it, techniques comparable to our own would be required.*

'Further mysteries in the history of techniques include the following: The method of spectral analysis has recently been employed by the Institute of Applied Physics of the Chinese Academy of Science to examine a girdle with openwork ornaments, 1,600 years old, found buried along with a lot of other objects in the tomb of the famous Tsin General, Chou Chou, who lived about AD 265-316. It appears that the metal in this girdle

Professor Mason sees the difficulty, and concludes that these ornaments were made from powder obtained by calcination, and not melted. This supposition reveals a real ignorance of metallurgy.

A ten-minute study of Schwarzkopf's *Treatise on Calcinated Powders (Traite des Poudres Frittees)* would have shown him that such a hypothesis was inadmissible. Why did he not consult specialists in other branches of science? This is the whole case against anthropology. Professor Mason asserts, equally innocently, that examples have been found, dating from the most ancient Peruvian civilization, of the welding of metals by the use of resin and molten metallic salts. The fact that this technique is the basis of electronics and is used in conjunction with the most advanced technologies, seems to have escaped his notice. We apologize for seeming to make a display of our knowledge, but it is here that we feel the necessity for the "concomitant information" so strongly recommended by Charles Fort.

Despite his extremely prudent approach, Professor John Alden Mason, Curator Emeritus of the Museum of American Antiquities of the University of Pennsylvania, does open a door to the realms of fantastic reality when, in his book *The Ancient Civilization of Peru*, he speaks about the *Quipu*. The *Quipu* are cords tied into complicated knots, and are a feature of Inca and pre-Inca civilizations.. They appear to be a form of writing, and may have been used to express abstract ideas. One of the best-known specialists in the matter, Nordenskjold, thinks that the *Quipu* were used for mathematical calculations, horoscopes, and various methods of foretelling the future. The problem is a vital one: there may be other means of registering thought than writing.

Let us take the matter further: the knot, on which *Quipu* is based, is considered by modern mathematicians to be one of the greatest mysteries.

was composed of 85 percent aluminum, 10 percent copper and 5 percent manganese. Now, although aluminum is found in many places on the Earth, it is difficult to extract. The only method known today of extracting aluminum from bauxite, namely by electrolysis, has only been in use since 1808. The fact that Chinese technicians were able sixteen hundred years ago to extract aluminum from such a bauxite is therefore an important discovery in the history of metallurgy. —*Horizons* No. 89, October 1958.

It is only possible in an odd number of dimensions; impossible in dimensions of *even* numbers—4, 6, 2—and the topologists have only been able to study the simplest knots. It is therefore not improbable that the Quipri may conceal knowledge that we do not yet possess.

Take another example: modern thinking on the nature of knowledge and the structure of the mind might be enriched by a study of the language of the Hopi Indians. This language is better adapted than our own to the exact sciences. It contains words representing not verbs or nouns, but events, and is thus more applicable to the space-time continuum in which we now know that we are living. Furthermore, the "event-word" has three moods: certitude, probability, imagination. Instead of saying: a man crossed the river in a boat, the Hopi would employ the group: man-river-boat in three different combinations, according to whether the event was observed by the narrator, reported by a third party, or dreamt.

The really "modern man," in the sense that Paul Morand and we ourselves understand the term, discovers that intelligence is a unity manifested in different structures, just as man's need for shelter is universal, expressed in a thousand different architectural forms.

It is possible that our civilization is the result of a long struggle to obtain from machines the powers that primitive man possessed, enabling him to communicate from a distance, to rise into the air, to liberate the energy of matter, abolish gravitation, etc. It is also possible that we may ultimately discover that these powers can be exercised with an equipment so simple that the word "machine" will acquire a different meaning. If this happens, we shall have gone from mind to machine and from machine to mind, and certain remote civilizations will appear to us to be less remote.

In his reception address at Oxford University in 1946, Jean Cocteau told the following story:

My friend Pobers, Professor of parapsychology at the University of Utrecht, was sent on a mission to the West Indies to study the part played there by telepathy, in current use among the simple people. If they want to communicate with their husbands or sons in town, the

women speak to a tree, and the men bring back whatever they have been asked for. One day Pobers was present at one of these occasions and asked the peasant woman why she addressed herself to a tree. Her reply was surprising and conducive to solving the whole modern problem of our instincts being atrophied by the machines on which we have come to rely. This, then, was the question: "Why do you address yourself to a tree?" And this the answer: "Because I am poor. If I were rich I should have the telephone."

Electroencephalograms of yogis in a state of ecstasy show curves which do not correspond to any cerebral activities known to us either in states of wakefulness or in sleep. There are plenty of colored blank spaces on the map of the mind of civilized man: precognition, intuition, telepathy, genius, etc. By the time these regions have been thoroughly explored, and a path opened up through various states of consciousness unknown to our classical psychologists, the study of ancient civilizations and of peoples we call primitive will perhaps reveal the existence of veritable technologies and essential aspects of knowledge. A cultural "centralism" will be succeeded by a relativism that will throw a new and fantastic light on the history of humanity. Progress does not consist so much in emphasizing parentheses as in multiplying hyphens.

[I] *In which the authors speculate about the Great Pyramid—Possibility of "other" techniques—The example of Hitler—The Empire ofAlmanzar—Recurrence of "ends ofthe world"—The impossible Easter Island—The legend ofthe white man—The civilizations of America—The mystery of Maya—From the "bridge of light" to the strange plain ofNazca*

It has taken humanity twenty-two hundred years—from Aristarchus of Samos to the year 1900—to calculate with sufficient accuracy the distance from the Earth to the Sun: 92,832,856 miles. To arrive at the same

result it was only necessary to multiply by a thousand million the height of the Pyramid of Cheops, built in 2900 BC.

We know today that the Pharaohs embodied in the Pyramids the findings of a science of whose origin and methods we know nothing.

We find in them the symbol *TZ*, the exact calculation of the duration of the solar year and of the radius and weight of the Earth, the law of the precession of the equinoxes, the figure of the degree of longitude, the position of the True North, and perhaps many other data not yet deciphered. Where did this knowledge come from? How was it obtained, or transmitted? And, in the latter case, by whom?

The abbe Moreux believes that God imparted scientific knowledge to the Ancients. "Hearken to me, O my son: the number 3.1416 will enable thee to calculate the surface of a circumference!" . . .

According to Piazzzi Smyth, God dictated this information to the Egyptians who were too impious and too ignorant to understand what they were inscribing in their stone. And why should God, who is omniscient, be seriously mistaken as to the quality of his pupils? In the opinion of the positivist Egyptologists, the measurements carried out at Gizeh have been faked by explorers too intent on discovering marvels: in fact, they reveal no special science. But the discussion turns on questions of decimals, and the fact remains that the construction of the Pyramids reveals a technique that to us is still totally incomprehensible. Gizeh is a mountain weighing 6,500,000 tons. Blocks of twelve tons are adjusted to a demimillimeter. The least imaginative idea is the one most generally accepted—namely, that the Pharaohs had a colossal manpower at their disposal. It has never been explained how the problem of dealing with the overcrowding caused by these vast hordes was solved. Nor the reason for such a mad undertaking. How were the blocks of stone extracted from the quarries? Classical Egyptology recognizes no other technique than the use of wedges of wet wood thrust into fissures in the rock. The builders, it seems, had only stone hammers, copper saws, and soft metal to work with. This only deepens the mystery. How were these chipped stones weighing 22,046 pounds and more hoisted and put into place? In the nineteenth century we had the greatest difficulty in transporting two obelisks, which

the Pharaohs used to transport by the dozen. What did the Egyptians use to light the interior of the Pyramids? Until 1890 we ourselves only had lamps that smoked and left a sooty deposit on the ceiling. No trace of smoke, however, has ever been found on the walls of the Pyramids. Did they perhaps intercept the Sun's light and convey it to the interior by some optical contrivance? No traces of a lens of any kind have been found.

Nor has any instrument for scientific calculations, nor any evidence of an advanced technology been discovered. There are two possible explanations. The first is the elementary-mystical theory of God dictating astronomical information to dense but willing stonemasons and lending them a helping hand.

Is it true that there is no scientific knowledge embodied in the Pyramids? The positivists maintain that if there is it is only a coincidence. When coincidences are, as Fort would have said, as exaggerated as in this case, what ought they to be called?

The second alternative is to believe that a few surrealist architects and decorators, in order to satisfy the megalomania of their king, and working to measurements improvised and imagined on the spur of the moment, succeeded in causing the 2,600,000 blocks of the Great Pyramid to be extracted, transported, decorated, hoisted, and adjusted to a demimillimeter by hordes of laborers working with nothing but pieces of wood and saws for cutting cardboard and treading on each other's toes.

All this happened five thousand years ago, and we know almost nothing about it. What we do know, however, is that research has been in the hands of people for whom the techniques of our modern civilization are the only ones that count. They are therefore obliged to imagine either Divine intervention, or else to look upon the whole thing as a bizarre and colossal task performed by antlike hordes. It is possible, however, that minds quite different from our own were able to conceive techniques as highly perfected as ours, but also quite different, involving instruments for measuring and methods of manipulating matter, unlike anything we know, and leaving no traces that we can see. It may be that a science and a technology of great potency, which provided solutions to these problems very different from anything we can imagine, disappeared completely

along with the world of the Pharaohs. It is difficult to believe that a civilization can die and leave no trace. It is still more difficult to believe that it could have been so different from our own that we are unable to recognize it as a civilization. And yet! . . .

When the War in Europe ended on May 8th, 1945, missions of investigation were immediately sent out to visit Germany after her defeat. Their reports have been published; the catalogue alone has 300 pages. Germany had only been separated from the rest of the world since 1933. In twelve years the technical evolution of the Reich developed along strangely divergent lines. Although the Germans were behindhand as regards the atomic bomb, they had perfected giant rockets unmatched by any in America or Russia. They may not have had radar, but they had perfected a system of infrared ray detectors that were quite as effective. Though they did not invent silicones, they had developed an entirely new organic chemistry, based on the eight-ring carbon chain.

In addition to these radical differences in matters of technique there were still more stupefying differences in the field of philosophy... . They had rejected the theory of relativity and tended to neglect the quantum theory. Their cosmogony would have startled astrophysicists in the Allied countries: they believed in the existence of eternal ice and that the planets and the stars were blocks of ice floating in space.* If it has been possible for such wide divergencies to develop in the space of twelve years in our modern world, in spite of the exchange of ideas and mass communications, what view must one take of the civilizations of the past? To what extent are our archaeologists qualified to judge the state of the sciences, techniques, philosophy, and knowledge that distinguished, say, the Maya or Khmer civilizations?

We must avoid falling into the trap of paying too much attention to legends: Lemuria or Atlantis. Plato, in the *Critias*, singing the praises of the vanished city, and before him, Homer evoking in the *Odyssey* the fabulous Scheria were perhaps describing Tartessos, the biblical Tarshish of the Book of Jonah, and the object of the prophet's journey. At the

*See part 2 of the present work.

mouth of the Guadalquivir, Tartessos was the richest mining town in the world and represented the quintessence of a civilization. It flourished for an unknown number of centuries, and had been the seat of wisdom and the depository of many secrets. About the year 500 BC it vanished completely, no one knows how or why.*

It may be that Numinor, that mysterious Celtic center of the fifth century BC, was not a legend¹ but we do not really know. The civilizations of whose existence in the past we can be certain but which are now dead are quite as strange as Lemuria. The Arab civilization of Cordoba and Granada was the cradle of modern science, the founder of experimental research and its practical applications; and among the subjects it studied were chemistry and even jet propulsion. Arab manuscripts of the twelfth century contain designs for rockets used for bombardment. If the Empire of Almanzar had been as advanced in biology as it was in other spheres, and if the plague had not assisted the Spaniards in its destruction, the Industrial Revolution would perhaps have started in Andalusia in the fifteenth or sixteenth century, and the twentieth century would then have been the era of Arab interplanetary adventurers colonizing the Moon, Mars, and Venus.

The Empire of Hitler, like that of Almanzar, collapsed in blood and fire. One fine morning in June 1940 the sky over Paris grew dark, the air was filled with gasoline fumes, and under this immense cloud that blackened the faces of the population overcome by astonishment, terror and shame, millions of human beings took blindly to flight along roads raked by machine-gun fire. Whoever has lived through that experience, and known also the Twilight of the Gods of the Third Reich, can imagine what the end of Cordoba and Granada was like, and a thousand other ends of the world since time began. The end of the world for the Incas, for the Toltecs, for the Mayas: the whole history of humanity—an endless end....

Easter Island, 1,864 miles from the coast of Chile, is about as big as Jersey. When the first European navigator, a Dutchman, landed there in 1722,

*cf. Sprague de Camp and Willy Ley, *De Utlantide a l'Eldorado (From Atlantis to Eldorado)*, ed. Plon, Paris.

tcf. Works of Professor Tolkien of Oxford.

he thought it was inhabited by giants. Towering over this little piece of volcanic land in Polynesia are 593 enormous statues. Some of them are more than 66 feet high and weigh fifty tons. When were they erected? and how? and for what purpose? Examination of these monuments reveals, it is thought, three levels of civilization, the most advanced one being the oldest. As in Egypt, the enormous blocks of tuff-stone, basalt, and lava are adjusted with prodigious skill. The island, however, is hilly, and a few stunted trees could not have provided enough rollers; how, then, were these huge stones transported? Certainly there was no large labor force available. In the nineteenth century the inhabitants of Easter island numbered two hundred—three times less than the number of their statues, and there can never have been more than three or four thousand inhabitants on this island where the soil is fertile, but there are no animals. What, then, are we to believe?

As happened in Africa and in South America, the first missionaries to arrive on Easter Island took steps to remove all traces of a dead civilization. At the foot of the statues there were wooden tablets covered with hieroglyphics: these were all burned or dispatched to the Vatican Library, which houses many secrets. Was this done to destroy all traces of ancient superstitions, or to remove what could have been evidence of some Unknown Power? A record of the presence on the Earth of other beings—visitors from Elsewhere?

The first Europeans to visit Easter Island discovered that the inhabitants included a race of white men with beards. Where did they come from? The descendants, perhaps, of some degenerate race, in existence for many thousands of years and today completely submerged? There are references in legends to a Master Race of Teachers, of great antiquity, fallen from the skies.

Our friend, the Peruvian explorer and philosopher Daniel Ruzo, went off in 1952 to investigate the desert plateau of Marcahuasi, situated at a height of 12,467 feet to the west of the Cordillera of the Andes.*

*Daniel Ruzo, *La culture Masma* (The Masma Culture), *Revue de la Societe d'Ethnographie de Paris*, 1956 and 1959.

