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OUR COSMIC SIGNIFICANCE

By the same author

Life Histories of Central American Birds

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The Golden Core of Religion

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OUR COSMIC SIGNIFICANCE

An Introduction to the Philosophy

of Cosmic Loyalty

by

Alexander F. Skutch

San Isidro del General

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....To live is, indeed, to deal with the world, to turn to it, to be concerned with it, to occupy oneself with it. Hence it is, by a psychological necessity, materially impossible for man to renounce the possession of a complete concept of the world, of an integral idea of the Universe. Delicate or crude, with our consent or without it, this trans-scientific physiognomy of the world establishes itself in the mind of each of us, and comes to govern our existence with more efficacy than scientific truth. The past century tried violently to halt the human mind at the point where exactitude reaches its limit. This violence, this turning the back on the ultimate problems, was called "agnosticism."

.....

I mean by this that it is not given to us to renounce taking a stand with reference to the ultimate problems: whether we consent or resist, in one aspect or another, they incorporate themselves in us. "Scientific truth" is an exact truth, but incomplete and penultimate, which is inevitably integrated in another kind of truth, ultimate and complete, although inexact, which there is no objection to calling "myth." Scientific truth, then, floats in mythology; and science itself, as a whole, is a myth, the admirable European myth.

--José Ortega y Gasset, ¿Qué es Filosofía?

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OUR COSMIC SIGNIFICANCE

FOREWORD

Two diametrically opposite views of the world have, since ancient times, competed for acceptance by Western man. The first, of which a naïve version is found in Genesis and a more philosophical version in Stoicism, holds that the world was fashioned by an Intelligence, who ordered all things for the best. The second view, that of the old Greek atomists and all their intellectual descendants, holds that the world springs from the fortuitous concourse of particles, governed, no doubt, by "natural law," but without plan or purpose.

To me, both of these doctrines have long seemed too extreme. The first has never offered a convincing explanation of the immense amount of strife and evil in a world created, and according to some still governed, by a powerful, benevolent Intelligence The second view cannot really account for the goodness, beauty, and love --in short, the value --that have arisen in a Universe that is claimed to be without purpose or goal. In the present book, I have attempted, by steering a course between these two extremes, to give a credible explanation of both aspects of the world, its good and its evil, without making assumptions which clash with currently accepted scientific concepts.

In view of the countless intricate structures and marvellous adaptations exhibited by living things, the atomists' denial that an Intelligence has ever intervened in the world's creation

hardly became credible until, a century ago, Charles Darwin suggested that all the complex forms and functions of plants and animals might arise, and become admirably adjusted to the environment, through the selection, by natural means, of a vast number of random, heritable variations. Darwin's views, somewhat modified, and supported by a tremendous amount of observation and experimentation by countless workers, are now widely accepted by biologists the world over.

But the current evolutionary doctrine has never, to my knowledge, received an adequate philosophical analysis. It has not been sufficiently recognized that two very different processes have been at work in the evolution of living things. In the first place, there is a straightforward constructive movement that builds up the simpler constituents of the Universe into patterns of ever increasing coherence, complexity, and amplitude. This primary movement is intense and initiates so many patterns that they inevitably compete for the space and materials necessary for their completion, thereby giving rise, secondarily, to all the strife and pain of the living world. The actual course of organic evolution is the resultant of the primary movement and its secondary complications, along with certain other contributing factors that will be noticed in due course. This more adequate analysis of organic evolution will perhaps be of little importance to the scientist whose interest is limited to finding proximate explanations of his observations, but it should be helpful to those who seek a deeper philosophical understanding of the world and themselves.

Some thinkers who hold that philosophy should build its own edifice from the ground up, accepting no data which the philosopher cannot himself test and verify. The contrary school holds that philosophy has no data peculiar to itself, but only such as the sciences provide for it. It has, however, its own canons of criticism and theory of knowledge, which it applies to the scientists' findings to evaluate them, and perhaps to combine the conclusions of the several sciences into a higher, more comprehensive synthesis.

Again, both of these opposing views seem to me to be too extreme. The traditional task of philosophy is to understand the Universe, and to guide our lives in the light of that understanding. To refuse any help which the sciences can provide in this vast and difficult endeavor would certainly be folly. On the other hand, for the philosopher to restrict himself to the information which the sciences furnish to him would seriously cripple his endeavor. There are aspects of reality inaccessible to the observational sciences, which wisely limit their field to data supplied by our outwardly directed senses, with or without the help of instruments. One of philosophy's most important functions is to correct the partial, one-sided view of the world which thence results; and this can be accomplished only by taking account of what the philosopher finds when he searches the depths of his own being. He should never forget that he also is part of the Universe which he strives to understand, and that a somewhat adequate comprehension can be achieved only by correlating the outwardly directed view with the inwardly directed view.

Some may claim that the results of even the most profound introspection that we can make fall within the province of the sciences, in particular that of psychology. But it should be remembered that psychology, in so far as it relies on introspection, whether performed directly by the psychologist or by others and reported to him, employs a method totally different from that of every other science. Introspective psychology has the closest bonds with philosophy, and was long considered part of it.

If the philosopher were familiar with nothing good or noble except his own strong desire to improve himself and the surrounding world, with nothing evil except the disruptive impulses that sometimes surge up within him, the sorrow and the frustration that he has himself felt, he would be in possession of data which cry out for explanation; and he might not rest content until he had explained, to his own satisfaction, these surprising contrasts in his experience. The more closely he can correlate this experience with movements that are widespread in the world, the more convincing his explanation will be, the more firmly his philosophy will be established.

As this work was taking shape, I awoke in the night with a great fear in my heart. Was I not wasting my time? Had I done more than spin a myth? Was not philosophy either arid disputation over verbal meanings or a more laborious form of myth-making? Then I reflected that ever since men became human they have oriented their lives either by naïve myths or by a more refined substitute for them, such as a religion or a philosophy. Even the attitude expressed by the old, light-hearted injunction, "Eat, drink, and be merry, for tomorrow we die," is a crude

sort of philosophy, founded on certain unexpressed assumptions that may or may not be true. Since this homely philosophy is the fruit of less careful thought than has gone into the construction of philosophic systems which have painstakingly examined their premises, it is, in fact, less likely to be true.

Since every somewhat thoughtful man inevitably orients his life by a view of the world that is based on certain assumptions that are either hidden or explicit, he owes it to himself to think out this view as carefully, to make it as consistent with his own experience and the verified conclusions of others, as he can. After all, thought is never an exact replica of reality; at best, it is only an interpretation of reality by means of symbolic concepts that satisfy the mind. Now as in ancient times, some of the questions which most pressingly confront us are so involved in obscurity that we can hardly treat them except symbolically or mythologically, as Plato recognized long ago. The best philosophy that we produce today may be only a more cautious form of myth-making; but unless we make our myths as coherent, and as consistent with our present understanding of the Universe, as we can make them, we shall never prepare our minds for a deeper understanding of the perplexing world in which we find ourselves.

Regarding this book as a modest introduction to philosophy, I have tried to avoid technical terms and expressions that might present difficulties to the general reader, and to explain those that I could not avoid. I would remind him that, as the problems of philosophy are vaster and deeper than those of any science, or all of them together, so its conclusions are inevitably less

exact, although not for that reason less important. As Ortega y Gasset has well said, scientific truth is exact but insufficient, philosophical truth sufficient but inexact --sufficient, I should say, as to scope if not as to accuracy. To those of us who take philosophy with the seriousness to which its long and glorious history entitles it, it is like a torch in the night. For finding our way through a baffling world, it is indispensable; but the light that it diffuses only expands the circle of darkness that meets our eyes on whatever side we turn them --the fundamental problems that we cannot adequately answer.

El Quizarrá,

January 31, 1971.

CHAPTER I

THE FUNDAMENTAL QUESTIONS, RELIGION, AND PHILOSOPHY

I exist. Nothing can be more certain to me than the fact of my existence as a stream of consciousness. I cannot be more certain of the existence of any other thing than I am of my own. For my only warrant for the existence of anything beyond my own mind is the sensations and thoughts of which my conscious life is composed. If I doubt that these exist, I must also doubt the reality of the things of whose existence they bear witness.

I am; I exist. All my thinking must begin with this first principle. But what am I? Whence did I come? For what purpose am I here? What is the highest and best use that I can make of my life? When I assert my own existence as a stream of consciousness, I am on solid and undebatable ground. When I proceed to the questions that inevitably follow from this assertion, I immediately find myself in a morass of doubt and uncertainty.

Yet to have answers to these questions is of the utmost importance to every thinking being. Although we suppose that animals of many kinds pass through their lives in obedience to instincts which drive them from act to act in an ordered sequence that involves no consideration of aims and purposes, men can hardly live without knowing why they live. Even the most thoughtless, who never stop to ask these questions, are carried along by the aims and valuations which pervade their culture; and without this support from their more purposeful fellows, they might sink into hopeless lethargy.

To know why and for what purpose we live is so necessary for the preservation of our tone and efficiency that practically every culture, archaic no less than advanced, has offered explanations that satisfied the majority of its members. These explanations are embodied in its religion, which typically provides an account of the origin of the world and of man, directions for the successful conduct of life, especially as this depends on winning the favor and support of superhuman powers, and a statement of what happens to us after death, together with counsels for assuring the most favorable destiny that is available to whatever part of man survives his body's decay.

An outstanding feature of religion is its conservatism. The explanations it provides may in many instances be traced to the earliest stages in the development of human speculative thought; although it may modify them, it scarcely ever rejects them wholly. Even the founders of new religions, not excepting the subtlest thinker of them all, Gautama Buddha, preserved many of the dogmas current in their land and age, including some that seem incompatible with their distinctive doctrines.

Because institutional religion is by its very nature so bound to its past that it cannot disburden itself of all its ancient and perhaps untenable beliefs, it fails to satisfy the most advanced and penetrating minds. This is no special phenomenon of the modern age; we meet it in every literate culture that has left us adequate records of its thought. In ancient Greece, we find thinkers vehemently repudiating the crude notions of the gods current in the ancestral religion and perpetuated by the

brilliant poetry of Homer and Hesiod. In India, we find the sages developing subtle systems of religious thought, while the masses continue their primitive sacrificial rites. In Egypt, we find the Pharaoh Ikhnaton arousing the implacable enmity of an ancient and powerfully entrenched priesthood by his monotheistic innovations. In Israel, we find the prophets, who have left us no record of sustained reasoning, angrily protesting that the elaborate ritual carefully preserved by the priests is worthless unless accompanied by righteous living and purity of heart.

In the West, whose serious thought flows in an unbroken current from the intellectual fountainhead of ancient Greece, those men who, not satisfied with the traditional replies to the fundamental questions, have tried to find the answers for themselves, have long been called "philosophers"; their pursuit is known as "philosophy". It is often said that philosophy is the quest of truth or knowledge, but more properly it is, as the name implies, the love or cultivation of sophia --wisdom. Our knowledge may include many facts which seem unrelated to life and provide no guidance; wisdom, however, is the application of knowledge to life, the orientation of our activities by what we know or believe to be true.

The old philosophers, whether of the East or the West, were not such disinterested seekers of "Truth for its own sake" as we sometimes imagine. They were not professors who gained a comfortable living by teaching other men's thoughts, often without being themselves convinced by them; they were independent seekers who, in a number of recorded instances, neglected their trade or their patrimony to seek wisdom, and they could be satisfied only by doctrines that were convincing to them. They were men filled

with an almost overwhelming sense of the importance of living, and they wished to be sure that they did not waste their lives by pursuing false goals. In a word, they sought happiness, which is a complex state involving many factors, but whose foundation, for any thoughtful being, is the conviction that he is on the right course, pursuing the highest goal within reach of such a being, making of his life the best and noblest that it is capable of becoming. This is the avowed or implicit aim of all the great systems of philosophy of ancient times, in both the West and the East.

Philosophy, then, is traditionally the pursuit of knowledge or truth, not for its own sake, but for life's sake. Since knowing is only one of our activities, life is greater than knowledge, and to pursue truth for life's sake is to pursue it for something higher than itself. So far as it is possible to devise a succinct definition of something as complex as philosophy, we might define it somewhat as follows: Philosophy is the attempt to give life significance, coherence, and stability by seeing it whole, and in relation to a greater whole. Only by seeing our lives in such perspective can we hope to give them that meaning, that assurance that we are not missing our way and running after specious goals, which for any thoughtful being is the indispensable foundation of happiness.

"What am I? Whence did I come? For what purpose am I here? What is the highest and best use that I can make of my life? -- When we begin to think seriously about these fundamental questions, they lead us far afield. The question What am I? for example,

may introduce us to the whole difficult problem of substance, by which we mean that of which things are ultimately composed, that which remains itself beneath all its shifting manifestations or states. Am I composed of matter alone? Or of matter and a second substance called spirit or mind? Or of something more fundamental, which is neither of these but the primal ground whence they spring?

Whence did I come? Evidently I was not the first being but was preceded by something else, from which I was made. If we pursue this question far enough, we are inevitably led to consider the origin of the Universe itself -- the difficult subject of cosmogony. Further, since the Universe, however it arose, underwent many complex changes before the earth became a habitable planet, and life passed through many phases before man evolved, and humanity had a long history before I was born, the question Whence did I come? involves the serious questioner in the vast mazes of cosmology, physics, chemistry, geology, biology, and related sciences.

The further questions For what purpose am I here? What is the highest and best use that I can make of my life? lead us beyond science, in its modern meaning; for the methods of the inductive sciences are ill suited to the investigation of purpose and value. But we cannot for that reason exclude them from philosophy without destroying philosophy, which is historically the quest of the meaning and values of life.

When, rejecting traditional answers to the fundamental questions audacious thinkers set about to find the replies for themselves, they before long discovered that they were engaged in an under-

taking of colossal proportions. It ~~might~~ may not be true that all knowledge is relevant to these questions, yet it is difficult to draw a line between what is pertinent and what is not. And, when we begin the serious study of ourselves and the world in which we live, the very momentum of our progress finally carries us into regions we had not intended to explore. Moreover, another complication soon arises: we begin to question the foundations of knowledge itself. Can I trust the declarations of my senses? Are my methods of investigation sound? Is my reasoning coherent, so that my conclusions necessarily follow from my premises?

Thus, by a natural and inevitable development, philosophy had already in ancient times become a large and complex subject, which was often divided into the three major branches of logic, physics, and ethics. Logic, which considers the laws of thought and the foundations of knowledge, is fundamental to the whole philosophic enterprise; for unless one uses sound methods of investigation and reasons correctly, all his efforts are vain. Physics was the study of nature in all its aspects; in early modern times it came to be known as "natural philosophy"; and today its vast field is divided among the sciences of astronomy, physics, chemistry, geology, and biology, with their numerous subdivisions. Ethics was and is the study of the conduct of life, of the ends it should pursue and the values which give it significance.

For a variety of reasons, philosophy has lost possession of that great realm which it once held under the denomination of "physics." The successful cultivation of the natural sciences demands special training, long and arduous. Each of them requires peculiar equipment, which is often so costly that those who invest

in it believe that it should be used constantly by experts rather than occasionally by dilettantes. Not only has the accumulation of scientific knowledge become too vast to be embraced by even the most capacious mind, each of the major divisions of science has outgrown the grasp of a single intellect. Scientific discoveries are now commonly made by specialists who concentrate on one small division of such extensive fields as chemistry, physics, or biology, seldom by philosophers.

Philosophy still retains its hold on logic, which requires no apparatus and can be cultivated in the philosopher's book-lined study. This seems to be a matter of convenience rather than of necessity. When "physics" declared its independence from philosophy, it might well have carried logic with it. No less than philosophy, the natural sciences require hard, sustained thinking. No less than philosophy, their results may be vitiated by incoherent ~~quential~~ thought. If we include under "logic" in the broadest sense, the subject of epistemology or the investigation of the grounds and validity of knowledge, it is evident that the scientist is, or should be, no less interested in it than the philosopher, or any other searcher for truth. Indeed, since it is generally conceded that the senses are the gateways to the mind, and the investigation of the structure and functioning of the sense organs is undertaken by the sciences, it seems that their pronouncements on this subject are no less valuable than those of the philosopher. The most satisfactory solution of this difficulty would, I believe, be the recognition that logic including epistemology (or, if one prefers, logic <u>and</u> epistemology) belong equally to philosophy and

the natural sciences. They are basic to the pursuit of knowledge by whatever road, hence all those who pursue knowledge have, or should have, an equal interest in them.