This plateau, where there is no life of any kind and which can only be approached on muleback, covers an area of one square mile. Ruzo found there animal and human faces carved in the rock and visible only at the summer equinox, thanks to a particular combination of light and shade. He also found there statues of animals belonging to the secondary era such as the stegosaur; also lions, tortoises, and camels, which are unknown in South America.

One hill was carved in the shape of an old man's head. The negative of the photograph showed a radiant young man. . . . Visible, perhaps, at some initiation rite? It has not been possible to employ carbon-14 to ascertain the date; there are no organic traces on Marcahuasi. The geological indications go back to the remotest antiquity. Ruzo thinks that this plateau may have been the cradle of the Masma civilization, perhaps the oldest in the world.

There is evidence pointing to the existence of white men on another fabulous plateau, Tiahuanaco, at an altitude of 13,123 feet. When the Incas conquered this region around Lake Titicaca, Tiahuanaco was already the heap of gigantic, inexplicable ruins that we see today. When Pizarro arrived there in 1532, the Indians called their conquerors Viracochas: white masters. Their tradition, now more or less extinct, spoke of a master race of huge white men who had come out of space—Sons of the Sun. Many thousands of years ago these men had reigned over them and taught them. Suddenly they disappeared, but will return again. Everywhere in South America, Europeans in quest of gold heard of this tradition of the white man, and benefited by it. Their basest desires for conquest and gain were aided by these mysterious and lofty memories.

Modern exploration on the American continent has revealed traces of an extraordinarily advanced civilization. Cortez was amazed to discover that the Aztecs were as civilized as the Spaniards. We know today that they had inherited an even higher culture from the Toltecs. The Toltecs erected the most gigantic monuments in all America. The Pyramids of the Sun at Teotihuacan and Cholula are twice as large as the tomb of Cheops. But the Toltecs were themselves the descendants of an even more perfect civilization, that of the Mayas, the remains of which have been discovered

in the jungles of Honduras, Guatemala, and Yucatan. Buried under huge forests of dense vegetation are traces of a civilization far older than that of Greece, and some say superior. When and how did this civilization perish? It died a double death, in any case, for here, too, the missionaries made a point of destroying manuscripts, breaking statues, and demolishing altars. Summarizing the results of recent research on vanished civilizations, Raymond Cartier writes as follows:

In many fields the science of the Mayas surpassed that of the Greeks and Romans. Possessing a profound knowledge of mathematics and astronomy, they had achieved a rare degree of perfection in chronology and everything pertaining to calendar-making. They built observatories whose domes were better orientated than the one erected in Paris in the seventeenth century—notably, the Caracol with its three terraces in their capital of Chichen Itza. They had adopted a sacred year of 260 days, a solar year of 365 days, and a Venusian year of 584 days. The exact duration of the solar year has been fixed at 365.2422 days. The Mayas put it at 365.2420 days—that is to say, within a decimal point of the number we have arrived at after lengthy calculations. It is possible that the Egyptians arrived at the same approximation, but to establish that we should have to believe in the concordances in the Pyramids which have been contested, whereas we actually possess the Maya calendar.

Other analogies with Egypt are discernible in the admirable art of the Mayas. Their mural paintings and frescoes and decorated vases show a race of men with strongly marked Semitic features, engaged in all sorts of activities: agriculture, fishing, building, politics, and religion. Egypt alone has depicted these activities with the same cruel verisimilitude; but the pottery of the Mayas recalls that of the Etruscans; their bas-reliefs remind one of India, and the huge, steep stairways of their pyramidal temples are like those at Angkor. Unless they obtained their models from outside, their brains must have been so constructed that they adopted the same forms of artistic expression as all the other great ancient civilizations of Europe and

Asia. Did civilization, then, spring from one particular geographical region and then spread gradually in every direction like a forest fire? Or did it appear spontaneously and separately in various parts of the world? Were some races the teachers and others the pupils, or were they all self-taught? Isolated seeds, or one parent srem giving off shoots in every direction?

We do not know, and we have no satisfactory explanation of the origins of civilizations such as these—nor of the ways in which they came to an end. According to Bolivian legends recorded in her book on Bolivia by Mme. Cynthia Fain, the civilizations of antiquity collapsed after a struggle with a ndnhuman race whose blood was not red. . . .

The high plateaus of Bolivia and Peru give an impression of being on another planet. This is not the Earth, but Mars. The oxygen pressure is 50 percent less than at sea level, and yet there are people living there at an altitude of 11,483 feet. They have two or three more pints of blood than we have, eight million red corpuscles instead of five million, and their hearts beat more slowly. The radiocarbon methods of dating reveal the presence of human beings here nine thousand years ago. Certain recent calculations suggest that there may have been human life here thirty thousand years ago. It is therefore by no means inconceivable that human beings, skilled in metalworking and possessing observatories and scientific knowledge, may have built these giant cities thirty thousand years ago. Under whose guidance?

Some of the irrigation works carried out by the pre-Inca peoples could hardly be done today by our electric turbodrills. And why did men, before the invention of the wheel, construct enormous paved roads?

The American archaeologist Hyatt Verrill devoted thirty years of research to the lost civilizations of Central and South America. In his opinion, these ancient peoples did not use in their great building operations tools for cutting stone, but a kind of radioactive paste which ate into the granite; a sort of etching, in fact, on the scale of the great Pyramids. This radioactive paste, handed down from still more ancient times, Verrill claims to have seen in the hands of the last surviving sorcerers. In his

fine novel, *The Bridge of Light*, he describes a pre-Inca city that can be approached only over a "bridge of light," a bridge of ionized matter that appears and disappears at will, and provides a passage over a rocky gorge that is otherwise inaccessible. Up to the end of his life (he died at the age of eighty-four) Verrill maintained that his book was much more than a legend, and his wife, who survived him, still made this claim.

What do the figures at Nazca signify? I refer to the immense geometrical designs traced in the plain of Nazca, which can only be seen from a plane or a balloon, and which have only recently been discovered, as a result of aeronautical exploration.

Professor Mason, who, unlike Verrill, can hardly be suspected of fantasy, is at a loss to know what to suggest. The builders could only have been guided by some sort of machine floating in the sky?

Mason rejects this hypothesis, and imagines that these figures were constructed by using a small-scale model or a stenciled plan. Given the level of technique of the pre-Incas, as allowed by classical archaeologists, this seems even more improbable. And what was the purpose of these tracings? Had they a religious significance? That is always the stock explanation—a reference to an unknown religion. People are always more ready to suppose all kinds of strange beliefs rather than admit the possibility of other levels of consciousness and techniques. It is a question of priority: the knowledge we possess today is the only knowledge we recognize. Photographs taken of the plain of Nazca remind one irresistibly of the ground-lighting of an airfield. Sons of the Sun, coming from the sky. . . . Professor Mason is careful not to see any connection with these legends, and has imagined a kind of religion of trigonometry, which must be unique in the history of religious beliefs. Nevertheless, a little later he refers to the pre-Inca mythology according to which the stars are inhabited and the gods have come down from the constellation of the Pleiades.

We do not reject the possibility of visits from the inhabitants of another world, or of atomic civilizations that vanished without leaving a trace, or of stages of knowledge and techniques comparable to those of today, or of remnants of forgotten sciences surviving in various forms of

what is known as esoterism, or of factual evidence of what we might call magic. We do not mean that we believe everything, but we shall show in the next chapter that the field of the humane sciences is probably much vaster than is believed. By integrating all facts and excluding none, and being willing to consider all the hypotheses suggested by those facts, without any kind of *a priorism*, a Darwin or a Copernicus of anthropology will create a completely new science, provided they also establish a constant connection between the objective observation of the past and the latest developments in parapsychology, physics, chemistry, and mathematics. They will then, perhaps, perceive that the idea of the evolution of intelligence being always slow, and the road to knowledge always long, is not, perhaps, the truth, but rather a taboo that we have set up in order that we may believe ourselves today to be enjoying the benefits of the whole history of mankind.

Why should not the civilizations of the past have experienced sudden periods of enlightenment during which the quasitotality of all human knowledge was revealed to them? Is there any reason why the moments of illumination, of blinding intuition, and the sudden explosion of genius that occur in the life of a man should not have occurred several times in the life of the human race? Are we not suggesting an entirely false interpretation of such evidence of these moments as has come down to us by talking of mythology, legends, and magic? If I am shown an unfaked photograph of a man floating in the air, I do not say: That represents the myth of Icarus, but: That is a snapshot of a high jump or a man diving. Why should there not be similar instantaneous states in the life of civilizations?

We shall be citing other facts, establishing other connections, and formulating other hypotheses in due course. Our book, we repeat, will doubtless contain a lot of nonsense, but that is of no importance if it inspires some readers with a sense of vocation and, to a certain extent, opens up new and wider paths for research.

We authors are only a couple of poor stonebreakers; others will follow and make the road.

IV *Memory older than us—Metallic birds—A strange map of the world— Atomic bombardments and interplanetary vessels in "sacred texts"—A new view of machines—The cult of the cargo—Another vision of esoterism— The rites of the intelligence*

During the last ten years the exploration of the past has been facilitated by the discovery of new methods based on radioactivity and by the progress of cosmology. As a result, two extraordinary facts have been established:*

1. The Earth is as old as the Universe: some 4,500 million years. It was probably formed at the same time as, and perhaps before, the Sun, by the condensation of particles at low temperature.
2. Man as we know him, *Homo sapiens*, has existed for only some 75,000 years. This short period saw the transition from prehistoric man to man. Here we would like to ask two questions:
 - a. In the course of these 75,000 years have there been other "technical" civilizations before our own? The specialists, as one man, answer No. But it is by no means clear that they are able to distinguish an instrument, or tool, from what is called an object of worship. In this field, research has not even begun. Nevertheless, there are some disquieting problems to examine. Most paleontologists consider eoliths (stones discovered near Orleans in 1867) to be natural objects. Some, however, believe them to be man-made. But by what kind of man? Not *Homo sapiens*. Other objects have been found at Ipswich, in Suffolk, which are believed to indicate the existence in Western Europe of "tertiary" man.
 - b. The experiments of Washburn and Dice prove that the evolution of man may have been brought about by quite trivial modifications. For example: a slight alteration in the bones of the skull.¹

*Dr. Bowen, *The Exploration of Time*, London, 1958.

¹To prove the correctness of his theory, Washburn changed the skull formation of rats from a "Neanderthaloid" to a "modern" shape.

Thus, a single mutation, and not, as had hitherto been believed, a complex combination of mutations, would have been enough to effect the transition from prehistoric Man to modern Man.

Only one mutation in 4,500 million years? It is possible, but why should it be a certainty? Why should there not have been several evolutionary cycles before this period of seventy-five thousand years? It may be that other forms of humanity, or rather other thinking beings, made their appearance and disappeared. They may not have left visible traces, but their memory is preserved in legends. "The bust outlives the city": their memory may be perpetuated in powerhouses, and machines, monuments to their vanished civilizations. Our memory perhaps goes back much farther than our own existence, or even than the existence of our species. What records of an infinitely remote past may not be dissimulated in our genes and chromosomes? *"D'oil te vient ceci, ame de l'homme, d'oii te vient ceci?"* (From where did you come, soul of man, from where did you come?)

In archaeology big changes have already taken place. Our civilization has speeded up communications, and observations carried out all over the globe and then collected and compared bring us to the brink of great mysteries. In June 1953 the Smithsonian Institute published the results obtained by American, Indian, and Russian archaeologists.* In the course of excavations carried out in Mongolia, Scandinavia, Ceylon, near Lake Baikal, and in the upper reaches of the Lena in Siberia, similar objects in bone and stone were discovered as those found among the Eskimos.

Now the techniques required for the manufacture of these objects do not exist among the Eskimos. The Smithsonian Institute therefore deduced that ten thousand years ago the Eskimos inhabited Central Asia, Ceylon, and Mongolia. Later it is assumed that they suddenly emigrated to Greenland. But why? What caused these primitive peoples to decide, all at the same time, to leave these countries and settle in this inhospitable corner of the globe? And how did they get there? To this day they do not know that the Earth is round, and have no idea of geography. And why

**New York Herald Tribune*, June 11, 1958.

should they have left Ceylon, that earthly paradise? The Institute does not attempt to answer these questions.

We do not wish to impose our own theory, and only propose it as a kind of exercise in open-mindedness: Ten thousand years ago an enlightened civilization controlled the world. It set up in the Frozen North—a zone of deportation. Now what do we find in Eskimo folklore? References to tribes being transported to the Frozen North at the beginning of time by giant metallic birds. Nineteenth-century archaeologists have always scoffed at these "metallic birds." And what do we think?

No work on objects of a more clearly defined character has as yet been done comparable to that accomplished by the Smithsonian Institute. On lenses, for example. Optical lenses have been found in Iraq and Central Australia. The question is: do they come from the same source, the same civilization? No modern optician has yet been asked to give an opinion. All optical glasses for the last twenty years, in our civilization, have been polished with ceria. In a thousand years from now spectroscopic analysis will prove, from an analysis of these glasses, the existence of a single civilization all over the world. And that will be the truth.

A new vision of the ancient world might result from studies of this nature. We can only hope that our book, in spite of being lightweight and poorly documented, may inspire some still naive young person to embark on a crazy enterprise which will one day provide the key to the wisdom of the past.

There are still other facts to be noted.

Over vast areas in the Gobi desert patches of vitrified soil have been observed similar to those produced by an atomic explosion.

In the caves of Bohistan inscriptions have been found, accompanied by astronomical maps showing the stars in the positions they occupied thirteen thousand years ago. Lines connect Venus with the Earth.

In the middle of the nineteenth century a Turkish naval officer, Piri Reis, presented the Library of Congress with a set of maps which he had discovered in the East. The most recent date from the time of Christopher Columbus; the oldest from the first century AD, the former having been copied from the latter. In 1952 Arlington H. Mallery, a well-known expert

in cartography, examined these documents.* He noticed, for example, that everything that exists in the Mediterranean had been recorded, but not in the right relationship. Did these people think the Earth was flat? This is not a sufficient explanation. Did they use the projection method in drawing up their maps, taking into account the fact that the Earth is round? Impossible; projective geometry dates from the time of Monge. Mallery then entrusted the study of these maps to an official cartographer, Walters, who compared them with a modern globe map of the World, and found that they were all correct, not only for the Mediterranean, but for all the countries of the world, including the two Americas and the Antarctic. In 1955 Mallery and Walters submitted their work to the Geophysical Year Committee. The Committee passed the file to the Jesuit Father Daniel Lineham, director of the Weston Observatory and in charge of the cartographical department of the American Navy. Father Lineham confirmed that the contours of North America, the location of the lakes and mountains of Canada, the coastal outline of the extreme north of the continent and the contours of the Antarctic (covered with ice and distinguishable only with the greatest difficulty by our modern instruments of measurement) were all correct. Were these copies of still earlier maps? Had they been traced from observations made on board a flying machine or space vessel of some kind? Notes taken by visitors from Beyond?

We shall doubtless be criticized for asking these questions. Yet the *Popul Vuh*, the sacred Book of the Quiches of America speaks of an infinitely ancient civilization which knew about the nebulae and the whole solar system. This is what we read: "The first race of men were capable of all knowledge. They examined the four corners of the horizon, the four (cardinal) points of the firmament, and the *round surface* of the Earth."

Some of the beliefs and legends bequeathed to us by Antiquity are so universally and firmly established that we have become accustomed to consider them as being almost as ancient as humanity itself.

*All this was the subject of a debate at Georgetown University in December 1958. See the study by Ivan T. Sanderson in *Fantastic Universe*, January 1959.

Nevertheless we are tempted to inquire how far the fact that some of these beliefs and legends have so many features in common is due to chance, and whether the similarity between them may not point to the existence of an ancient, totally unknown and unsuspected civilization of which all other traces have disappeared.

The man who, in 1910, wrote these lines was neither a writer of science fiction nor some vague dabbler in the occult. He was one of the pioneers of science, Professor Frederick Soddy, Nobel Prize winner and the discoverer of isotopes and of the laws of transformation in natural radioactivity.*

The University of Oklahoma in 1954 published some records of Indian tribes in Guatemala dating from the sixteenth century. These contained fantastic accounts of apparitions of legendary beings and imaginary descriptions of the private life of their gods. On closer examination it became clear that the Indians were not just spinning yarns, but referring in their own way to their first contacts with the Spanish invaders, whom the Indian "historians" looked upon as beings of the same order as those that figured in their own mythology. In this way reality is disguised as legend. Indeed, it is highly probable that texts considered as belonging purely to folklore or mythology may be based on actual facts that have been wrongly interpreted and integrated with others, which are, in fact, imaginary. All this has not yet been sorted out, with the result that while the shelves of our specialized libraries are loaded with a whole literature labeled "legend," no one has ever thought for a moment that this label may conceal picturesquely presented accounts of events that actually happened.

And yet, with our knowledge of modern science and techniques, we ought to examine this literature with an unprejudiced eye.

The book of Dzyan speaks of "superior beings of dazzling aspect" who abandoned the Earth, depriving the impure human race of its knowledge,

*Professor at Oxford University, Fellow of the Royal Society. The passage is taken from his book *Radium*.

and effacing by disintegration all traces of their passage. They departed in flying chariots, propelled by light, to rejoin their land "of iron and metal."

In a recent study published in the *Literaturnaya Gazeta* (1959), Professor Agrest, who accepts the hypothesis of the Earth having been visited long ago by interplanetary travelers, relates his discovery among the first texts introduced into the Bible by Jewish priests of references to beings from another world who, like Enoch, disappeared into the heavens in mysterious arklike vessels. The sacred Hindu texts, such as the *Ramayana* and the *Mahabharata*, contain descriptions of airships appearing in the sky at the very beginning of time and looking like "bluish clouds in the shape of an egg or a luminous globe."

They could encircle the Earth several times, and were propelled by "an ethereal force which struck the ground as they rose," or by "a vibration produced by an invisible force." They emitted "sweet and melodious sounds," and "a shining light as bright as fire," and their trajectory was not straight, but appeared "to follow a long and undulating course bringing them alternately nearer to and farther from the Earth." The material of which these engines were composed is defined in these texts, more than three thousand years old and doubtless based on memories going back infinitely farther into the past, as being a blend of several metals, some white and light, others red.

In the *Mausola Purva* we find this singular description, which must have been incomprehensible to nineteenth-century ethnologists though not to us today:

... it was an unknown weapon, an iron thunderbolt, a gigantic messenger of death, which reduced to ashes the entire race of the Vrishnis and the Andhakas. The corpses were so burned as to be unrecognizable. Their hair and nails fell out; pottery broke without any apparent cause, and the birds turned white. After a few hours, all foodstuffs were infected. The thunderbolt was reduced to a fine dust.

And again:

Cakra, flying on board a high-powered *vimana*, hurled on to the triple city a single projectile charged with all the power of the Universe. An incandescent column of smoke and flame, as bright as ten thousand Suns, rose in all its splendor. . . . When the *vimana* returned to Earth, it looked like a splendid block of antinomy resting on the ground....

Objection: if you admit the existence of such fabulously advanced civilizations, how do you explain the fact that the innumerable excavations that have been carried out all over the globe have never brought to light a single fragment of any object that could induce us to believe in such civilizations? Answer:

1. Systematic archaeological exploration has been going on for little more than a century, whereas our atomic civilization is barely twenty years old. No serious exploration has been carried out in South Russia, China, or in Central and South Africa. Vast areas still preserve the secrets of their past.
2. If a German engineer, Wilhelm Konig, had not paid a chance visit to the Museum at Baghdad, it might never have been discovered that some flat stones found in Iraq, and classified as such, were in reality electric batteries that had been in use two thousand years before Galvani. The archaeological museums are full of objects classified as "objects of worship," or "various," about which nothing is known.

The Russians recently discovered in some caves in the Gobi desert and in Turkestan semicircular objects made of ceramics or glass ending in a cone containing a drop of mercury. What could these have been? Finally, few archaeologists have any scientific or technical knowledge. Still fewer are capable of realizing that a technical problem can be solved in several different ways, and that there are machines that do not resemble what we call machines—without crankshafts, drive r

mysticism, but also to problems of technique and practical knowledge, it is perfectly natural, rational, and reasonable to admit that they may have been able to work "miracles," even with the simplest apparatus.*

Jorge Luis Borges relates that once upon a time there was a wise man who devoted his whole life to seeking, among the innumerable signs in Nature, the ineffable name of God, the key to the Great Secret. After a life of tribulations, he was arrested on the orders of a Prince, and condemned to be devoured by a panther. While waiting in the cell into which he had been thrown, he observed through the bars the wild beast who was waiting to devour him. Gazing at the spots on its skin, he discovered in the pattern and rhythm of the design the number, the Name that he had been seeking

'Although the majority of archaeologists categorically deny the existence in the past of advanced civilizations with powerful material means at their disposal, the possibility of the existence at every epoch of a small percentage of "awakened" beings utilizing natural forces with improvised means, can scarcely be denied. We even believe that a methodical examination of archaeological and historical data would confirm this hypothesis. How could this "awakening" have started? Of course it is possible to imagine interventions from "Beyond": alternatively one may seek a purely materialist and rationalist explanation. This is what we would suggest. Physicists dealing with cosmic rays have recently discovered what they call extraordinary "events." In cosmic physics, an "event" is the collusion between a particle from space and terrestrial matter. In 1957, as we stated in our study of alchemy, scientists detected an exceptional particle of fantastic energy (an energy of 10^{11} electron volts, whereas the fission of uranium produces only 2×10^7). Let us assume that *only once* in the history of the human race, such a particle came into contact with a human brain. Who knows if the enormous energy resulting therefrom might not have produced an activation inducing for the first time an "awakened" state in Man? This Man might have discovered and might have applied techniques for inducing this "awakened state." In various forms these techniques may have been preserved down to our times, and the alchemists' Great Work, the Initiation, could be something more than a legend. Our hypothesis is, of course, only a hypothesis. It would be difficult to test it experimentally, for it is impossible even to imagine an artificial accelerator producing such a fabulous and fantastic amount of energy. All we can do is to recall that the great English scientist, Sir James Jeans, once wrote: "It was perhaps cosmic radiation, which turned the Monkey into Man." (cf. *The Mysterious Universe*.) We are now only carrying on these ideas, with modern data at our disposal, which Sir James Jeans did not have and which enable us to state: "It was perhaps exceptional cosmic 'events' releasing fantastic energy, which turned Man into super-Man."

for so long and in so many places. He knew then why he had to die, and that he could die only after his great wish had been fulfilled—and that would not be death.

The Universe devours us, or else it yields up its secrets to us; that depends on whether or not we know how to observe it. It is highly probable that the most subtle and profound laws of life and of the destiny of all created things are clearly inscribed on the material world by which we are encompassed; that God has left his handwriting everywhere, as the wise man discovered on the panther's skin; and that we only have to look at things in a certain way. The man who can do this is the "awakened" man... ..

VIII Some Documents on the "Awakened State": *Wanted: an anthology— The sayings of Gurdjieff—When I was at the school for "awakening"— Raymond Ahellio's story—A striking extract from the works of Gustav Meyrinck, a neglected genius*

If there is such a thing as an "awakened state," there is a chapter missing in the history of psychology. Here follow four documents, all contemporary. We have not selected them specially, not having had time to make a thorough investigation. There is room for an anthology of testimonies and studies on the "awakened" state.

It would be most useful, as it would put us in touch again with tradition, and show how essential values have been preserved in our century; it might also indicate new paths that could be followed in the future. Writers would find in it a key; to natural scientists it would be a source of stimulation; intellectuals everywhere would find in it the thread that runs through all the great adventures of the mind, and would feel less isolated. It goes without saying that in assembling these documents which lay ready to hand we are making no such far-reaching claims.

We wish only to give some brief examples of a possible psychological

approach to the question of the "awakened state" in its elementary forms. These consist of:

1. Extracts from the sayings of Georg Ivanovitch Gurdjieff, recorded by the philosopher Ouspensky;
2. My own account of the attempts I made to enter the path of the "awakened state" under the guidance of instructors of the Gurdjieff school;
3. The story of a personal experience, by the writer and philosopher Raymond Abellio;
4. The finest of all documents, in our opinion, in the whole of modern literature dealing with this subject; an extract from a little known novel by the German poet and philosopher Gustav Meyrinck, whose works rise to the highest peaks of mystical intuition.

1. SOME SAYINGS OF GURDJIEFF

"In order to understand what the difference between states of consciousness is, let us return to the first state of consciousness, which is sleep. This is an entirely subjective state of consciousness. A man is immersed in dreams, whether he remembers them or not does not matter. Even if some real impressions reach him, such as sounds, voices, warmth, cold, the sensation of his own body, they arouse in him only fantastic subjective images. Then a man wakes up. At first glance this is a quite different state of consciousness. He can move, he can talk with other people, he can make calculations ahead, he can see danger and avoid it, and so on. It stands to reason that he is in a better position than when he was asleep. But if we go a little more deeply into things, if we take a look into his inner world, into his thoughts, into the causes of his actions, we shall see that he is in almost the same state as when he is asleep. And it is even worse, because in sleep he is passive, that is, he cannot do anything. In the waking state, however, he can do something all the time and the results of all his actions will be reflected upon him or upon those around him. And yet he does not remember himself. He is a machine, everything with

him happens. He cannot stop the flow of his thoughts, he cannot control his imagination, his emotions, his attention. He lives in a subjective world of 'I love,' 'I do not love,' 'I like,' 'I do not like,' 'I want,' 'I do not want,' that is, of what he thinks he likes, of what he thinks he does not like, of what he thinks he wants, of what he thinks he does not want. He does not see the real world. The real world is hidden from him by the wall of imagination. He lives in sleep. He is asleep. What is called 'clear consciousness' is sleep and a far more dangerous sleep than sleep at night in bed.

"Let us take some event in the life of humanity. For instance, war. There is war going on at the present moment. What does it signify? It signifies that several millions of sleeping people are trying to destroy several millions of other sleeping people. They would not do this, of course, if they were to wake up. Everything that takes place is owing to this sleep.

"Both states of consciousness, sleep and the waking state, are equally subjective. Only by beginning to remember himself does a Man really awaken. And then all surrounding life acquires for him a different aspect and a different meaning. He sees that it is the life of sleeping people, a life in sleep. All that men say, all that they do, they say and do in sleep. All this can have no value whatever. Only awakening and what leads to awakening has a value in reality.

"How many times have I been asked here whether wars can be stopped? Certainly they can. For this it is only necessary that people should awaken. It seems a small thing. It is, however, the most difficult thing there can be because this sleep is induced and maintained by the whole of surrounding life, by all surrounding conditions.

"How can one awaken? How can one escape this sleep? These questions are the most important, the most vital that can ever confront a man. But before this it is necessary to be convinced of the very fact of sleep. But it is possible to be convinced of this only by trying to awaken. When a man understands that he does not remember himself and that to remember himself means to awaken to some extent, and when at the same time he sees by experience how difficult it is to remember himself, he will understand that he cannot awaken simply by having the desire

to do so. It can be said still more precisely that a man cannot awaken by himself. But if, let us say, twenty people make an agreement that whoever of them awakens first shall wake the rest, they already have some chance. Even this, however, is insufficient because all the twenty can go to sleep at the same time and dream that they are waking up. Therefore more still is necessary. They must be looked after by a man who is not asleep or who does not fall asleep as easily as they do, or who goes to sleep consciously when this is possible, when it will do no harm either to himself or to others. They must find such a man and hire him to wake them and not allow them to fall asleep again. Without this it is impossible to awaken. This is what must be understood.

"It is possible to think for a thousand years; it is possible to write whole libraries of books, to create theories, by the million, and all this in sleep, without any possibility of awakening. On the contrary, these books and these theories, written and created in sleep, will merely send other people to sleep, and so on.

"There is nothing new in the idea of sleep. People have been told almost since the creation of the world that they are asleep and that they must awaken. How many times is this said in the Gospels, for instance? 'Awake,' 'watch,' 'sleep not.' Christ's disciples even slept when he was praying in the Garden of Gethsemane for the last time. It is all there. But do men understand it? Men take it simply as a form of speech, as an expression, as a metaphor. They completely fail to understand that it must be taken literally. And again it is easy to understand why. In order to understand this literally it is necessary to awaken a little, or at least to try and awaken. I tell you seriously that I have been asked several times why nothing is said about sleep in the Gospels. Although it is there spoken of almost on every page. This simply shows that people read the Gospels in sleep.

"Speaking in general, what is necessary to awake a sleeping man? A good shock is necessary. But when a man is fast asleep one shock is not enough. A long period of continual shocks is needed. Consequently there must be somebody to administer these shocks. I have said before that if a man wants to awaken he must hire somebody who will keep on shaking

him for a long time. But whom can he hire if everyone is asleep? A man will hire somebody to wake him up but this one also falls asleep. What is the use of such a man? And a man who can really keep awake-will probably refuse to waste his time in waking others up: he may have his own much more important work to do.