This leaves to philosophy, as its own peculiar realm, only one of the three provinces, logic, physics, and ethics, that it held in the ancient days of its glory. At the first glimpse, this appears to be an ignominious constriction of its domain; yet if we construe the meaning of "ethics" liberally enough, we shall find that philosophy retains a field wide and fertile enough to call forth the best efforts of those who cultivate it. Ethics is concerned with the orientation of life by the values it is capable of realizing; in ancient times, philosophers gave much attention to the summum bonum or supreme good, by which they meant what we might now call the highest value within our reach. The most important task of philosophy at the present day is the investigation of the origin, nature, and preservation of value in the Universe at large.

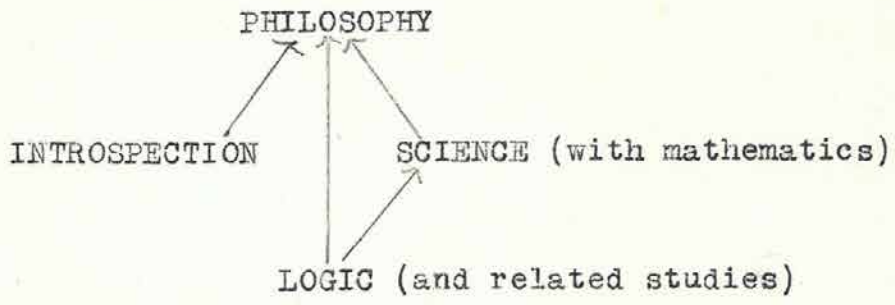
Perhaps, because values are subjective and can be known in their fullness only in our individual selves, we shall be forced, by the paucity of our sources of information, to concentrate our attention on the values attainable by man; but this is an accidental, not an intrinsic, limitation of the field. Arbitrarily to limit philosophy to the study of such values as we can achieve would stunt and impoverish it; ~~Arbitrarily to limit philosophy to the study of such values as we can achieve~~ it must, for its own fruitful growth, try to understand the place of value in the world process and its relation to the whole of Being. Perhaps to include all

of this investigation under the heading of "ethics" would stretch this term too far beyond its original meaning. But at least it is evident that the field here proposed for philosophy is more closely related to ethics than to either logic or physics. Moreover, as we proceed, it will be seen that our concentration on the origin, nature, and preservation of value suggests new approaches to some of the most difficult problems of metaphysics and points the way to their solution.

Although philosophy has relinquished its ancient province of physics to men of special competence in its several departments, it must continue to levy tribute on the natural sciences. The philosopher must be well acquainted with the results of scientific investigation and their interpretation, and his conclusions cannot run counter to the most trustworthy information that the sciences provide. But he recognizes that the purely scientific interpretation of the world can never be final and complete, because there is a side of reality inaccessible to the sciences so long as they respect the limitation that they have placed upon themselves with such fruitful results, that of studying the relations between the phenomena which are accessible to investigation by the external senses, especially sight and hearing, aided by whatever instruments can be devised to make them more perceptive. This side of reality to which the sciences are blind includes everything that gives meaning to existence, including consciousness and value, which are known to us directly rather than by means of our external senses and the instruments that fortify them. Philosophy without science lacks foundation; science without philosophy lacks interpretation.

To be sure, the sights that we see and the sounds that we hear are rich sources of value, and without them our lives would be

narrow and poor. But they are not in themselves value, and they could never become value without something supplied by the responsive mind itself, as we shall see in a future chapter. Since certain forms and structures in the external world, and indeed in our own bodies, are intimately involved in the genesis of value, and it is the sciences' task to explain how these forms arise and these structures operate; here, too, philosophy must lean heavily on the sciences in the furtherance of its undertaking. Philosophy's task is to take the results of scientific investigation, review them in the light of its interpretation of aspects of reality inaccessible to the sciences, and combine all the parts in a higher synthesis. We may, then, visualize the relations of introspection, logic, science, and philosophy in this manner:



To understand the role ~~which~~ that philosophy should play in modern life, we must examine its relation to religion as well as its relation to the sciences. Religion tried, in its own way, to answer our fundamental questions, long before men had developed the kind of thinking that we now call philosophy. Like philosophy, all the higher religions, and even many of the primitive religions,

have tried to give life significance, coherence, and stability by seeing it in relation to a greater whole. Frequently, however, they have been prevented by their dogmatic commitments from seeing it whole, in all its aspects and relations. Moreover, many of the greatest philosophers, from Plato to Whitehead, have been profoundly religious men, even when, as often happened, their own convictions alienated them from the institutional religion of their contemporaries. The same attitude toward life, the same burning desire for assurance that we are not wasting it but moving toward the highest destiny that is open to us, the same deep seriousness that makes some men passionately religious makes others turn to philosophy.

What is the difference between these two classes of men? They differ chiefly in intellectual rather than in emotional or spiritual qualities. The true philosopher is critical; he analyzes and examines everything; he demands ~~adequate~~ satisfactory reasons for every belief that he accepts. The religious person is uncritical, or at least far less critical than the philosopher; his heart rules his head; he would rather retain his cherished belief without questioning than jeopardize it by a rigorous examination. Of course, this distinction is relative rather than absolute. From Socrates onward, most philosophers have upheld doctrines that they could not prove; while, on the other hand, religious people usually want some reasons for their beliefs, although frequently they accept pitifully lame ones. Nevertheless, it remains true that a critical cast of mind turns an earnest man to philosophy, a credulous ~~one~~ cast of mind, to religion.

We might divide all men into the serious and the frivolous. The former try to be quite certain that the one life which they

are sure of living is dedicated to the highest ends that it can achieve; nothing less than the highest will satisfy them. The frivolous do not greatly care; they are content with the second or third best, so long as it occupies them agreeably, gives them power, or flatters their sense of importance. They may, indeed, pursue with fearful intensity their chosen end, such as the accumulation of property or the winning of public office; but they are still frivolous, because they have never examined whether this goal that they so eagerly seek is the highest good attainable by them. The frivolous may be separated into the energetic, who vehemently pursue unexamined goals, and the lethargic, who are content with whatever comes easiest to them. The serious, in turn, may be divided into the critical, who study philosophy, and the uncritical, who embrace religion.

The difference between philosophy and religion is cast into high relief by their respective attitudes toward science. Philosophy welcomes the findings of science, which is indeed its own child, which it tenderly nurtured, under the name of "physics," until it came of age and demanded emancipation from parental authority. Philosophy, so long as it remains true to its ancient spirit of free inquiry, is always ready to revise its doctrines in accordance with the latest well-substantiated conclusions of the sciences. Religion, on the contrary, has, especially in the West, been bitterly antagonistic to the sciences and has accepted some of their most important findings, if at all, only after they had gained such credence by the general public that it could no longer deny them without making itself absurd.

Just as philosophy and religion pursue the same end by diverse means, so they both require faith, but differ in their attitude toward it. Faith is one of the chief religious virtues; some sects have taught that salvation depends largely or wholly on it. Viewing faith as meritorious in itself, religion has rarely seriously tried to reduce the burden it must bear. On the contrary, it is sometimes held that the more improbable the alleged fact or occurrence in which the devout man believes, the greater his merit. To give credence to the obvious is no act of faith; even the sceptic cannot doubt that he exists, because in doubting he affirms it.

Unlike religion, philosophy has consistently striven to substitute rational demonstration for faith; yet it has never been able wholly to dispense with faith. If we ask a reason for everything we believe, we shall never stop asking; for the "reason" itself is a belief and must on this principle have another reason to substantiate it, and so on ad infinitum. Every science or study, not excepting mathematics, requires certain axioms as its starting point. It accepts them because they seem self-evident; if you ask why they are self-evident, it can only reply that the human mind is so constituted that it must regard them as such.

Without faith, the philosopher is reduced to that extreme form of scepticism known as pyrrhonism, which doubts everything, including the possibility of knowing anything with certainty; if consistent, it must even doubt its assertion that truth is unattainable by man. Even to believe that the world around me is not just the imagery of a prolonged dream but, extended in space,

exists independently of me, is an act of faith — animal faith, as Santayana called it. All the impressions ~~which~~ that proclaim to me the existence of an external world, in which my body must be included, are in my own mind, just as the visions of a dream are there. It is true that the images which, while awake, I spontaneously ascribe to outside sources — as, for example, the table and typewriter now before me — are as a rule more vivid, detailed, and coherent than the dreams that visit my sleep. Yet dreams vary much in intensity; how can I be sure that this so-called "external world" is not just one of the more detailed and sustained of them? No demonstration that I have ever seen is free from all unproved assumptions; I must recognize the external world by an act of faith, or continue to believe that all my life has been lived amidst fancies that my own mind spins, seeming to move among hills and trees and houses and people whose existence depends upon my own imagination.