"There is also the possibility of being awakened by mechanical means. A man may be awakened by an alarm clock. But the trouble is that a man gets accustomed to the alarm clock far too quickly, he ceases to hear it. Many alarm clocks are necessary and always new ones. Otherwise a man must surround himself with alarm clocks, which will prevent him sleeping. But here again there are certain difficulties. Alarm clocks must be wound up, in order to wind them up one must remember about them: in order to remember one must wake up often. But what is still worse, a man gets used to all alarm clocks and after a certain time he only sleeps the better for them. Therefore alarm clocks must be constantly changed, new ones must be continually invented. In the course of time this may help a man to awaken. But there is very little chance of a man doing all the work of winding up, inventing, and changing clocks all by himself, without outside help. It is much more likely that he will begin his work and that it will afterwards pass into sleep, and in sleep he will dream of inventing alarm clocks, of winding them up, and changing them, and simply sleep all the sounder for it.

"Therefore, in order to awaken, a combination of efforts is needed. It is necessary that somebody should wake the man up; it is necessary that somebody should look after the man who wakes him; it is necessary to have alarm clocks and it is also necessary continually to invent new alarm clocks.

"But in order to achieve all this and to obtain results a certain number of people must work together.

"One man can do nothing.

"Before anything else he needs help. But help cannot come to one man alone. Those who are able to help put a great value on their time. And, of course, they would prefer to help, say, twenty or thirty people who want to awake rather than one man. Moreover, as has been said earlier, one

man can easily deceive himself about his awakening and take for awakening simply a new dream. If several people decide to struggle together against sleep, they will wake each other. It may often happen that twenty of them will sleep but the twenty-first will be awake and he will wake up the rest. It is exactly the same thing with alarm clocks. One man will invent one alarm clock, another man will invent another, afterwards they can make an exchange. Altogether they can be of very great help one to another, and without this help no one can attain anything.

"Therefore a man who wants to awake must look for other people who also want to awake and work together with them. This, however, is easier said than done because to start such work and to organize it requires a knowledge, which an ordinary man cannot possess. The work must be organized and it must have a leader. Only then can it produce the results expected of it. Without these conditions no efforts can result in anything whatever. Men may torture themselves but these tortures will not make them awake. This is the most difficult of all for certain people to understand. By themselves and on their own initiative they may be capable of great efforts and great sacrifices. But because their first effort and their first sacrifice ought to be obedience nothing on Earth will induce them to obey another. And they do not want to reconcile themselves to the thought that all their efforts and all their sacrifices are useless.

"Work must be organized. And it can be organized only by a man who knows its problems and its aims, who knows its methods; by a man who has in his time passed through such organized work himself."

2. MY FIRST ENCOUNTER WITH THE GURDJIEFF SCHOOL

"Take a watch," we were told, "and look at the big hand while trying to remain conscious of yourself and concentrate on the thought: I am Louis Pauwels, and I am here now, at this moment.' Try to think of nothing else but that; simply follow the movement of the big hand and go on being conscious of yourself, your name, your existence, and the place where you are now."

At first this seemed simple, and rather ridiculous. Of course I could concentrate on the idea that my name was Louis Pauwels and that I was there, at that moment, watching the big hand of my watch moving slowly around. Soon I had to admit that this idea did not remain stable within me for long; it began to take on a thousand shapes and to flow about in every direction, like those objects that Dali paints in mud. But I had to remember, too, that I had not been asked to keep alive and fixed in my mind an idea, but a perception. I had not only to think that I existed, but to know it and to have an absolute knowledge of that fact. I felt that that would be possible, and that it could happen in me and bring me something new and important. I discovered, however, that I was perpetually being distracted by a thousand more or less vague thoughts, sensations, images, and associations of ideas that had nothing to do with the object of my efforts, and indeed prevented me from pursuing it. Sometimes it was the watch hand that absorbed all my attention, and while gazing at it I lost sight of myself. Sometimes it was my body—a twitching muscle in my leg, a sensation in my stomach—that took my attention away from both the watch and myself. Sometimes, again, I thought I had closed down my little internal cinema and eliminated the external world; but I soon found then that I had sunk into a kind of sleep in which the watch hand as well as myself had disappeared, while images, sensations, and ideas continued to be mixed up in my mind behind a kind of veil, as if in a dream unfolding itself independently of me while I slept. Sometimes, for a fraction of a second, while looking at the watch hand, I was totally and completely conscious that I was I. But in the same fraction of a second, I was congratulating myself on having achieved this state; my mind, so to speak, was applauding, whereupon my intelligence, by expressing satisfaction at my success, ruined it irremediably. Finally, disappointed, but above all thoroughly exhausted, I gave up the experiment, because it seemed to me that I had just been through the most difficult few minutes in the whole of my existence and deprived of air to a degree that had taxed my endurance to its extreme limits. How interminable it had seemed! And yet it had lasted scarcely more than a couple of minutes; and in those two minutes I had only had a real perception of myself in three or four

imperceptible flashes. I was then forced to admit that we are practically never conscious of ourselves, and that we are hardly ever conscious of the difficulty of being conscious.

The state of consciousness, we were told, is at first the state of a Man who, having at last discovered that he is hardly ever conscious then begins gradually to learn what, in himself, are the obstacles to what he is trying to do. In the light of this little experiment one knows now that a Man may, for example, read a book, approve or be bored by it, protest or be enthusiastic, without ever being conscious for a moment of the fact that he himself "is" and that consequently nothing of what he has read has really impinged on the Man he "is." His reading is another dream added to his own dreams—a flux in the perpetual flux of the unconscious. For our real consciousness may be—and almost always is—completely absent from everything we do, think, desire, or imagine.

I understood then that there is very little difference between our normal waking and sleeping states. Our dreams when we are awake have become invisible, as it were, like the stars in daytime; but they are still there, and we continue to live under their influence. We have merely acquired on waking a critical attitude toward our own sensations; our thoughts are better coordinated, our actions more controlled, our impressions, sensations, and desires more lively; but we are still in a state of non-consciousness. We are not now discussing the real "awakened state" but what could be called a "waking sleep"; and it is in that state that we spend practically the whole of our lives. We were taught that it is possible to become completely awake, and to be conscious of oneself. In this state, as I discovered during the experiment with the watch, I was able to have an objective knowledge of my thoughts and of a succession of images, ideas, sensations, sentiments, and desires. While in that state, I could try to make a real effort to examine and even halt from time to time, or change this floss of sensations. And the very fact of making this effort, so I was told, created in me a certain subsistence, it did not actually result in anything definite. The mere fact of its having been made was enough to call into being and accumulate in me the very substance of my being. I was assured that I could then, having a fixed "being," acquire an "objective consciousness"

and that I would then be in a state to have a completely objective and total knowledge not only of myself, but of other men and things and of the whole world.*

3. RAYMOND ABELLIO'S STORY

When in the "natural" attitude, which is that of all normal existing beings, I "see" a house, my perception is spontaneous, and it is that house that I see, and not my own perception of it. On the other hand, if my attitude is "transcendental," then it is my perception itself, which is perceived. *But this perception of a perception radically changes my primitive approach.* The state of actually experiencing something, uncomplicated to begin with, loses its spontaneity from the very fact that the new contemplation has for its object something that was originally a *state*, and not an object, and that the elements which make up my new perception include not only those pertaining to the house "as such," but those pertaining to the perception itself, considered as an actually experienced flux. And an essentially important feature of this "alteration" is that the concomitant vision I had, in this bi-reflexible, or rather "reflective-reflexible" state (*"e'tat bi-reflexif, ou plutot reflechi-reflexif"*) of the house that was my original "motif," so far from being lost, displaced, or blurred by this interposition of "my" second perception in front of "its" original perception, *is, paradoxically, intensified, becoming clearer, more "actual," and charged with more objective reality than before.* We are here confronted with a fact that cannot be accounted for by pure speculative analysis: namely, the transfiguration of the thing as consciously experienced, its transformation, as we shall call it later, into a "super-thing," its passage from being something "known about" to something "known." This fact is insufficiently appreciated although it is the most remarkable in the phenomenological experimentation. All the difficulties met with in ordinary phenomenology and, indeed, in all the classic theories of knowledge, stem from the fact that they consider the duality consciousness—knowledge (or more precisely, consciousness-science) as being self-sufficient and able to absorb the whole of experience; whereas

*Extract from *Monsieur Gurdjieff*, Ed. du Seil, Paris, 1954.

the triad knowledge-consciousness-science alone can provide a genuinely ontological foundation for phenomenology. Certainly, nothing can make this transfiguration apparent except the direct and personal experience of the phenomenologist himself. But no one can claim to have understood real transcendental phenomenology unless he has had this experience and been "illuminated" as a result. No one, not even the most subtle of dialecticians or the most cunning logician, who has not actually experienced this and has therefore not seen things-beneath-things, can do more than talk about phenomenology; he cannot actively participate in any phenomenological experience. Let us take a more precise example:

As long as I can remember, I have always been able to recognize the colors blue, red, yellow. My eye saw them, and I had a latent knowledge of them. Certainly "my eye" did not ask itself any questions about them; how could it have? Its function is to see, not to see itself in the act of seeing; but my brain itself was as if asleep; it was not in any sense the "eye of the eye," but merely a prolongation of that organ. And so I simply said, almost without thinking: that's a beautiful red—or a faded green—or a brilliant white. One day some years ago while walking among the vines in the Canton of Vaud overlooking the Lake of Geneva—one of the most beautiful sites in the world—so beautiful, in fact, and so vast that the "Ego" first expands at the sight of it, then dissolves and finally recovers and attains a state of exaltation—I had a most extraordinary experience. The ocher of the steeply descending slope, the blue of the lake, the violet of the mountains in Savoy, and in the distance the glistening glaciers of the Grand-Combin—all this I had *seen* a hundred times. I now knew for the first time that I had never *looked* at them. And yet, I had been living there for three months. It is true that, from the very first, this landscape had profoundly affected me; but it had only produced in me a vague feeling of exaltation. No doubt the "I" of the philosopher is stranger than any landscape. The poignant sensation of beauty we experience is only the "I" measuring and deriving strength there from the infinite distance that separates us from that beauty. But on that day, suddenly, I knew that it was I who was creating that landscape, and that without me it would not exist: "It is I who sees you, and who sees myself seeing you and in so

doing creates you." This cry from the heart is the cry of the demiurge when creating "his" world.

It is not only the suspension of an "old" world but the projection of a "new" one. And in that instant, indeed, the world was re-created. Never had I seen such colors. They were a hundred times more vivid, more delicately shaded, more "alive." I knew that I had just acquired a color sense—that I was seeing color for the first time, and that until then I had never really seen a picture or penetrated the world of painting. But I knew also that by this awakening of consciousness, this perception of my perception, I held the key to that world of transfiguration, which is not a mysterious subworld, but the true world from which we are banished by "Nature." This has nothing to do with attention. Transfiguration is complete; attention never is. Transfiguration knows itself in its positive sufficiency; attention aims at attaining some day such sufficiency. It cannot be said, of course, that attentiveness is empty. On the contrary, it craves fullness. But this craving is not fulfillment. When I returned to the village that day, the people I met were mostly "attentive" to their work; yet to me they all seemed to be walking in their sleep.*

4. GUSTAV MEYRINCK

The Green Face (Extract)

The key that will make us masters of our inner nature has been rusty ever since the Flood. The secret is to be awake. To be awake is everything.

Man is firmly convinced that he is awake; in reality, he is caught in a net of sleep and of dreams, which he has woven himself. The tighter the net, the heavier he sleeps. Those who are trapped in its meshes are the sleepers who walk through life like cattle being led to the slaughterhouse, indifferent and without a thought in their heads. Seen through the meshes, the world appears to the dreamers like a piece of latticework; they only see misleading apertures, act accordingly, and are unaware that what they see are simply the crazy debris of an enormous whole. These

*Raymond Abellio, *Cahiers du Cercle d'Etudes Metaphysiques* (Notebooks from the Society of Metaphysical Studies), privately published, 1954.

dreamers are not, as you might perhaps think, dwellers in a world of fantasy and poets; they are the workers, the restless ones, consumed by a mad desire for action. They are like those beetles which laboriously climb all the way up a long pipe, only to plunge down into it again as soon as they have reached the top. They say they are awake, but what they think is life is really only a dream, every detail of which is fixed in advance and independent of their free will.

There have been, and still are, a few men who have known that they were dreaming—pioneers who have advanced as far as the barrier behind which lies hidden the eternally awakened "I"—seers like Descartes, Schopenhauer, and Kant. But they did not possess the equipment necessary to capture the fortress, and their call to arms failed to awaken the sleepers.

To be awake is everything.

The first step toward this state is so simple that any child could take it. Only those who have been misled have forgotten how to walk, and stay paralyzed on their two feet because they do not want to throw away the crutches they have inherited from their predecessors.

To be awake is everything.

Keep awake whatever you are doing! Do not imagine that you are already awake. No; you are asleep and dreaming.

Gather all your strength together, and fill your body for a moment with the feeling: Now I am awake!

If you can do this, then you will at once perceive that the state in which you were before was merely one of somnolence.

This is the first step on the long, long journey that leads from servitude to being all-powerful.

Go on, then, advancing from one awakening to another. There are no tormenting thoughts that you cannot in this way get rid of. They will be left behind and will not be able to trouble you any more. You will be as high above them as the crown of a tall tree is above the withered branches below.

Your pains will fall away from you like dead leaves from a tree when you feel your whole body is awake.

The Brahmans' icy baths, the sleepless nights of the disciples of

Buddha, and the Christian ascetics, the self-inflicted tortures of the Hindu fakirs are nothing other than the fixed rites which indicate that it was here that the temple of those who strove to stay awake originally stood.

Read the sacred writings of all the peoples of the Earth. Through all of them runs, like a red thread, the hidden science of maintaining wakefulness. It is the ladder of Jacob who fought all through the "night" with the angel of the Lord until the "day" broke and he was victorious.

You must climb from one rung to another if you want to conquer death.

The lowest rung is called: genius.

What are we to call the higher ones? They are hidden from the mass of mankind and looked upon as legends.

The story of Troy was thought to be a legend until one day a Man had the courage to start excavating by himself.

The first enemy you will meet with on this road to wakefulness will be your own body. It will fight you until the first cock-crow. But if you can glimpse the dawn of eternal wakefulness, which will put a gulf between you and those somnambulists who think that they are men and who are unaware that they are gods asleep, then sleep will leave your body too, and the Universe will be at your feet.

Then you will be able to work miracles, if you wish, and you will no longer be compelled, like a humble slave, to wait until a cruel false god is kind enough to shower gifts upon you, or to cut off your head.

Naturally the happiness of a good and faithful dog—which is to serve a master—will no longer be yours; but be frank with yourself: would you, even now, want to change places with your dog?

Do not be afraid that you may not be able to attain your goal in this life. He who has found the way always returns to this world with an internal maturity that enables him to continue with his work. He is born a "genius."

The path I am pointing out to you is strewn with strange happenings: dead people you have known will rise up and talk with you! These are only images! Luminous silhouettes will appear to you and give you their

blessing. They are only images, forms conjured up by your body, which, under the influence of your newly transformed will, will die a magical death and become spirit, just as ice, when attacked by fire, dissolves in steam.

When you have got rid of the corpse within you, only then will you be able to say: Now sleep has left me forever.

Then will come to pass the miracle, which no Man can believe—because, deceived by their senses, they do not understand that matter and force are the same thing—the miracle that, even if you are buried, there will be no corpse in your coffin.

Then only will you be able to distinguish between reality and appearance. Whoever you may meet can only be one of those who have preceded you on this road.

All the others are shadows.

Up to now you do not know if you are the happiest or the unhappiest of creatures. But fear not. Not one of those who have followed the path that leads to the waking state, even if he has lost his way, has ever been abandoned by his guides.

I would like to give you a sign, which will enable you to recognize whether an apparition is reality, or only an image: if it approaches you, if your conscience is troubled, if the things of the external world are vague or disappear—then beware! The apparition is only a part of yourself. If you do not understand it, it is only a specter without substance, a thief who is robbing you of part of your life.

Thieves who steal your soul's strength are worse than worldly thieves: They attract you like the will-of-the-wisps into the marshes of a false hope, only to abandon you in the darkness before disappearing forever.

Do not allow yourself to be blinded by any miracle they may appear to perform for you, by any sacred name by which they may call themselves, or by any prophecy they may utter—not even if it comes true; they are your mortal enemies, driven out from the inferno of your own body, against whom you are fighting for victory.

Know that the marvelous strength they possess is your own—which

they have stolen so that they may keep you as their slave. They cannot live outside your life; but if you defeat them they will collapse and be your dumb and docile tools for you to use according to your needs.

They have made innumerable victims among men. Read the history of the visionaries and sectarians and you will see that the path you are following is strewn with skulls.

Unwittingly, humanity has erected against them a wall of materialism. This wall is an infallible protection; it is an image of the body, but at the same time a prison wall that blocks the view.

Today they are all dispersed, and the phoenix of the inner life is resuscitated from the ashes where it has long been lying as if dead; but the vultures of another world are also beginning to flap their wings. This is why you must be careful. The scales in which you place your consciousness will show you when you can trust these apparitions: the more "awakened" it is, the further the scales will go down in your favor.

If a guide, a brother from another spiritual world, wishes to make himself known to you, he should be able to do so without making inroads on your consciousness. You can place your hand on his side, like doubting Thomas.

It would be easy to avoid the apparitions and dangers. You have only to behave like an ordinary man. But what will you have gained by that? You will remain a prisoner in the jail of your body until Death, the executioner, comes to lead you to the scaffold.

The desire of mortal men to see supernatural beings is a cry that wakes even the ghosts of the underworld, because such a desire is not pure; because it is greed, rather than desire; because it wants to "take" in some way or other, instead of learning to "give."

All those who look upon the Earth as a prison—all the pious folk who pray for deliverance, evoke, without knowing it, the world of ghosts. Do the same yourself, but knowingly.

For those who do it unwittingly, is there an invisible hand to guide them out of the morass in which they are engulfed? I do not think so.

When, on your way to the "awakened" state, you cross the kingdom of the shades, you will gradually come to see that they are simply thoughts that you are suddenly able to see with your eyes. That is why they are

strangers to you, and seem to be creatures: for the language of forms is different from the language of the brain.

Now the moment has arrived when the transformation takes place: the men around you will become ghosts. All those whom you have loved will suddenly turn into worms. Even your own body.

It is impossible to imagine a more terrible solitude than that of the pilgrim in the desert who cannot find a well of pure water and dies of thirst.

Everything I have said here can be found in the writings of holy men of all nations: the advent of a new kingdom; wakefulness; the conquest of the body and of solitude. And yet an unbridgeable gulf separates us from these holy men: they believe that the day is coming when the good will enter into Heaven and the wicked will be cast down into hell. We know that the time is coming when many will wake up, and will be set apart from the sleepers who cannot understand what it means to be "awake." We know that there is no good or bad; only right or wrong. They believe that to be "awake" means keeping their senses alert and their eyes open during the night so that a man can say his prayers. We know that to be "awake" is the "awakening" of the immortal "I," and that physical insomnia is a natural consequence of this. They believe that the body ought to be neglected and despised because it is sinful. We know that there is no such thing as sin; the body is the beginning of our work, and we have come down to Earth to transform it into spirit.

They believe that we ought to live in solitude with our bodies in order to purify our spirits. We know that our spirits must first retire into solitude in order that the body may be transfigured. It is for you, and you alone, to choose what path to take: theirs or ours. You must act according to your own desires.

It is not for me to advise you. It is more salutary to pluck of your own free will a bitter fruit from a tree than to look at a sweet fruit hanging there that someone else has recommended.

But do not do as so many do who know the saying: examine everything, and only retain the best. You must go ahead; examine nothing, and cling on to whatever comes first.

1 A 1 he Point Beyond Infinity: *From Surrealism to Fantastic Realism—
The Supreme Point—Beware of images—The madness of Georg Cantor—
The Yogi and the mathematician—A fundamental aspiration of the human
spirit—An extract from a story by Jorge Luis Borges*

In the preceding chapters I have tried to give some idea of possible ways of studying the reality of *another* state of consciousness. In that other state, if it exists, every man who is tormented by the demon of a desire for knowledge would perhaps find an answer to the following question, which never fails to arise:

"Is there not a place to be found in myself where everything that *happens to me* would be immediately comprehensible; a place where everything that I see, know, or feel could be instantly deciphered, whether it be the movement of the stars, the way in which the petals of a flower are arranged, developments in the civilization to which I belong, or the most secret movements of my heart?

"Is it not possible that this immense and mad desire to understand, which pursues me, as if in spite of myself, through all the vicissitudes of my life might not one day be completely and once and for all assuaged? Is there not in Man, in myself, a path which leads to a knowledge of all the laws by which the world is governed? Do I not possess, deep down within myself, the key to total knowledge?"

Andre Breton, in the second Surrealist Manifesto, believed that he could return a definite answer to this question: "There is every reason to believe that there is a certain point within the mind from which life and death, the real and the imaginary, the past and the future, the communicable and the incommunicable, the high and the low are no longer perceived contradictorily."

It goes without saying that I do not, in my turn, claim to return a positive answer. In place of the methods and apparatus of surrealism, Bergier and I have aimed at substituting the more modest methods and heavier apparatus of what we call "fantastic realism." I therefore propose, in my study of these questions to have recourse to several dif-

ferent levels of knowledge: esoteric tradition; avant-garde mathematics; unusual trends in modern literature. Our method, in fact, consists in carrying out a survey on different levels (those of the spirit of magic, of pure intelligence, and poetic intuition), establishing a connection between these three, verifying by comparison the truths belonging to each, and finally putting forward a hypothesis in which these truths will be integrated. This fat book of ours is nothing but a first attempt to justify and illustrate this method.

The quotation from Andre Breton above dates from 1930. It achieved an extraordinary notoriety; and is still often quoted and commented on. For the fact is that one of the chief characteristics of the contemporary spirit is the growing interest now being taken in what might be termed: the point beyond infinity.

This concept is to be found in the most ancient traditions as well as in the most advanced mathematics. It haunted the poetic inspiration of Paul Valery, and one of our greatest living writers, the Argentinian Jorge Luis Borges, has made it the theme of his finest and most astonishing short story, entitled, significantly, "Aleph."*

This is the name of the first letter of the alphabet in sacred language. In the Kabbalah it indicates the *En-Soph*, the center of total knowledge, the point from where the spirit, or mind, perceives in a flash the totality of all phenomena, their causes and their significance. This letter is said, in a great many texts, to be in the form of a Man who is pointing to Heaven and Earth so as to show that the world below is the mirror and map of the world above. The point beyond Infinity is the supreme point mentioned in the second Surrealist Manifesto, the "Point Omega" of Father Teilhard de Chardin and the fulfillment of the alchemists' "Great Work."

How can this concept be clearly defined? Let us make an attempt. There exists in the Universe a point, a privileged spot from where the Universe as a whole is revealed. We observe creation with instruments,

***Published in *Les Temps Modernes*, June 1957, translated from the Spanish by Paul Benichou. An extract from it will be given at the end of this chapter.**

telescopes, microscopes, etc. But if an observer could be in this privileged spot everything that is or has ever been would appear to him in a flash, and space and time would be revealed in the totality and ultimate significance of all their aspects.

In order to give his sixth-form pupils some idea of the concept of eternity, a Jesuit teacher in a celebrated college employed the following image: "Imagine that the Earth is made of bronze and that a swallow brushes it with its wing once every thousand years. When the Earth has been demolished in this way, only then will eternity begin. . . ." But eternity is not only an infinite length of time. It is something other than mere duration.

Images are not to be trusted. They help to transpose down to a lower level of consciousness an idea which could only survive at another altitude. They deliver a corpse to the cellar. The only images capable of conveying a lofty idea are those which create in one's consciousness a state of surprise and insecurity, calculated to raise this consciousness to the level of the idea in question, where it can be grasped in all its freshness and strength. Magic rites and genuine poetry serve no other purpose.

For this reason we shall not try to provide an "image" of this concept of the point beyond Infinity. We prefer to refer the reader to Borges' magic and poetical text.

Borges, in his story, has drawn on Kabbalistic and alchemist sources and on Muslim legends. Other legends, as old as humanity, evoke this Supreme Point, this Privileged Spot. But it is a characteristic of the times in which we live that the efforts of pure intelligence, engaged in research of a completely nonmystical and nonmetaphysical nature, have led to mathematical conceptions which enable us to rationalize and understand the idea of the Transfinite.

The most important and remarkable achievements in this field were made by a mathematician of genius, Georg Cantor, who died mad. His work is still discussed by mathematicians, some of whom maintain that Cantor's ideas are logically indefensible. To which the partisans of the Transfinite theory reply: "No one shall drive us out of the Paradise opened up by Cantor!"

Cantor's thought could be roughly expressed as follows: Let us imagine on this piece of paper two points A and B one centimeter apart.

Now draw a segment joining A to B. How many points are there on this segment? Cantor demonstrates that there is more than an infinite number of points. To fill the segment completely would acquire a number of points greater than Infinity: the number *Aleph*.

This number Aleph is equal to all its parts. If we divide the segment into ten equal parts, there will be as many points in one of these parts as on the whole segment. If we make a square on the base of this segment, there will be as many points on the segment as on the surface of the square. If we make a cube, there will be as many points on the segment as in the whole volume of the cube.

If we build from the cube a four-dimensional solid, a tesseract, there will be as many points on the segment as in the four-dimensional volume of the tesseract. And so on and so on, to Infinity.

In this mathematical conception of the Transfinite, involving a study of the "Alephs," the part is equal to the whole. From the point of view of classical reasoning this is completely mad; and yet it is demonstrable. Equally demonstrable is the fact that an Aleph multiplied by any number will always be an Aleph. Thus there is something in common between contemporary higher mathematics and the Emerald Table of Hermes Trismegistus ("that which is above is like that which is below"), or the intuition of poets like William Blake ("the Universe is a grain of sand").

There is only one way of going beyond Aleph, and that is to raise it to a power of Aleph (we know that A to the power of B means A multiplied by AB times; similarly, Aleph to the power of Aleph equals another Aleph).

If we call the first Aleph zero, the second is Aleph one, the third Aleph two, etc. Aleph zero, we said, is the number of points contained on a *segment de droite* or in a volume. It has been demonstrated that Aleph one is the number of all the possible rational curves in space.

As for Aleph two, already it corresponds to a number which would be greater than anything one could conceive in the Universe. There are not enough objects in the whole Universe, which, if counted, would amount

to an Aleph two. And the Alephs extend to Infinity. The human mind, then, is capable of reaching beyond the confines of the Universe and of forming concepts which the Universe could never fulfill. This is a traditional attribute of God; but no one has ever imagined that the human mind could encroach upon this attribute. It was probably the contemplation of the Alephs in excess of two that drove Cantor mad.

Modern mathematicians, of stronger fiber or, perhaps, less inclined to succumb to metaphysical delirium, handle concepts of this nature, and even deduce certain applications arising from there.

Some of these applications are a challenge to reason and common sense—for example, the famous paradox of Banach and Tarski.*

According to this paradoxical theory, it is possible to take a sphere of normal dimensions, such as an apple, for example, or a tennis ball, and to cut it up into slices and then to reassemble the slices so as to produce a sphere smaller than an atom or bigger than the Sun.

It is not possible to perform physically this experiment, because the cutting has to be done with special surfaces which have no tangent plane and is thus technically impracticable. Most specialists, however, believe that this inconceivable operation is theoretically sound, in the sense that, although these surfaces do not belong to the tangible Universe, the calculations relating to them are valid and effective in the Universe of nuclear physics. The neutrons in an atomic pile move in curves which have no tangent.

The work of Banach and Tarski has led to conclusions which resemble to an hallucinating degree the powers claimed by Hindu experts in the *Samadhi* technique: they declare that they are able to grow as big as the Milky Way, or to shrink to the dimensions of the smallest conceivable particle. Nearer to us, Shakespeare causes Hamlet to exclaim: "O God! I could be bounded in a nutshell, and count myself a king of infinite space . . ."

It is impossible, in our opinion, not to be struck by the resemblance

*Two contemporary Polish mathematicians. Banach was murdered by the Nazis at Auschwitz; Tarski died in 1983.

between these distant echoes of magical thought and modern mathematical logic. An anthropologist taking part in a seminar on parapsychology at Royaumont in 1956 declared: "The *siddhis* of the Hindu yogis are extraordinary, since they include the faculty of being able to make oneself as small as an atom, or as big as the Sun or the whole Universe! Among these fantastic claims, we encounter positive facts, which we have every reason to believe are true, and facts like these, which seem to us incredible and beyond the bounds of any sort of logic." But we can only suppose that this anthropologist was ignorant not only of Hamlet's cry, but of the unexpected forms assumed recently by the purest and most modern branch of logic: mathematical logic.

In what precisely lies the profound significance of these resemblances? As always in this book, we shall confine ourselves to formulating hypotheses. The most romantic and exciting, but the least "integrating" hypothesis would be to admit that the *Samadhi* techniques are real, that the initiate can in fact make himself as small as an atom and as big as a sun, and that these techniques are derived from knowledge handed down from ancient civilizations which had mastered the mathematics of the Transfinite. In our opinion, we are dealing here with one of the fundamental aspirations of the human mind, which finds expression in the yogis' *Samadhi*, as well as in the advanced mathematics of Banach and Tarski.

If the revolutionary mathematicians are right, if the paradoxes of the Transfinite are valid, then the most extraordinary perspectives are opened up for the human mind. It is conceivable that there exist in space Aleph points, like the one described in Borges' story. In these points the whole space-time continuum is represented, and the spectacle ranges from the interior of an atomic nucleus to the most remote Galaxy.