But what incentive could I have to undertake the arduous labors of philosophy with a mind that daily and hourly deceives me? Throughout my waking hours, it persistently affirms that I am surrounded by solid, extended bodies, whose existence does not depend on my thinking of them; if it is lying in this, how can I believe any of its pronouncements, including its most laboriously drawn conclusions? To philosophize I need faith --faith that my mind is fundamentally sound and, even if often in error, is not always and consistently wrong; faith that nature is essentially honest, rather than a fabric of deception. By this direct faith in the adequacy of my mind and the fundamental correctness of its most persistent assertions, I avoid the needlessly complicated

procedure of Descartes, who first convinced himself, by an elaborate argument, that there is a good God, then concluded that such a God would not permit him to be consistently deceived in a matter so important as the reality of an external world. As though his belief in the existence of a supremely perfect being, whose idea he found in his own mind, were not itself an act of faith in the adequacy of that mind!

Moreover, for the serious pursuit of philosophy, we require faith that reality is somehow rational, purposeful, or friendly, so that if we understand it and put ourselves in accord with it, it will support our highest aspirations. We could not give life significance, coherence, and stability by seeing it whole, and in relation to a greater whole, if that greater whole which surrounds it were fundamentally hostile and consistently opposed everything we strive to become. At the same time, it is folly to deny that there is a vast amount of evil in the world, that on every side we are beset with difficulties and perils. To work our way, through the maze of contradictions, absurdities, and horrors that the world of daily experience presents, down to some solid foundation for our aspirations, is a long and arduous task, which one could hardly undertake unless he had faith, or at least a hope almost as strong as faith, that some fundamental order and purpose underlies the superficial dis-order and apparent randomness. Thus the philosopher needs a deep and abiding faith, not with reference to certain supposedly historical events, as is often the case with religious faith, but in things far more basic, the adequacy of human reason at its best to understand the world in which it finds itself, and that this world is neither hostile nor in-

different to our highest aspirations.

Double space

Finally, it seems necessary to say a word about philosophic systems. Today, when professional philosophers are largely engaged with problems of logic and the analysis of meaning, or in the criticism of science and its methods, it has become the custom to disparage the system as a ponderous monument to a thinker's conceit. But the old philosophers, for whom philosophy was a way of life and not just a means of earning a living, could hardly dispense with their system, or unified view of the nature of the world and man. When we try to give life significance, coherence, and stability by seeing it whole, and in relation to a larger whole, we shall get nowhere unless we have some conception of the larger whole. This larger whole, I take it, is more than the community in which we happen to dwell or even than humanity, which is neither self-created nor self-sustaining, but originated from something that was not human and depends on the surrounding world for its continued existence. The larger whole which is our frame of reference seems to be nothing less than the Cosmos itself, or all that vast portion of it which somehow affects us.

Accordingly, the great philosophies of antiquity, which offered comprehensive guidance to those who accepted them, found it indispensable to have a cosmology, or view of the Universe, and an ethic, or doctrine of conduct and values, which was closely related to the former. Philosophy has no more important task than to provide us with a satisfying ethic firmly set on a sound cosmology, and to achieve such a synthesis will be its highest glory. When one has a cosmology and an ethic, along with the intermediate

steps by which the second is derived from the first, and together they form a coherent, self-consistent body of thought, he has, in effect, a philosophic system. Indeed, practically every serious attempt, religious or philosophic, to give meaning and orientation to human life, with the exception of some forms of modern Humanism, has provided a similarly comprehensive frame of reference. One of the most familiar of these is found in the Bible, which, taking the Old and New Testaments together, furnishes an account of the origin of the world and of man, his fall, his nature, and his ultimate redemption. Philosophic systems, like those of Plato, Aristotle, the Stoics, Spinoza, or Spencer, cover very much the same ground, but by different methods.

To discard the system, then, seems tantamount to renouncing philosophy's historic endeavor to give life significance, coherence, and stability by seeing it whole, and in relation to a greater whole. On the other hand, to construct a system of Aristotelian or Spencerian proportions is a gigantic undertaking, which everyone will avoid if he can. The philosopher who cannot wholly accept some existing system might modify it to conform to his own peculiar interpretations of the Universe and of man, as has been repeatedly done, with great saving of effort. Or he might accept as his point of departure the contemporary scientific view of the Universe, in which case he will be obliged to add interpretations which the sciences cannot make without stepping beyond their self-imposed and, on the whole, salutary limitations. This is what I propose to do in the present essay.

CHAPTER II

OF WHAT WHOLE AM I A PART?

What is the greater whole in relation to which I must see my life, in order to give it significance, coherence, and stability? Certainly it is the whole of which I am a part; nothing is more important to any being than to have a correct understanding of its relation to the whole, or wholes, which include it. Thus, for the proper conduct of life, a man must understand his relation to his family, his community, his country, humanity, and that of which humanity is a part. It is the scope of this ~~greater~~ inclusive whole that we must now investigate.

Before proceeding in this difficult inquiry, it seems necessary to give some attention to the terms we shall need -- terms which denote comprehensive wholes. The most inclusive of these terms is "Being," which denotes that which is or exists. Every actual entity, no matter what or where it is, belongs to the category of Being. With this realm of Being our minds inevitably contrast Non-being, or that which is not. This is, of course, an abstraction which has no real existence; and, as Parmenides long ago recognized, there is nothing that we can affirm of Non-being, except to reiterate that it is not.

The next most comprehensive term is "universe," which includes everything that we know, viewed as forming a single whole or unified system. It is conceivable that Being includes more than one universe; if so, the others must be separated from ours by an absolute vacuum, so that we can know nothing of them; if they interacted with the Universe known to us, they would seem to be

part of it.

Because of the order which pervades it, our Universe is sometimes termed the "Cosmos," from the Greek word for order or harmony. The ancients, who admiringly applied this epithet to creation, conceived it far other than we do. For them, the earth was at its center, surrounded by concentric circles in which the moon, sun, and planets moved, while the fixed stars revolved all together in the outermost sphere, which swept around the earth once each day. Had the ancient philosophers been familiar with the picture of the Universe that modern astronomy provides, it is questionable whether they would have applied the term "Cosmos" to this stupendous vastness. Nevertheless, we still detect a certain orderliness in this collection of innumerable stars and galaxies, albeit not the same comforting tidiness that the ancients saw there. Hence the word "Cosmos" is still useful when we wish to emphasize the orderliness of creation, as the word "Universe" is useful when we think of it under the aspect of its oneness.

The word "nature" is applied to the Universe when we think of its multitudinous processes as following certain definite laws -- the "laws of nature" -- which of course are not laws in the sense of legislative enactments, but are merely statements of regularities that men have observed. We expect that unsupported heavy bodies will always fall with a definite velocity, merely because we have always found that near the earth's surface they do fall with a definite velocity. Some of these "laws" which nature obeys or, more properly, exemplifies, are well known, like that of gravitation; others are imperfectly known; and doubtless ~~there are~~ others ~~which~~ have quite escaped out attention.

Most useful because of the variety of its applications, but for that reason lacking in precision, is the term "world." Sometimes it is used as a synonym of universe; but at other times its meaning is far more restricted, as when we speak of "life on other worlds," although we obviously refer merely to other planets, within or beyond our solar system, but not outside our Universe. Almost any large, complex aggregate can be called a "world;" and often the word connotes something distracting and even debasing, as when it it is said "the world is too much with us." Thus we speak of the "natural world," in which the laws of nature prevail, when we wish to contrast it with a real or imaginary "supernatural world," where these regularities of procedure are in abeyance. If we admit that nature is not just a name for the Universe viewed as a vast system of orderly processes, that the natural world is not the only world but there is in addition a supernatural world, we must face a further question: Must we conceive of this super- or extra-natural realm of Being as included in our Universe or beyond it. Or is the natural Universe included in this other mode of Being? Some philosophers have taught that we should not conceive of God as in the world, but of the world as in God. This question will, I hope, become clearer as we proceed.

Were I a fairly simple entity, such as a stone or a drop of water, it might not be difficult to decide of what whole I am a part. But our inquiry is complicated by my great complexity. I consist of two parts or aspects which everyone recognizes, body and mind; and how these are related to each other is an unsolved -- profound thinkers have said an insoluble --problem. Hence it may

be that my body belongs to one system or world and my mind or spirit to another. This possibility requires the most careful study.

Let me begin by considering my body, or any human body. The examination of its bony frame, its limbs, its organs of sense, its internal structure, its functioning, its hairiness, the manner of its generation, leave no doubt that it is a fairly typical mammalian body. The mammals belong to the great phylum of vertebrates, which in turn are included in the animal kingdom, one of the two great divisions of living things. My body, like any other animal body, is composed of innumerable atoms, the most abundant of which are oxygen, carbon, hydrogen, nitrogen, calcium, phosphorus, potassium, sulphur, sodium, chlorine, magnesium, and iron, with traces of several other kinds. These elements are not only widely diffused in the earth's mineral crust, its oceans and, at least in the case of the lighter ones, its atmosphere, but spectrographic analysis has revealed their presence in distant stars. The uniqueness of my body consists, not in its chemical composition, but in the way its ultimate components are put together, the pattern they form. In the first place, the atoms of several sorts are conjoined in molecules, some of which have a structure not found in other animals. Even more obviously, the molecules, the cells composed of them, and the tissues in which the cells are grouped, form organs that differ in shape from the corresponding organs of other mammals. Hence, despite my basic resemblance to other men and even to other vertebrate animals, I am not quite like any other creature that I have ever seen. I am a unique being, but with close affinities to other beings.

Not only is my body composed of elements that are widespread in the Universe; the processes that go on in it are fundamentally the same as those which occur in other living beings; and these, in turn, appear to be complications of the basic chemical reactions of the inorganic world, including oxidation and reduction, polymerization and hydrolysis, condensation, and the like. The laws of the conservation of matter and energy seem to hold within my body, or any living body, no less than in purely physical systems. As to my body, there can hardly be any doubt as to the whole of which it is a part. It belongs, along with suns and planets and stones and clouds and winds, to the natural world, to the Universe considered as a system of orderly processes that have already, in large measure, been formulated by the sciences. This is now so generally recognized, its demonstration is to be found in so many learned works, that perhaps I have already overlabored the point.

Not only am I a body, I am also a mind. Indeed, this is the part which I consider most peculiarly myself; my body seems to have significance only to the extent that it ministers to my mind. By "my mind," I understand my conscious self; it includes all those states of consciousness, linked together in a peculiarly intimate way, of which I can say "It is I who think this" or "I feel this." In so far as it is winged and aspiring, a mind is well called a "spirit." The word "soul," however, has been used for such diverse concepts, and is so entangled in difficult metaphysical questions, that it is safest to avoid it, except in poetry.

One most significant difference between body and mind becomes evident as soon as we begin to pay attention to the problem. My body, as we have seen, is composed of elements whose presence in

distant stars has been scientifically demonstrated. But not only is science unable to demonstrate the presence of mind or consciousness beyond this planet; it cannot prove its existence anywhere; for our senses, with or without instruments, cannot detect consciousness, and science relies wholly on the senses for its data. Were I to refuse to recognize the presence of consciousness until it has been scientifically demonstrated, I should have to conclude that I am the only sentient being in the Universe, the single mind that surveys all this vast drama of heaven and earth, generation, growth, and decay, hence the one being that imparts significance to the Universe. When I concede that there are other minds beside my own, I do so by inference, analogy, and sympathy, not because anybody has ever supplied a faultless demonstration of the existence of consciousness beyond myself.

But whether, in a cautious mood, I refuse to admit that mind is present anywhere except in myself, where I am immediately aware of it, and perhaps in other living things that closely resemble me; or whether, like many thinkers, I postulate the diffusion of consciousness throughout the Universe, I am unable to explain how it is related to body. That mind and body are somehow related, I cannot doubt; hourly I find that my thoughts, especially those thoughts called volitions, control the movements of my limbs, and conversely that alterations in the state of my body, as by the application of cold or heat or the prick of a thorn, produce diverse sensations in my mind. But as to how this interaction occurs, introspection affords not the slightest clue; and

scientific investigations throw ~~no~~ little light on the subject, as is to be expected from the fact that consciousness escapes detection by its most cunningly devised apparatus.

Without knowing how my mind is related to my body, how consciousness is related to matter, I cannot be sure to what whole I belong. May it not be, as many have supposed, that I am composed of two contrasting parts, which have distinct origins and destinies; that my spirit came as a stranger to this natural world, abides here for a while in a perishable organic body, but will finally return to that far region whence it came, enriched or chastened by its experiences in the material realm? In this case, the greater whole to which I must look to give my life significance, coherence, and stability is that to which the more enduring part of myself belongs. Doubtless, for the successful conduct of life in the natural world, I must also give some attention to the material realm; but if ever the interests of body and mind are in opposition, it is clearly with reference to the whole to which my mind belongs that I must orient myself.

Is there no way out of this difficulty, which confronts me at an early stage in my endeavor to give my life significance, coherence, and stability by seeing it in relation to the greater whole of which I am a part? I confess my inability to decide whether my spirit and body are parts of the same whole or of different wholes. But suppose that instead of continuing to try, as so many have tried in vain, to trace my mind to its source, I single out one of its most significant attributes, and attempt to relate this to its source. Whence come my ideals and aspirations, my steady and frequently intense yearning to transcend

the limitations of my present state, to grow in insight and sympathy and achieve a fuller, more harmonious life, not only for myself but for all beings? This I take to be the highest and most intimate part of myself, that which raises me somewhat above the lower levels of creation. Certain of the manifestations of consciousness, especially sensations and appetites, may be, as some contend, no more than modes of reaction developed by animals because they promote survival in a dangerous world; but my ideals and aspirations can hardly be accounted for in this ready fashion. I must look, for the orientation and significance of my life, to whatever is the source of these, my highest attributes. Whence come my purposes, especially my moral purposes? How did these arise in a Universe which many declare to be purposeless? To this question we must now address ourselves.

CHAPTER III

THE GENEALOGY OF PURPOSE

Nothing is more important to me than to know the source of my ideals and aspirations, which are the revelation of my true and inmost self. They give direction to my life; and I shall orient it more securely, if I can discover whence they have sprung.

Before we undertake to answer this question, we must try to trace the development of purpose in general; for our moral purposes, our ideals and aspirations, are particular examples of this inclusive class. By a purpose we mean, in the strictest sense, a foreseen end, which we undertake to achieve by the development of appropriate means. A purpose, like a wish and a hope, contemplates a future situation which appeals to us or appears desirable; it differs from a wish or a hope in that it includes a plan for the realization of the coveted situation. Hence a purpose is a stronger or more developed wish, which does not passively await the desired event but prepares the ground for it.

To entertain purposes of any sort, however selfish or vile they may be, is by many held to be the peculiar prerogative of man, which sets him sharply apart from the purposeless world in which he lives. Among those who hold this view are not only theists who trace humanity to a divine source, but likewise materialists who claim that it is only a higher product of organic evolution. If the latter are correct, and our purposes are chance developments in a Universe devoid of purpose, without antecedents or connections in the larger environing world, we shall hardly succeed in orienting our lives by anything greater or more en-

during than humanity. Hence we urgently need to know whether our purposes can be traced to anything beyond ourselves.

Purpose is the offspring of desire or appetite. To have an appetite develop into a purpose is so common an experience that it hardly seems necessary to give examples. The desire or need first gives rise to a mental image, as of a meal when one is hungry, of a fire or a shelter when one is cold, of a companion when one is lonely. Next we proceed to plan a course for the realization of the objective which we visualize, and we then have a developed purpose. At times, however, the purpose seems to be otherwise engendered: an image, evoked by the association of ideas or the free play of the imagination, or else the actual sight of an object, arouses desire, of which we were not previously conscious. But in these instances the appetite, or at least the predisposition to it, is nearly always latent within us, hovering just below the threshold of consciousness and needing only a slight stimulus to bring it forth. Although we cannot be quite certain that non-human creatures visualize ends and plan means for their attainment, we can hardly doubt that they are often moved by a strong appetite; and it is probable that at least the more intelligent of the animals foresee that which will satisfy this appetite, and even the course which will lead to it.

Consciousness does not create desire so much as discover or become aware of it. This is obviously true of all physical appetites, such as hunger, thirst, craving for warmth or repose, which can always be traced to a definite physiological condition. It is less obvious when we desire mental rather than bodily

satisfactions, as when we thirst for knowledge, hunger for beauty, long for friendship, or desire to perfect ourselves; yet these yearnings, too, seem to arise from the dark depths of our being, to become conscious aspirations. Purpose is the child of desire; and desire springs from deep, subconscious, vital urges. It is, as will become evident in due course, the offspring of growth, of the organism's constitutive tendency to complete, perfect, and preserve itself.