One may go still further: one can imagine that as a result of manipulations involving at the same time matter, energy, and mind, any point in space whatsoever can become a Transfinite point. If such a hypothesis corresponds to a mathematical-psycho-physical reality we have the explanation of the alchemists' "Great Work," and of the supreme ecstasy met with in certain religions. The idea of a Transfinite point from which the whole

Universe would become perceptible, is prodigiously abstract. But the basic equations of the theory of relativity are equally abstract—and yet they have produced the sound movie, television, and the atomic bomb.

Moreover, the human mind is incessantly progressing toward higher and higher levels of abstraction. Paul Langevin has already pointed out that the electrician's apprentice is perfectly at home with the highly abstract and delicate notion of the "potential," and even has a word for it in his slang: he speaks of "the juice."

It is again possible to imagine that, in the more or less distant future, the human mind, having mastered the mathematics of the Transfinite, will succeed, with the aid of certain instruments in constructing, in "Aleph" space, Transfinite points from which it will be able to perceive the infinitely small and the infinitely great in their totality and ultimate significance.

Thus, the traditional quest for the "Absolute" will have at last been crowned with success. It is tempting to dream that the experiment has already partially succeeded. We mentioned in an earlier chapter in this book the alchemistic experiment in which the operator oxidizes the surface of a molten bath of metal. When the film of oxide dispersed, it was said that an image of our Galaxy with its two satellites, Magellan's clouds, appeared against an opaque background. Legend or fact? In any case, this is an example of the earliest Transfinite Instrument making contact with the Universe by means other than those provided by normal instruments.

It was perhaps through an operation of this sort that the Mayas, who did not know the telescope, discovered Uranus and Neptune. But we must not let our imagination run away with us. Let us be content to take note of this fundamental aspiration of the mind, so neglected in classical psychology, and at the same time to observe the connection between ancient traditions and one of the most important trends in modern mathematics.

Now follows the extract from the story by Borges: "The Aleph."

When I reached the house in the Rue Garay the maid asked me if I would mind waiting. Monsieur, as usual, was in the cellar developing his photographs. Near a vase empty of flowers on the unused

piano stood smiling (more untemporal than anachronistic) the large portrait of Beatriz with its clumsy coloring. No one could see us, and impelled by an impulse of tender despair I went up to it and murmured: "Beatriz, Beatriz Elena, Beatriz Elena Viterbo, Beatriz darling, Beatriz lost forever, it is I, I, Borges."

Carlos entered a moment later. He spoke abruptly: I understood that he was incapable of thinking of anything except the loss of the Aleph.

"A small glass of pseudocognac," he ordered; "then down you go to the cellar. You know that the dorsal decubitus is indispensable. So are darkness, immobility and a certain visual accommodation. You are to lie on the ground, on the tiles, and gaze fixedly at the nineteenth step of the stairway I shall show you. Then I shall go away, shut the trapdoor, and you'll be alone. Perhaps you'll be scared by some rodent—easily done! In a few minutes you will see the Aleph. The microcosmos of the alchemists and Kabbalists, our concrete and proverbial friend, the *multum in parvo!*" [Much in little].

When we were in the dining room, he added: "It's understood that if you don't see it, your incapacity will not invalidate my experience. . . . Now go down; very soon you'll be able to start a conversation with all the images of Beatriz."

I went downstairs quickly. The cellar, scarcely wider than the stairway, was very like a well. I looked in vain for the trunk which Carlos Argentino had mentioned. A few cases with bottles and some coarse sacking were piled up in one corner. Carlos took a sack, folded it, and placed it in a particular position.

"It's not much of a pillow," he explained; "but if I raise it an inch higher you won't see anything at all, and you'll be ashamed and embarrassed. Spread your great carcass on the ground and count nineteen steps."

I complied with his ridiculous demands, and at last he went away. He carefully closed the trapdoor; the darkness, in spite of a chink, which I noticed later, seemed complete. Suddenly I realized the danger I was in; I had allowed myself to be buried by a madman, after

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having absorbed some poison. All Carlos's blustering failed to conceal his tenor lest the miracle should not be revealed to me; Carlos, to justify his delusions and so as not to know that he was mad, was *bound* to kill me. I felt a vague malaise, which I tried to put down to my stiffness, and not to the effect of a narcotic. I closed my eyes, then opened them. It was then that I saw the Aleph.

I come now to the ineffable climax of my story; and this is where my despair as a writer begins. All language is an alphabet of symbols, whose use presupposes an experience which is shared by both parties: but how can I convey to others the infinite Aleph of which my timid memory has hardly any recollection? The mystics, in cases like this, abound in symbols; to indicate a divinity, a Persian speaks of a bird which, in some way, is all birds; Alanus de Insulis, of a sphere whose center is everywhere and the circumference nowhere; Ezekiel, of an angel with four faces facing simultaneously North, South, East, and West. (I have a reason for recalling these inconceivable analogies, as they have something in common with the Aleph.) Perhaps the gods would allow me to use an image of this kind; but then this story would be tainted with literature and falseness. In any case, the central problem is insoluble; it is impossible to enumerate, even partially, an infinite number of things. In that gigantic instant, I saw millions of actions, both delectable and atrocious; but none of them astonished so much as the fact that they all occupied the same point, without being either superimposed or transparent. What my eyes saw was simultaneous: my transcription of it will be successive, because language has to be. I want, however, to give some account of it.

At the bottom of the step, to the right, I saw a little mottled sphere almost intolerably bright. At first I thought it was revolving around itself; afterwards I realized that this movement was an illusion due to the vertiginous spectacle it enclosed. The diameter of the Aleph must have been about two or three inches, but the whole of cosmic space was inside it, unreduced. Everything (the glass in the mirror, for example) was a multiplicity of things, because I could see

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it clearly from every point in the Universe. I saw the populous sea; I saw the dawn and the evening; I saw the multitudes swarming in America; I saw a silver spiderweb in the center of a black pyramid; I saw a broken labyrinth (it was London); I saw interminable eyes gazing one upon the other inside me as palpable as if seen in a mirror; I saw all the mirrors on the planet, and not one reflected my image; I saw in a backyard in the Rue Soler the same paving stones that I had seen thirty years ago in a house at Fray Bentos; I saw clusters of grapes, snow, tobacco, veins of metal, steam; I saw convex deserts under the Equator and each of their grains of sand; I saw at Inverness a woman whom I shall not forget; I saw her disheveled hair and haughty carriage; I saw a cancer of the breast; I saw a ring of dried earth on a pavement where there had been a tree; I saw in a country house at Adroque a copy of the first English translation of Pliny by Philemon Holland; I saw every letter on every page at the same time (as a child I had always wondered why when a book was closed, the letters did not get mixed up and lost during the night); I saw the night and day together; I saw a sunset at Queretaro, which seemed to reflect the color of a Bengal light; I saw my bedroom with no one in it; I saw in a room at Alkmaar a terrestrial globe between two mirrors, which multiplied it to Infinity; I saw horses with shaggy manes on a beach by the Caspian Sea; I saw the delicate bone structure of a hand; I saw the survivors of a battle sending off post-cards; I saw in a shopwindow at Mirzapur a pack of Spanish playing cards; I saw the sloping shadows of ferns on the floor of a greenhouse; I saw tigers, pistons, bisons, heaving seas, and armies; I saw all the ants on the Earth: I saw a Persian astrolabe; I saw in a drawer (and the handwriting made me tremble) obscene letters—precise, unbelievable—that Beatriz had addressed to Carlos Argentino; I saw an adored monument in the cemetery at Chacarita; I saw the ghastly remains of what had deliciously been Beatriz Viterbo; I saw the circulation of my dark blood; I saw the connection between love and the transformations of death; I saw the Aleph from every point; I saw the Earth in the Aleph and in the Earth again the Aleph, and in

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the Aleph the Earth; I saw my face and my entrails; I saw your face, and I was giddy and I wept, because my eyes had seen that secret and conjectural object whose name men utter improperly, but which no man has ever seen: the inconceivable Universe.

I felt an infinite reverence, and an infinite sorrow. "You must be feeling a bit dazed after poking your nose into what is no concern of yours," said a jovial and detested voice. "Even if you empty your whole brain you'll never in a hundred years be able to repay me for that revelation. What a terrific observatory, eh? Borges!"

Carlos Argentino was standing at the top of the staircase.

In the sudden half-light I managed to raise myself and stammer: "Terrific—Yes, indeed. . . ."

The note of indifference in my voice surprised me. Carlos went on anxiously: "You saw absolutely everything in color?"

In that moment I planned my revenge. Nervously and evasively, with a show of friendliness, I thanked Carlos Argentino Daneri for the hospitality of his cellar, and urged him to take advantage of the demolition of his house to leave the pernicious capital, which never forgives anyone! I quietly but firmly refused to discuss the Aleph; I embraced him on leaving, and reminded him again that the country and tranquility were the best doctors.

In the street, in the stairways of Constitucion and in the metro all the faces seemed familiar. I was afraid that there was nothing left in the world that could surprise me, and that all my life I should be haunted by the feeling that I had seen everything before. Fortunately, after a few sleepless nights, I had forgotten everything.

A Some Reflections on the X Imams: *The child astronomei—A sudden access of intelligence—The theory of mutation—The myth of the Great Superior Ones—The Mutants among us—From Fiorla to Leonard Euler—An invisible society of Mutants?—The birth of the collective being—Love of the living*

During the winter of 1956, Dr. J. Ford Thomson, a psychiatrist at the Education Office at Wolverhampton, received in his consulting room a small boy of seven who was causing great anxiety to his parents and to his teacher.

"He obviously could not have access to any specialist literature on the subject," wrote Dr. Thomson. "And even if he had, would he have been able even to read them? And yet, he knew the right answers to the most complicated problems of astronomy."

Greatly impressed by his study of this case, the doctor decided to investigate the level of intelligence among schoolchildren, and undertook to test five thousand children all over England, with the assistance of the British Medical Research Council, the physicists at Harwell and a number of university professors. After eighteen months work, he came to the conclusion that there had been "a sudden rise in the level of intelligence." He went on to say:

Among the last ninety children from seven to nine years of age whom we questioned, twenty-six had an IQ of 140, which is practically that of a genius. I believe that strontium 90, a radioactive substance that penetrates the body, could be responsible for this. This substance did not exist before the first atomic explosion.

Two American scientists, C. Brooke Worth and Robert K. Enders, in an important work entitled *The Nature of Living Things*, believe that there is proof that the gene groups have been disturbed and that, under the influence of forces that are still mysterious, a new race of men is appearing, endowed with superior intellectual powers. This is, of course,

a subject to be approached with caution. The genetician Lewis Terman, however, after thirty years of study of infant prodigies, has reached the following conclusions: Most infant prodigies used in the past to lose their faculties on becoming adult. It would seem today that they tend to become a superior kind of adult, gifted with an intelligence that has nothing in common with that of ordinary human beings. They are thirty times as active as a normal man of talent. Their "success index" is multiplied by twenty-five. Their health is perfect, as well as their sentimental and sexual balance. Finally, they escape the psychosomatic diseases, notably cancer. Is this certain? One thing is certain, and that is that we are now witnessing a progressive acceleration throughout the world of the mental faculties, and this is true also of the physical. The phenomenon is so evident that another American scientist, Dr. Sydney Pressey, of the University of Ohio, has just drawn up a plan for the instruction of precocious children capable, in his opinion, of producing 300,000 superior intelligences a year.

Does this point to a mutation of the human species? Shall we see a new race of beings who resemble us outwardly, but yet are different? This is the formidable problem we must now examine. What is certain is that we are witnessing the birth of a myth: that of the Mutant. That this myth should arise in our technical and scientific civilization must have some significance and dynamic value.

Before tackling this subject, it should be noted that this access of intelligence that has been observed among children carries with it the simple, practical, and reasonable notion of a progressive improvement in the human race brought about by techniques.

Modern sporting techniques have shown that Man possesses physical resources that are far from being exhausted. The experiments now being carried out on the behavior of the human body in interplanetary rockets have proved the existence of formidable powers of resistance. The survivors from the concentration camps have learned to what extremes it is possible to go to preserve life, and have discovered sources of strength in the interaction of psychic and physical forces. Finally, as regards the intel-

ligence, the imminent discovery of mental techniques and chemical products capable of stimulating the memory and reducing to zero the strain of memorizing, opens up some extraordinary perspectives. The principles of science are not inaccessible to a normal intelligence. If schoolchildren and students could be relieved of the enormous effort of memory they have to make, it will become quite possible to teach the structure of the nucleus and the periodical table of the elements to elementary pupils, and to explain the relativity and quantum theories to undergraduates. Moreover, when the principles of science are widely diffused in all countries and there are fifty or a hundred times as many research workers, the multiplication of new ideas, their mutual fecundation, and multiple points of contact will produce the same effect as an increase in the number of geniuses. Even greater, because genius is often unstable and antisocial. It is probable, too, that a new science, the general theory of information, will soon make it possible to express quantitatively the ideas we are now expounding qualitatively. By distributing equitably among men the knowledge mankind already possesses, and by encouraging them to exchange their knowledge so as to produce new combinations, we shall increase the intellectual potential of human society no less rapidly and surely than by multiplying the number of geniuses. This vision must be borne in mind along with the other more fantastic one of the Mutant.

Our friend Charles-Noel Martin, in a sensational communication, has revealed the accumulated effects of atomic explosions. The effects of the radiation generated in the course of the tests increase in geometrical proportion. Thus the human race is in danger of being exposed to unfavorable mutations. Moreover, for the last fifty years radium has been used all over the world without any serious precautions being taken. X-rays and certain radioactive chemical products are exploited in a great many industries. How, and to what extent does this radiation affect modern man? We know nothing about the system of mutations. Could there not also be favorable mutations? Speaking at an atomic conference at Geneva, Sir Ernest Rock Carling, a Home Office pathologist, declared: "It is also to be hoped that, in a limited proportion of cases, these mutations will have

a favorable effect and produce a child of genius. At the risk of shocking this distinguished company, I affirm that the mutation that will give us an Aristotle, a Leonardo da Vinci, a Newton, a Pasteur, or an Einstein will largely compensate for the ninety-nine others, which will have much less fortunate effects."

First, a word as to the theory of mutations.

At the end of the last century, A. Weisman and Hugo de Vries instilled new life into the old ideas about evolution. The atom was then fashionable, and its effects were beginning to make themselves felt in physics. They discovered the "atom of heredity," and localized it in the chromosomes. The new science of genetics thus created brought to light again the work done in the second half of the nineteenth century by the Czech monk, Gregor Mendel.