We have now traced purpose, through appetite or desire, down into the subconscious depths of our being. It is a manifestation, at the highest level of consciousness, of that great creative movement which we call life. In growing, in developing organs necessary for their preservation, in seeking the conditions favorable to themselves, all living things act in ways that seem to be purposeful; and the uncritical spontaneously ascribe purposes to animals of all sorts, and even to plants. But whence arose life? Although this is a problem which has given rise to endless speculation, the most probable view is that life is an outgrowth of that striving toward organization which, as we shall see, is a fundamental attribute of Being. Growth and organic strivings of every sort are transmitted to living things by the substance of which they are made. The striving of one ultimate particle to unite with another first produces atoms of the compound sort contemplated by modern physics, then molecules and crystals, and, finally, organic compounds and the creatures which they compose. It is the source of all the order and beauty which the Universe exhibits, as likewise of all our desires and purposes. This striving for union by the particles of substance takes the form of gravitation,

electrical and magnetic attractions, chemical "affinity." The diversity of these physical phenomena makes it evident that we have not yet reached the very fountainhead and primary source of purpose, which must be sought in Primal Being.

To retrace our steps in ascending course, we have found that this is the genealogy of purpose: (1) The striving toward organization inherent in Being, which gives rise to (2) all the attractions among the particles of matter, including electrical and magnetic attractions and gravitation, which are the most primitive forms in which the creative energy manifests itself to us. (3) The formative forces responsible for the growth and differentiation of living things. (4) Organic strains and propensions. (5) Appetites and desires. (6) Developed purposes, which consist of a mental representation of a desired object or situation along with some consideration of the means for realizing it.

At stages 5 and 6 of the foregoing sequence, consciousness is present; but we lack proof of its existence at the earlier levels. Our highest purposes and aspirations are the final stage of a long developmental sequence, without which they could never have arisen. Since there is continuity between our purposes and the strivings toward organization in Primal Being, the whole sequence is in a sense purposive. To suppose that purpose entered the world when first a man said to himself or his companion "I shall do thus and so" is like supposing an architect to discover that he intends to build a house after it is half finished, or a traveller to become aware of his destination after he has made the greater part of a long and difficult journey. Until a vast amount of purposive development had been accomplished in

the Cosmos, no man could say "I shall do thus and so."

In recognizing that purpose pervades the world process from beginning to end, we must also bear in mind that each constituent or aspect of the Universe is in each part thereof according to the mode or type of organization of that part. Matter exists in one mode in minerals, in another mode in liquids, in another mode in gases, in yet another mode in living organisms. Similarly, purpose is present in one mode in an intelligent being able to plan his future, in another mode in the lower animals, in a different mode in plants, and in yet another mode in inorganic substances; yet each mode passes gradually into that which succeeds it in the developmental sequence. As there is continuity between the infant's close attention to a bright moving object, the child's curiosity which prompts him to take apart a toy which he cannot put together again, the youth's eager but uncritical absorption of information, and the careful investigations of the scientist or philosopher; so there is continuity between the striving toward organization of Primal Being and our highest aspirations.

The view that human purposes have arisen in a Cosmos devoid of purpose is plausible only when purpose is narrowly defined as foreseeing a desired end together with some consideration of the means for its attainment. But this narrow concept of purpose tends to isolate our purposes from their vital and cosmic antecedents in a manner that we have found unsatisfactory. The inadequacy of this narrow concept also becomes glaringly evident

when we examine our own purposeful activity, not against its cosmic background, but in the context of our daily lives. Here it immediately becomes obvious that our pursuit of foreseen goals, and indeed all our consciously directed activities, do not form a coherent, self-sustaining whole, but are at every point dependent for their continuance upon vital processes that are not subject to our conscious control.

Whether we consider our most elementary activities or the most intellectual and spiritual of our pursuits, the same truth becomes evident. As an example of the former, we may take our effort to nourish ourselves. The activities whereby the farmer or horticulturist produces food, including the preparation of the soil, sowing, tilling, harvesting, storing, and the like are purposeful in the narrow sense, for at every stage the farmer chooses his procedures with reference to a foreseen end. Likewise, the preparation of food for the table, and the eating of it, are activities subject to our volition; although much of the time we perform them mechanically, while our thoughts are otherwise engaged. But after our food has been swallowed, complicated vital processes, which few of us understand and none of us can control, are necessary to make it available to the cells of our body, so that it may support life and yield energy for all our activities. Without the closest cooperation between our consciously directed efforts and processes of which we are largely unaware, our most strenuous efforts to nourish ourselves would be unavailing.

Likewise when we pursue knowledge, or create beauty, or strive for moral improvement, we would accomplish nothing if our high endeavors were not continuously supported by vital processes not

subject to our conscious control, such as the beating of our hearts, the circulation of our blood, and all the complicated business of metabolism, secretion, and the like. Moreover, the attainment of our objectives depends in large measure on a class of activities which are sometimes subject to conscious direction and at other times go on without such direction. I refer to all our acquired habits and skills, which as a rule we develop painfully, giving the closest attention to every movement that we make, but which when perfected are often carried on automatically, while our minds are otherwise occupied. If a purposeful activity is one which involves constant attention to an end and the means by which it is attained, then the beginner's efforts to play a musical instrument, to use the typewriter or almost any kind of tool, are highly purposeful; whereas the expert's activities in these fields, frequently carried on while his thoughts are occupied by far different matters, are not purposeful.

Yet it seems absurd to declare that our purposes vanish in the measure that they can be speedily and effortlessly fulfilled. We escape this embarrassment when we recognize that, when we live most successfully, all our activities, those which we consciously direct and those which we do not, form a single coherent pattern or mosaic. Among the latter we include not only vital processes that were never subject to our volition, but likewise all those operations which we have deliberately trained ourselves to do so well that they have become almost automatic. It is permissible, and at times useful, to analyze our activities into those which are purposeful, in the sense that they are consciously directed toward foreseen ends, and those which go forward without our

volition. But if, by exaggerating the depth of this rather superficial distinction, ~~volition. But if, in this~~ manner we isolate our purposes from their vital context, we find them ineffectual; they cannot be sustained; they are no longer capable of accomplishing anything. Only as integral parts of that hive of purposive activity which each of us is are our conscious purposes effectual. And we in turn are drops in that ocean of purpose which we call life.

If, further, we ask why certain of our activities are subject to conscious direction and others are not, the answer is not hard to find. Life has never entrusted to wavering consciousness the direction of vital processes which must be carried on unremittingly and with great precision, as the circulation of the blood, the regulation of the body's temperature, respiration at the molecular level, metabolism, and the restitution of spent tissues. Where a certain degree of latitude in the performance of a vital activity is permissible, as in breathing, which may with beneficial results be suspended briefly while one is under water or exposed to noxious fumes, the activity is subject to voluntary control, although most of the time it is carried on automatically. Where a wide range of choice is permissible, where the activity can be suspended for a long while or even totally omitted without fatal consequences, it is usually completely subject to our will and shaped by our conscious purposes. Here are included the choice of our foods and the hours at which we eat them, the selection of our garments and dwellings, the election of a vocation, the choice of our intellectual and esthetic pursuits, and the formation of our ideals. In the evolution of life, conscious direction and purpose have arisen chiefly at those points where flexibility is an advantage and since delays and failure to

act appear to be inseparable from the power to choose—omission is not usually fatal. The activities which fulfill life are far more subject to choice than those which preserve it. Yet, unless life is preserved, it can never be fulfilled.

A purposeful being, with ideals and aspirations, could not in a purposeless world find the orientation which he needs to give his life significance, coherence, and stability. But it has become evident that those who declare that our Universe is devoid of purpose have defined purpose too narrowly. They view their conscious purposes in a manner ~~which~~ that severs them sharply from their vital and cosmic contexts; yet purposes so isolated could achieve nothing. When we traced in broad outlines the genealogy of our purposes, we found that they spring from the subconscious depth of our being, and thence we followed them back into the non-living world whence life arose. We did this only hastily, in a preliminary attempt to discover the whole of which we are parts, so that we might orient our lives by it. Since we found evidence of continuity between our purposes and the cosmic movement which created us, it seems worth our while to push our inquiries diligently in the same direction, trying to follow in greater detail the steps by which the strivings of Primal Being developed into our highest aspirations. One who takes life seriously will pursue this course with some confidence, for the serious man finds it difficult to believe that the Universe is only a colossal joke.

CHAPTER IV

BEING'S STRIVING FOR SELF-REALIZATION

Imagine, if you can, a Universe wholly devoid of consciousness. It is spread over a vast extent of space, through which countless suns are scattered, many of them with attendant planets. The surfaces of some of these planets are diversified by seas, continents, and mountain ranges; they are surrounded by an atmosphere, in which float clouds that are tinted with the colors of sunrise and sunset. They may support vegetation in all its myriad forms, if we concede that vegetable life is devoid of sentience, and even animals, if for the argument's sake we accept the Cartesian contention that they are unfeeling automata. But in this Universe that we imagine, there is no one to respond to the beauty of mountain, sea, and cloud, no one to admire the graceful forms of plants. No creature ever feels the joy of living, or even knows that it lives. This Universe certainly exists, although it exists unperceived. Yet it seems to represent Being near its lowest level, Being which has not yet discovered itself, Being devoid of value. It is indifferent to this Universe and to everything in it whether it continues to exist or is suddenly annihilated.

Next, let us try to imagine a world inhabited by self-conscious creatures whose minds are capable of knowing but not of feeling. These creatures are aware that they exist in the midst of varied objects, whose outlines they can trace and whose relations they can analyze. But nowhere do they detect beauty; they find nothing to admire or to love; they feel neither joy nor sorrow; although they know, they find no delight in knowing. They live in a world

devoid of value. If these apathetic creatures were told that tomorrow they and their world would dissolve into nothingness, they would receive this information without a quiver of emotion. Having nothing to live for, they do not care whether they exist or cease to exist. In this world, as in the first, Being appears to be near its lowest level.

From these two imaginary examples, it appears that Being without consciousness and value is meaningless, a barren waste. If, from the point of view of existence, such Being stands at the opposite pole from Non-being, from the point of view of value it is indistinguishable from Non-being. Being devoid of value is bare Being, not full Being. It is Being at, or not far above, the most primitive state.

But Being does not consent to remain in this rudimentary state. It everywhere strives to become full Being through the realization of the values potentially present within it. No fact about Being is more certain than this: whether we look around us or within ourselves, the same truth is evident. The course of cosmic evolution becomes intelligible when we intrepret it as Being's effort to fulfill itself by the realization of the value that it potentially contains. We incessantly yearn to fulfill our lives through the realization of ever higher values; and we are parts of Being, significant samples of the whole.

Just as we cannot explain why anything exists, why there is Being rather than only Non-being, so we cannot explain why Being strives to fulfill itself by the realization of the values latent in it. We must regard this an an original property of Being, mysterious, as Being itself is mysterious. We must accept

this fact without explanation, but we shall find that it affords an explanation for much that is otherwise inexplicable.

Thus we find purpose at the very beginning of things, in Primal Being. But in an evolving Universe everything evolves, including the very impulses and processes which cause this evolution. Purpose in its most primitive form, as it occurred in Primal Being, was very different from purpose in its advanced form, as we find it in ourselves; although, as we have seen, a continuous development leads from the first to the second. Perhaps the most unobjectionable term to apply to this primordial germ of purpose is "striving."

The primal striving was not toward any definite, foreseen goal. Minds which can foresee, ideals which attract them, are slowly developed through its action, then direct its further action. In the beginning, the cosmic striving was blind, like that of a germinating seed forcing its way up through the dark loam into the light. We may conceive it as the dim dissatisfaction of Primal Being with the limitations of its valueless state, a vague apprehension that it contained unrealized potentialities; but these are hardly more than figures of speech. This striving was at first an exploratory approach toward whatever values might lie concealed within Being, not a straightforward advance to a foreseen end.

Teleology, the view that the Universe is inspired by a purpose, that nature works to achieve definite ends, was widely held by Classical thinkers, but has fallen into discredit in modern times. Our present view is a return to the ancient insight, but with an important difference. The word "teleology," from the Greek

teleos, end, and logos, speech or reason, suggests a developed purpose, a subject of discourse which is pursued intelligently. A Universe governed by a purpose of this sort should proceed straight to its goals, with no fumbling and blundering, no miscarriages, no vast and time-consuming advances in unprofitable directions, which must be slowly and painfully corrected. As the ancient supporters of teleology maintained, nature's means should be perfectly adjusted to her ends, everything she contains should contribute to the welfare of the whole, no smallest part should be useless or evil. Our actual world is far different from this, for reasons ~~which~~ that will become apparent as we proceed. Hence I propose to use the word telergy, the working toward ends that only slowly become clear and definite as the world process goes forward, instead of teleology, which implies that from the beginning nature was directed toward foreseen goals. It is not to reach some foreseen end, but to realize the highest values that it can in time bring forth, whatever they may turn out to be, that Being strives and labors. In this particular, our present teleology differs from Classical teleology.

As I view it, telergy or striving, the urge to realize its own potentialities, is the most fundamental attribute of Being. Older than matter and consciousness, it slowly brought them forth from Primal Being or the Cosmic Ground, which is neither material nor mental, but the undifferentiated substratum, the Primal Stuff, whence both of these modes of Being arose. The matter that the chemist studies, that we see and feel and taste, has, in the modern view, even at the atomic level a complex structure and accordingly represents a somewhat advanced stage

in the creative process, an outcome of telergy and not its source.

Mind or consciousness, too, seems to represent an advanced state of Being, not its primal form. Although many thinkers, especially in India but not a few in the West, have imagined that mind or spirit is the ground of all things, the objections to this view, which is known as Idealism or Mentalism, are many and grave. One of the weightiest of these objections is that it ascribes to the supposed Cosmic Mind a power absent from the only minds that we directly know -- our own. On the Idealist or Mentalist view, as in the philosophy of Berkeley, God or the Cosmic Mind projects its ideas in such a fashion that they appear to lesser minds, like ours, as bodies extended in space and endowed with all the properties that our senses or the physicist's instruments reveal in them. There is no evidence that our minds can produce this effect on the minds of our companions. To attribute to a supposed Universal Mind a power not evident in the only minds that we know somewhat intimately, is surely a rash procedure. Something which differs so fundamentally from our minds ought to be called by another name. Nor have we the slightest evidence that the ground of all things is conscious.

On the other hand, if we conclude that sentience is restricted to living things, or the more highly organized of them, we confront a grave difficulty of interpretation. Being strives to realize the value potentially present within it. But without consciousness there is no value. If sentience is a relatively recent development in the Universe, it follows that Being strove

for long ages before its efforts began to bear fruit. But, in our experience, the capacity to work toward distant goals is confined to a rather high type of mind; whereas creatures with simpler minds exert themselves only for more immediate satisfactions. An intelligent man, for example, may labor for an end which he knows that he cannot realize for years; children and animals work only for rewards that are more quickly obtained. Yet if we assume that values are realized only by animals or perhaps only the most advanced of them, we must also suppose that the lower the grade of organization of the developing Universe, the more distant were the objectives toward which it moved. At the beginning, when its organization was least, it strove toward the most distant goals.

This difficulty diminishes in the measure that we attribute feeling to simpler modes of Being; it becomes slight if we adopt the ancient view that all matter is animated. Hylozoism differs from Mentalism, which we have already found reason to reject, in that it asserts that matter, even in its most elementary forms, has life or sentience, not that consciousness or mind is the primal form of Being, whence all things have sprung. In its more developed form, as in the philosophies of Spinoza and Whitehead, this doctrine holds that every portion of substance has two attributes, material and mental, or that every event has both a physical and a mental pole. A corollary of this is that there is no consciousness without matter and no matter apart from consciousness.

A powerful reason for attributing sentience to inorganic

matter is that it affords at least a proximate explanation of the origin of minds. If a fragment of mineral or lump of earth were wholly devoid of gravitation, how could a planet, which is an aggregation of such materials, exert a gravitational pull? If a single drop of water lacked the properties that we associate with liquids, how could an ocean, which is merely an accumulation of drops, manifest such properties? Similarly, if atoms and molecules are devoid of sentience, how can a human brain, composed of many millions of such particles, develop consciousness?

But the attempt to account for the sentience of animals by tracing it back to their constituent parts is not without pitfalls. If each atom, or molecule, or cell of a human body is itself conscious, then a man's consciousness would appear to be compounded of many lesser consciousnesses, just as his body is compounded of cells, and these in turn of molecules and atoms. My consciousness would, on this view, appear to be a mosaic composed of innumerable little sentient entities; how could it then possess that unity which it obviously has, and on which psychologists like William James have so strongly insisted?