Today it appears to be an established fact that heredity is transformed by the genes. These are strongly protected against their outside environment. It seems, however, that atomic radiations, cosmic rays, and certain violent poisons such as colchicine are able to attack them or cause the number of chromosomes to be doubled. It has been observed that the frequency of the mutations is proportional to the intensity of the radioactivity.

Now, today, the radioactivity in the world is thirty-five times higher than it was at the beginning of the century. Exact examples of selection in bacteria operating through genetic mutation under the action of antibiotics have been furnished in 1943 by Luria and Debruck, and in 1945 by Demerec. These studies show that mutation selection is operating just as Darwin had imagined. The adversaries of the Lamarck-Mitchurine-Lysenko theory as to the inheritance of acquired characteristics would therefore seem to be right. But can one generalize from bacteria to plants, animals or man? This is no longer doubted.

Are there any genetic mutations in man that can be controlled?

Yes. A case in point, as to which there appears to be no doubt, is the following: quoted from the archives of the Hospital for Sick Children in London: Dr. Louis Wolf, the Director of this hospital, estimates that

thirty phenylcetonc mutants are born in England every year. These mutants possess genes which do not produce in the blood certain ferments that are normally found there. A phenylcetonc mutant is incapable of dissociating phenile-alamine. This inability renders the child vulnerable to epilepsy and eczema, turns his hair ash-gray, and renders an adult liable to mental disorders. A certain phenylcetonc race of men, distinct from normal human beings, is therefore living amongst us. . . . This is an example of an unfavorable mutation; but must one refuse to believe in the possibility of a favorable mutation? Some mutants could have in their blood substances capable of improving their physical equilibrium and raising their intelligence coefficient to a level higher than our own. Their blood might contain natural tranquilizing agents, which protect them from the psychic shocks of social life and anxiety complexes. In this way they would form a race different from ordinary humans and superior to them. Psychiatrists and doctors try to find out what makes things go wrong. How are they to act when things go exceptionally well?

Mutations are of various kinds, Cellular mutation, which does not attack the genes and has no effect on heredity, is known to us in its unfavorable forms: cancer and leukemia are cellular mutations. To what extent could there be cellular mutations, generalized throughout the organism, which would be beneficial? The mystics speak of the apparition of a "new flesh," a "transfiguration."

We are also beginning to know something about unfavorable genetic mutations (e.g., the phenylcetonc cases). Could there not, here too, be beneficial mutations? Here again we must distinguish between two aspects of the phenomenon, or rather two interpretations.

1. This mutation, this apparition of another race could be due to chance. Radioactivity, among other causes, could induce a modification of the genes in certain individuals. The protein in the gene, if slightly affected, would no longer, for example, produce certain acids which cause us to feel anxiety. We should see another species of Man—a race of tranquil men who would not know fear or have

any negative sensations. Men who would go tranquilly to war, and kill without anxiety and have no complexes in their pleasures—a sort of robot devoid of any internal emotions. It may well be that we are witnessing now the coming of this race.

2. Genetic mutation is not, it would seem, due to chance, but directed in some way, perhaps toward a spiritual regeneration of humanity—a bridge, as it were, between a lower and a higher level of consciousness. The effects of radioactivity may be ordained as a means of improving the race. The modifications we mentioned just now are merely a slight indication of the profound changes that humanity may be destined to undergo in the future. The protein of the gene may be structurally affected so that we should see the birth of a race whose intelligence would be completely transformed—a race of beings capable of mastering time and space and of extending the domain of the intellect beyond Infinity. Between these two conceptions there is as much difference as there is between hardened steel and steel subtly transformed into a magnetic band.

The second conception (above), which is responsible for a modern myth which science fiction has adopted, is curiously reflected in various manifestations of contemporary spirituality. In the satanic camp we have seen how Hitler believed in the existence of Superior Beings, and heard him reveal his secret: "The mutation of the human race has begun; there are already supermen."

Representing the new Hindu school of thought, the master of the Pondicherry Ashram, Sri Aurobindo Ghose, founded his philosophy and his commentaries on the sacred texts on the certitude that the upward evolution of humanity would be accomplished by means of mutations. And Teilhard de Chardin, representing a Catholicism open to scientific speculation, affirmed that he believed in "a force capable of impelling us toward some form of superhumanity" ("Ultra-Humain").

Andre Breton, the Father of Surrealism, a pilgrim on the road of strangeness, sensitive to every transient current of disquieting ideas, spec-

tator rather than creator, but a hyperlucid observer of the most extreme adventures of the modern mind, wrote as follows in 1942:

Man is not, perhaps, the center, the principal protagonist of the Universe. It is permissible to believe that there are beings above him in the animal scale whose behavior is as different from his as his own is from that of whales or butterflies. There is no reason why there should not be beings altogether outside his field of sensory perception, thanks to some form of camouflage possibly of the kind adopted by mimetic animals. There is no doubt that this idea opens up a vast field for speculation, despite the fact that it tends to reduce man's interpretation of his Universe to a modest scale, not unlike that of an ant in an anthill which a child has trampled on. When we think of catastrophes such as a cyclone, where Man can only be either a victim- or a spectator, or war, about which notoriously inadequate opinions have been expressed, it should be possible in the course of an extensive study of a rigorously inductive nature, to succeed in giving a plausible picture of the structure and complexion of such hypothetical beings which haunt our imagination and fill us with obscure apprehensions.

In this, I must point out, my thought is not far removed from that of Novalis who wrote: "We are really living inside an animal whose parasites we are. What we are, our constitution, depends on this animal, and vice versa." I also find myself in agreement with William James, who asked: "Who knows but that we may occupy in Nature as small a place by the side of beings of whom we know nothing as the cats and dogs who live beside us in our houses?" Scientists themselves would not contradict this point of view: "All around us there may be beings, built on the same model as ourselves, but different—men, for example, whose albumins may be straight."*

A new myth? Should we try to persuade these beings that they

*Emile Duclaux, former Director of the Pasteur Institute.

are nothing but a mirage, or give them an opportunity to reveal themselves?

Are there really beings among us who resemble us externally, but whose behavior is as far removed from ours as "that of whales or butterflies"? Common sense answers that, if so, we should be aware of it, and that if such beings were living among us, we should certainly see them.

We know of a writer, John W. Campbell, who more or less demolished this commonsense argument in an editorial in the review *Astounding Science Fiction* in 1941. This is the gist of what he wrote:

No one goes to see his doctor to tell him that his health is magnificent. No one would go to a psychiatrist to inform him that life is an easy and delicious game, or visit a psychoanalyst to declare that he is not suffering from any complex. Unfavorable mutations can be detected. But what about the favorable ones?

Ah, but—objects common sense—the superior mutant would be revealed by their prodigious intellectual activities.

Campbell replies:

Nor at all. A man of genius, of the same species as ourselves—an Einstein, for example—publishes the fruits of his researches. He attracts attention. This often causes him a lot of trouble in the form of open hostility, incomprehension, threats, and perhaps exile. Einstein at the end of his life declared: "If I had known, I should have been a plumber." Above Einstein's level, the mutant is clever enough to conceal himself. He keeps his discoveries for himself. He lives as discreetly as possible, and only tries to remain in contact with other intelligences like his own. A few hours of work each week are enough to ensure the necessities of life; the rest of his life he spends in activities of which we can have no conception.

An attractive hypothesis, but one that is impossible to check in the light of science as it is today. No anatomic examination can tell us any-

thing about intelligence. Anatole France had an abnormally light brain. Moreover, there is no reason why a mutant should be the subject of an autopsy, except in the case of an accident; in which case, how would it be possible to detect a mutation affecting the cells of the brain? It is not, therefore, completely mad to admit the possible existence of Superior Beings in our midst. If mutations are governed by chance alone, some of them are probably favorable. If they are governed by an organized natural force, or correspond to a living man's will to better himself, as Sri Aurobindo, for example, believed, then there must be many more. Our successors may be here already.

There is every reason to believe that they are exactly like us, or rather that we have no means of distinguishing them. Some science-fiction writers naturally imagine that mutants have some anatomical peculiarities. Van Vogt, in his celebrated *In Pursuit of the Slans* imagines they have a special kind of hair: a sort of antennae used in telepathic communications; and he makes this the basis of a fine but terrible story about hunting down Superior Beings, modeled on the persecution of the Jews. Storytellers, however, sometimes add to Nature to simplify the problems.

If telepathy exists, it is probably not transmitted by waves, and has no need of antennae. If we believe in a controlled evolution it is reasonable to suppose that the mutant, to ensure his own protection, is able to camouflage himself to perfection. In the animal kingdom it is a commonplace that the predatory species are deceived by their prey disguising themselves as dead leaves, twigs, even excrement, with an astonishing perfection. Some succulents are even cunning enough to imitate the color of other uneatable species.

As Andre Breton said, when imagining the presence among us of "Great Transparent Beings," it is possible that they escape our observation "thanks to some form of camouflage of the kind adopted by mimetic animals."

"The New Man is living amongst us! He is there! What more do you want? I will tell you a secret: I have seen the New Man. He is intrepid and cruel! I was afraid in his presence!" Thus spake a trembling Hitler.

Another example: Maupassant, in an access of terror, and madness, in blood and sweat wrote in precipitate haste one of the most disturbing texts in the whole of French literature: "Le Horla":

Now I know, I can guess the truth. Man's dominion is a thing of the past! *He* has come, the being who was an object of fear to primitive races, whom anxious priests tried to exorcize, whom sorcerers called up at midnight without ever yet seeing him in visible form, to whom the temporary lords of creation attributed in imagination the shape monstrous or attractive, of gnomes, spirits, fairies, or goblins. After the vulgar ideas inspired by prehistoric fears, scientific research has clarified the outlines of Man's presentiment. Mesmer guessed it, and in the last ten years doctors have discovered the exact nature of this being's power before its manifestation. They have experimented with this weapon of the new lord of the world, the imposition of a dominant will on the human soul, which thus becomes its slave. To this power they have given the name of magnetism, hypnotism, suggestion, and what not. I have seen them playing with it like silly children playing with fire. Woe to us! Woe to mankind! He has come . . . what is his name? . . . yes, he is shouting it and I can't hear . . . say it again! . . . Le Horla, I've got it at last. . . Le Horla . . . that's his name . . . Le Horla has come!"*

In his interpretation of this vision of horror and wonder, Maupassant, true to the age he lived in, endowed the mutant with hypnotic powers. Modern science-fiction literature, nearer to the work of Rhine, Soal, and MacConnel than to that of Charcot, tends to endow the mutants with parapsychological powers: telepathy, or telekinesis. Other writers go further and show us the Superior Being floating in the air or going through walls: but this is pure fantasy, an agreeable echo of the archetype of all fairy stories. Just as the island of the mutants, or the galaxy of the mutants correspond to the

*Extract from "Le Horla" (The Incubus), a short story by Guy de Maupassant, Penguin Edition; translated by H. N. P. Sloman.

old dream of the Islands of the Blest, so do paranormal powers correspond to the archetype of the Greek gods. But from the standpoint of reality, it is obvious that all these powers would be completely useless to beings living in a modern civilization. Why have telepathy when the radio exists? Why telekinesis, when you have the airplane? If the mutant exists as we are tempted to believe, he has powers greater than any that we can imagine. Powers that an ordinary man seldom uses: he is gifted with intelligence.

Our actions are irrational, and intelligence plays only a very small part in our decisions. One can imagine the Ultra-Human, representing a new stage of life on this planet as a rational being, no longer merely a reasoning one, and as being endowed with a permanent objective intelligence, only taking decisions after having examined lucidly and thoroughly all the information at its disposal. A being whose nervous system is immune to any negative impulses. A being with a cold and swiftly calculating brain, equipped with a completely infallible memory. If the mutant exists it is likely to have a physical resemblance to a human being, but to be different in all other respects, owing to the fact that it controls its intelligence and uses it unceasingly.

This seems a simple enough vision. Nevertheless, it is more fantastic than anything in science-fiction literature. The biologists are beginning to understand the chemical modifications, which would have to precede the creation of this new species. Experiments with tranquilizing drugs, lysergic acid, and its by-products have shown that very feeble traces of certain organic compounds still unknown to us would be enough to protect us against the excessive permeability of our nervous system, and enable us in this way to exercise on all occasions an objective intelligence. Since there are phenylcetic mutants in existence whose chemical composition is less well adapted to life than our own, it is legitimate to suppose that there are mutants whose chemical composition is better adapted than ours to life in this world in process of transformation. It is these mutants, whose glands would spontaneously secrete tranquilizers and substances capable of stimulating the activity of the brain, who would be the forerunners of the new species destined to replace Man. Their place of residence would not be some mysterious island or forbidden planet. Life has been able in the past

to produce creatures adapted to dwell in the depths of the ocean or in the rarefied atmosphere of the highest mountains. It is also capable of creating the "Ultra-Human" whose ideal habitation would be the Metropolis, "the Earth of smoking factories, and teeming multitudes, the Earth that vibrates with a hundred new kinds of radiation. . . ."

Life is never perfectly adapted, but it tends toward perfect adaptation. Why should it relax this tension since the creation of Man? Why should it not prepare the way for something better than Man, through Man? And it may be that this Man-after-Man is already born. "Life," says Dr. Loren Eiseley, "is a great dreamy river, which flows through every opening, changing and adapting itself as it advances." Its apparent stability is an illusion engendered by the brevity of our own life. Just as we do not see the hands of a clock going around, so do we fail to see one form of life flowing into another.

The object of this book is to reveal facts and suggest hypotheses, but not in any way to promote any particular belief. We do not claim to know any mutants. Nevertheless, if we accept the idea that the perfect mutant is perfectly camouflaged, we can accept the idea that Nature sometimes fails in her efforts to improve creation and puts into circulation some imperfect mutants who, unlike the others, are visible.

In such mutants you may find a combination of exceptional mental qualities and physical defects, as, for example, in the case of a great many lightning calculators. The greatest specialist in this field, Professor Robert Tocquet, has stated his views as follows: "Many calculators were at first thought to be backward children. The Belgian prodigy Oscar Verhaeghe at the age of seventeen expressed himself like a two-year-old baby. Zerah Colburn, moreover, showed symptoms of degeneration: he had an extra finger on each hand. Another lightning calculator, Prolongeau, was born without arms or legs. Mondeux was subject to hysteria. Oscar Verhaeghe, born on April 16, 1862, at Bousval in Belgium to parents of humble origin, belongs to the group of calculators whose intelligence is far below average. The raising to different powers of numbers consisting of the same figures was one of his specialities. Thus, he could find the square of 888,888,888,888,888

in forty seconds, and raise 9,999,999 to the fifth power in sixty seconds, the resulting numbers running to thirty-five figures.*

Degenerates, or imperfect mutants?

Here, now, is perhaps an example of a perfect mutant: Leonard Euler, who was in contact with Roger Boscovitch (whose story we related in the preceding chapter).^f

Leonard Euler (1707-83) is generally considered one of the greatest mathematicians of all time. But this qualification is too narrow to convey the suprahuman qualities of his mind. He could skim through the most complex treatise in a few minutes, and could recite from memory *all* the books he had ever handled since he had learned to read. He had a thorough and complete knowledge of physics, chemistry, zoology, botany, geology, medicine, history, and Greek and Latin literature. In all these fields he was without a rival among his contemporaries. He had the power of isolating himself completely at will from the outside world, and of following a train of thought in any circumstances whatever. He lost his sight in 1766, but this did not affect him. One of his pupils has recorded that during a discussion relating to calculations involving seventeen decimal places, there was some disagreement with regard to the fifteenth place. Euler then, with his eyes closed, performed the whole calculation again in a fraction of a second. He saw relationships and connections which had escaped the notice of other cultivated and intelligent beings throughout the ages. Thus, he discovered in the poetry of Vergil new and revolutionary mathematical ideas. He was a simple and modest man, and all his contemporaries agree that his one desire was to remain unnoticed. Euler and Boscovitch lived at a time when men of learning were honored, and ran no risk of being imprisoned for their political opinions, or of being forced by governments to manufacture arms. If they had lived in our century, perhaps they would have taken steps to camouflage themselves

^f*New York Herald Tribune*, November 23, 1959.

^fThe diary of the father of the science of astronautics, Ziolkovsky, was published in U.S.S.R. in 1959. In it he states that he borrowed most of his ideas from the work of Boscovitch.

completely. Maybe there are Eulers and Boscovitchs among us today.

Intelligent and rational mutants, endowed with an infallible memory, a constantly lucid intelligence are perhaps working beside us disguised as country schoolmasters or insurance agents.

Do these mutants form an invisible society? No human being lives alone. He can only develop himself within a society. The human society we know has shown only too well its hostility toward an objective intelligence or a free imagination: Giordano Bruno burnt, Einstein exiled, Oppenheimer kept under observation. If there are mutants answering to our description, there is every reason to believe that they are working and communicating with one another in a society superimposed on our own, which no doubt extends all over the world. That they communicate by means of superior psychic powers, such as telepathy, seems to us a childish hypothesis. Nearer to reality, and consequently more fantastic, is the hypothesis that they are using normal human methods of communication to convey messages and information for their exclusive use.

The general theory of information and semantics proves fairly conclusively that it is possible to draw up texts which have a double, triple, or quadruple meaning. There are Chinese texts in which seven meanings are enclosed one within the other. One of the heroes in Van Vogt's *In Pursuit of the Slans* discovers the existence of other mutants by reading the newspapers and deciphering apparently inoffensive articles. A similar network of communication in our own Press and literature, etc., is quite conceivable. The *New York Herald Tribune* published on March 15, 1958, an analysis from its London correspondent of a series of advertisements appearing in the Personal column of *The Times*. These messages had attracted the attention of professional cryptographers and the police in various countries because they obviously had a hidden meaning. But this meaning was never deciphered. There are, no doubt, other still less decipherable means of communication. Who knows but that some fourth-rate novel, or some technical textbook, or some apparently obscure philosophical work is not a secret vehicle for complex studies and messages addressed to higher intelligences, as different from our own as we are from the great apes.

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Louis de Brogue, in an article in *Nouvelles Litteraires* on March 2, 1950, entitled "What is Life?" wrote as follows:

We must never forget how limited our knowledge must always be, and in what unexpected ways it is likely to develop. If our human civilization endures, the physics of the future a few centuries hence could well be as different from the physics of today as the latter is from the physics of Aristotle. The greatly extended range of knowledge to which we shall have access by then will perhaps enable us to incorporate in a general synthesis, in which each will have its place, the whole body of physical and biological phenomena. *If human thought, which by that time may have had its powers extended by some biological mutation, can one day rise to those heights, it will then perceive in its true perspective, something of which, no doubt, we have no idea at present, namely, the unity of the phenomena, which we distinguish with the help of adjectives such as "physicochemical," "biological," or even "psychic."*

And what if this mutation has already taken place? One of the greatest French biologists, Morand, the inventor of the tranquilizers, admits that mutants have made their appearance all through the history of humanity*

"These mutants, among others, were called Mahomet, Confucius, Jesus Christ____" Many more exist, perhaps. It is by no means inconceivable that, in the present evolutionary period, the mutants think it would be useless to offer themselves as an example, or to preach some new form of religion. There are better things to do at present than to appeal to the individual. Again, they may think that it is both desirable and necessary that our humanity should move toward collectivization. Finally, it may well be that they think it a good thing that we should be suffering now the pains of childbirth, and would even welcome some great catastrophe which might

*P. Monad and H. Laborit, *Les Destins de la Vie et de l'Homme* (The Destinies of Life and of Man), Ed. Masson, Paris, 1959.

hasten a better understanding of the spiritual tragedy represented in its totality by the phenomenon of Man. So that they may act more efficiently and so as to obtain a clearer view of the current that is perhaps sweeping us all upwards to some form of the Ultra-Human to which they have access, it is perhaps necessary for them to remain hidden, and to keep their coexistence with us secret while, despite appearances and thanks, perhaps, to their presence, a new soul is being forged for the new world which we long for with all our heart.

We have arrived now at the frontiers of the imaginary. It is time to stop. We only want to suggest as many not unreasonable hypotheses as possible. Many of them, no doubt, will have to be rejected. But if some of them have opened doors to research that have hitherto been hidden, we shall not have labored in vain; we shall not have exposed ourselves uselessly to ridicule. "The secret of life can be discovered. If I had an opportunity to do this, I should not allow myself to be deterred by ridicule." These words were spoken by Loren Eiseley.

Any reflections on the question of the mutants must lead to speculation with regard to evolution, and the destiny and nature of Life and Man. What is Time, in regard to the cosmic scale by which the history of the Earth must be measured? Has not the future, so to speak, been with us from all eternity? The appearance of the mutants would seem to suggest that our human society is from time to time given a foretaste of the future, and visited by beings already possessing a knowledge of things to come. Are not the mutants the memory of the future with which the great brain of humanity is perhaps endowed?

Another thing: the idea of a favorable mutation is clearly linked with the notion of progress. This hypothesis of a mutation can be dealt with on a strictly scientific level. It is known for certain that the areas most recently affected by evolution, and the least specialized—namely, the silent zones of cerebral matter—are the last to mature. Some neurologists think with reason that this points to possibilities which the future of the species will reveal. There may be individuals with "other" possibilities; a superior kind of individualization. And yet the general trend of societies would seem to

be toward a greater degree of collectivization. Is this contradictory? We do not think so. Existence, in our view, does not mean contradiction, but complementing and going beyond.

In a letter to his friend Laborit, the biologist, Morand wrote these words:

The perfectly logical man who has abandoned all passions and all illusions will become a cell in the vital continuum constituted by a society arrived at the peak of its evolution; we have obviously not reached that stage yet; but I do not think there can be evolution without it. Then, and then only, will there emerge that "universal consciousness" of the collective being, which we are all tending to become.

Confronted with this vision, which seems highly probable, we are well aware that those who remain faithful to the old humanism that has molded our civilization, will be filled with despair. They picture Man, henceforth deprived of any aim in life, entering into his decline. ". . . Perfectly logical, and having abandoned all passions and all illusions... ." How could a Man transformed into a being radiating intelligence be on the point of a decline? It is true that the psychological "I," *which* we call "personality" is likely to disappear. But we do not think that this "personality" is Man's richest possession. It is only one of the instruments he has been given to enable him to pass into the "awakened" state.

When the goal has been attained, the instrument disappears. If we had mirrors capable of revealing to us that "personality" that we value so highly, we could not bear to look at our reflections so disfigured would it be by all sorts of monstrous excrescences. Only a truly "awakened" man could look into such a mirror without being in danger of dying from fright, because then the mirror would reflect nothing and be absolutely pure. The true face is one that in the mirror of truth is not reflected. We have not yet acquired, in this sense, a face. And the gods will not speak to us face-to-face until we have one ourselves.

Rejecting the fluid and limited psychological "I," Rimbaud long ago

said: "I is another." This is the pure, transparent, immobile "I" endowed with infinite understanding: in all traditions, Man is taught to give up everything to attain this state. Maybe we are living at a time when the near future speaks the same language as the distant past.

Apart from these considerations on the "other" possibilities of the mind, our thinking, even at its most tolerant, perceives only contradictions between the individual and the collective conscience, and between a personal and a collective life. But thinking which perceives contradictions in living things, is wrong thinking. The individual conscience, when truly "awakened," enters into the universal. Personal life, if regarded and used wholly and solely as an instrument of "awakening," can be merged with impunity in a collective life.

This does not mean, however, that the formation of this collective being is the intimate aim of evolution. The spirit of the Earth and the individual soul have not yet fully emerged. The pessimist seeing the great upheavals which are caused by this secret emergence, says that we ought at least to try to "save Man." But this Man does not want saving, but changing. Man, as projected in orthodox psychology and current philosophy, has already been left behind, condemned as inadaptable. With or without mutation, we must envisage a different kind of human if we want to bring the phenomenon of Man into line with the present trend of our destiny. From now on, it is no longer a question of pessimism or optimism: it is a question of love.

At the time when I thought I could possess truth in my soul and in my body, when I imagined I should find the solution of everything at the school of the philosopher Gurdjieff, there was one word which I never heard pronounced, and that was: love.

Today there is nothing about which I feel absolutely certain. I could not guarantee the validity of even the most timid hypothesis put forward in the course of this book. Five years of study and work in collaboration with Jacques Bergier have only taught me one thing: a determination to keep my mind prepared for surprises, and to have confidence in life in all its forms, and in intelligence wherever and however it may be manifested

in living things around me. These two states: surprise and confidence are inseparable. The determination to attain them and to remain in them undergoes, in the end, a transformation. It ceased to be an act of will, in other words compulsion, and becomes love, in other words, joy and liberty. To sum up, all that I have gained is that I now bear within myself a love, which can henceforth never be uprooted, for all things living, in this world and in every world ad infinitum.

In order to express and pay homage to this powerful and complex love Jacques Bergier and I have, no doubt, not confined ourselves, as prudence would have dictated, to strictly scientific methods. But is there such a thing as prudent love? Our methods have been those familiar to scientists, but also to theologians, poets, sorcerers, magicians, and children. In a word, we have behaved like barbarians, preferring invasion to evasion. This is because something told us that we were indeed a part of the strange armies, transparent cohorts, and phantom hordes, heralded by ultrasonic trumpets, which are beginning to descend upon our civilization. We are on the side of the invaders, on the side of the life that is coming, on the side of a changing age and changing ways of thought. Error? Madness? A man's life is only justified by his efforts, however feeble, toward better understanding. And to understand better is to become more attached. The more I understand, the more I love; for everything that is understood is good.

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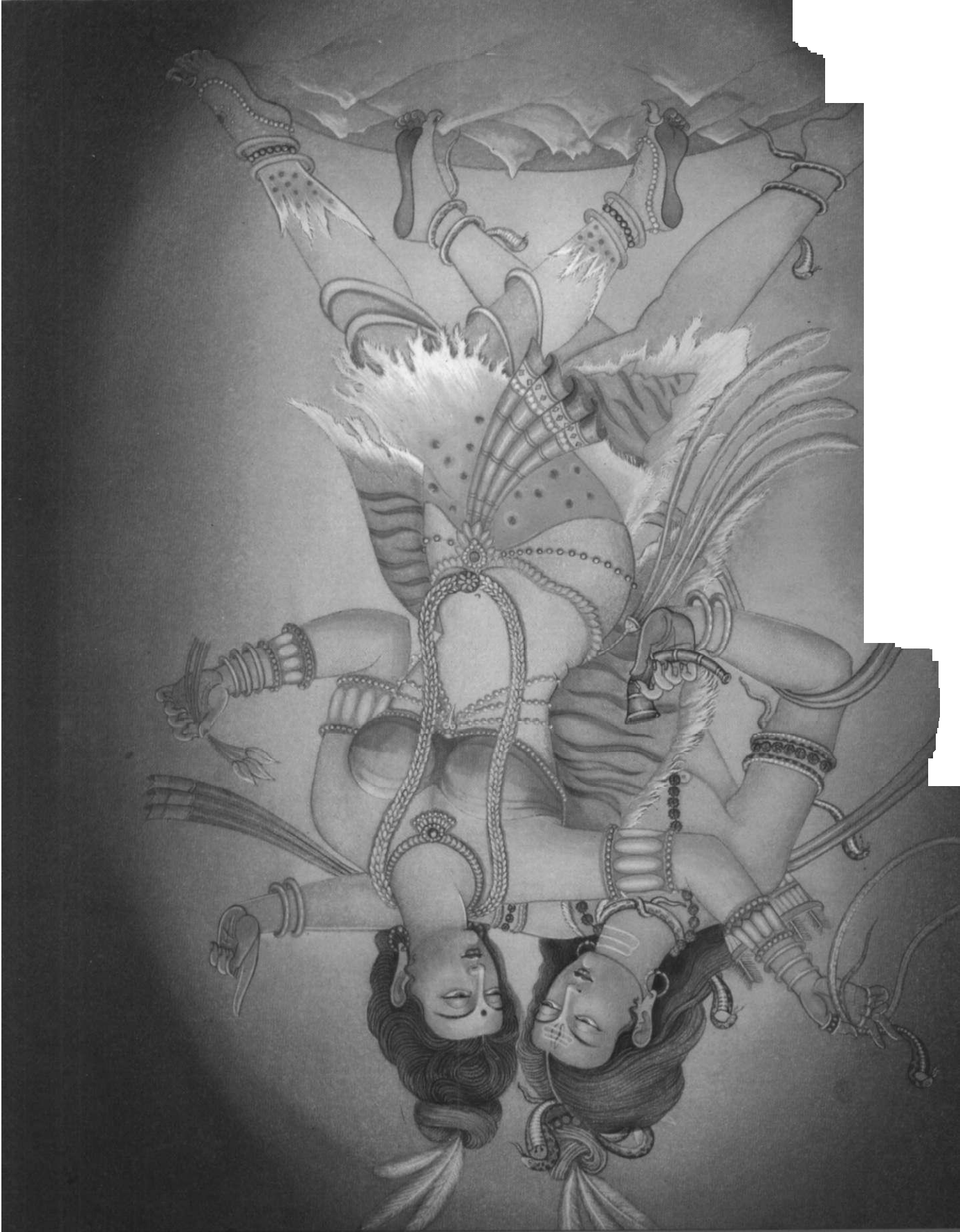
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