Must I then suppose that the consciousness which I call my mind is superadded to the consciousness that belongs to the components of my body, or of my brain alone? Does each atom retain its individual sentience while forming part of a molecule that is likewise conscious as a whole? Does each cell possess a unitary consciousness in addition to that of the molecules included in it? And does the same apply to tissues and organs in relation to the cells which compose them? If this be true, what a compli-

cated association of conscious entities I must be! And if it is not true, if each of the atoms, molecules, and cells in me relinquishes its own sentience in favor of that larger, unitary consciousness which I immediately experience, what happens to the hypothesis that every part of matter is itself sentient?

These difficulties seem to be overcome when we view consciousness, not as an inherent property of matter, but as a field associated with it. As a working hypothesis, I believe that we can profitably think of sentience on the analogy of a gravitational or a magnetic field. A gravitational field accompanies a planet or any smaller mass, but is not confined to it; a magnetic field surrounds and permeates a magnet, yet is distinct from it. When we stack a number of magnetized bars of iron, all with the same orientation, each retains its separate existence, but they create a unitary field with continuous lines of force. The pile of magnets is a compound structure; the magnetic field is a continuum rather than an aggregate. Similarly, in a living brain, the sentience of the constituent atoms or molecules may fuse into a unitary field. The reason why a brain produces more consciousness than a stone composed of an equal number of atoms may be that in the former the atoms are so arranged as to reinforce each other's sentience, while in the rock they are not so arranged. The difference is comparable to what we should find if we threw a number of small magnetized bars together at random, instead of arranging them with their axes parallel and corresponding poles all in the same direction.

The hypothesis that sentience is associated with matter some-

what as a gravitational or magnetic field is related to it, leaves open the question whether a body and its associated consciousness may not, in certain circumstances, separate and go different ways. Some fields, such as a gravitational field, seem to be inseparably attached to the mass which they surround, unable to persist in its absence. But light and other electromagnetic waves may be viewed as fields which radiate out from bodies and may continue to travel through space after the dissolution of the incandescent mass or the electric machine which produced them. Mind may well be related to body somewhat in this fashion. The problem is obscure and difficult, but this appears to be a profitable approach to its solution.

We have, then, two reasons for preferring the view that sentience is widely diffused in the Universe, rather than restricted to animals or even to living things. It helps to account for the origin of minds, and it makes the persistence of the cosmic striving to realize value more understandable; for on this view values, of at least a rudimentary sort, could emerge aeons before organic life became possible, and this success would stimulate further effort. Without sentience, there can be no value; but wherever sentience occurs, some value is conceivable.

To be sure, we cannot demonstrate, in an unexceptionable manner, that sentience occurs in the absence of organic life. Indeed, none of us can prove that consciousness exists apart from his individual self, where he is immediately aware of it. When any of us places any being beside himself within the circle that separates sentient from insentient existence, he does so

on the strength of inference and analogy, not upon demonstrative proof. When he begins to expand this circle and admit a greater variety of beings into it, it is difficult to know where to stop. He must be guided by probability, not by certainty. And it is probable that sentience is far more widely diffused than materialistic science will concede.

The chief reason for the refusal to accept the view that sentience is associated with the more elementary constituents of the Universe is simply the fact that we have no direct awareness of its presence there. But we lack direct awareness of many things that have long been present in the world, existing unsuspected until they were postulated from theoretical considerations, to be later demonstrated by means of apparatus which transmuted them into a form accessible to our senses. Thus the longer electromagnetic waves were reaching the earth from the sun and stars long before Clerk Maxwell was born, but they did not become familiar to us until the invention of the radio and television, which, by converting their pulsations into sounds and light waves, convince everyone of their reality. Similarly, photography demonstrates the existence of single atoms and their constituent particles, which our unaided senses fail to perceive. Since we still have no apparatus to reveal the consciousness of our fellow men, the absence of instrumental demonstration of sentience in the lower animals, in plants, and in inorganic bodies signifies nothing.

Perhaps we lack direct awareness of any consciousness except

our own because such awareness would be detrimental to us. Physiological insulation is a primary requisite of living things; and the more efficient this insulation becomes, the more an organism is master of its destiny. Increased insulation has been called the most important of evolutionary advances. Unicellular organisms, such as the protozoa, achieve partial insulation from the water in which they live by enclosing their protoplasm in a semipermeable membrane, which regulates the passage of solutes into and out of their minute bodies. Larger organisms are covered with a waxy epidermis in the case of plants, with skin in the case of animals, and in either case, this integument retards the loss of water and essential salts, at the same time that it guards against the entry of harmful substances. When an animal's skin is covered with fur or feathers, as in birds and mammals, thermal insulation is added to the chemical insulation which all organisms possess. As a consequence, these vertebrates can maintain a high body temperature and live actively in air so cold that less thoroughly insulated creatures become dormant or succumb.

May not psychic insulation confer an advantage in the struggle for existence hardly less valuable than that given by physiological insulation? For all we know, the sentience of the various entities of the non-living world, of atoms, molecules, and the like, fuses and blends as readily as these bodies themselves mix and unite. This may be no disadvantage, so long as there is no problem of preserving the integrity of a complex, unstable structure, whose prosperity depends on receiving certain substances from the environment and avoiding others. Indeed,

it is not impossible that direct ~~direct~~ awareness of the psychic states of neighboring beings adds immensely to the joy of existence in the inorganic realm.

When organisms develop minds whose primary function is to guide them through the complexities of the surrounding world, perception of the feelings of other beings might prove inconvenient. The complacency of a herbivorous animal might be destroyed by sensitivity to the myriad tiny pangs of the vegetable cells that it ruptures and grinds. A predatory animal might be inhibited from striking down and tearing apart the victim whose terror and pain were immediately communicated to it with the strength of a sensuous impression. Children who, as it is, have much difficulty in concentrating on their lessons, might be unable to learn anything if their little minds were invaded by the wandering thoughts of all their classmates. Could one read a book in a public library if the cogitations of neighboring readers crowded in on him? Although, at every level of psychic life, feeling might, in many instances, be enhanced by direct participation in the mental states of other beings, this would often prevent the concentration of attention that is indispensable for many practical activities no less than for reasoning. For conceptual thought, it would be disastrous. Often, while concentrating on a difficult subject, we wish for more complete insulation from the surrounding world than nature and art have given us.

It is evident that, even if all the living and lifeless things that surround us are sentient, our minds must, for their adequate functioning, be shielded much of the time from this encompassing

sentience. Since psychic insulation seems necessary for the prosperity of animals, evolution by means of variation and natural selection should promote it, just as it has favored physiological insulation. Accordingly, it is not unlikely that, as animals developed better minds, they simultaneously developed more efficient means to screen their consciousness from the impact of the feelings and thoughts of other beings, whether lifeless bodies or other individuals of their own kind. That something of this sort exists becomes more probable when we reflect that we are equipped with means for excluding memories from consciousness. To have all our recollections rush upon us simultaneously would be no less disastrous to concentrated thought than to be aware of what is happening in the minds of all the people around us in a crowded room. Bergson believed that a function of the brain is to shield the mind from memories unrelated to its present train of thought. That the method whereby our consciousness is screened from inappropriate and distracting memories is not perfectly efficient, we all know. Similarly, telepathy or extra-sensory perception may result from the occasional or partial breakdown of whatever arrangement insulates our consciousness from that of other beings.

Double space

Our habitual failure to become directly aware of consciousness anywhere in the world beyond our individual selves will surprise nobody who reflects on the general trend of our perceptions. In perceiving an object, we add qualities that it lacks while we omit others that it has. We add all those qualities generally called

secondary, including color, taste, scent, and sound. Color, for example, is created by our sensory apparatus and minds from the intrinsically colorless luminous vibrations which impinge upon our retina; it exists in the percipient mind rather than in the external world, as is also true of taste and scent. When we perceive an object, we add qualities which make it more valuable to ourselves, by increasing its beauty (as in the case of color) or otherwise enhancing our enjoyment of it (as in the taste of food). But we overlook, and mostly remain oblivious of, whatever could make the object of perception valuable to itself. Without sentience, there is no value; yet sentience is never revealed by sensory perception, and ~~doubtfully~~ at best dimly so by extra-sensory perception.

If we stick stubbornly to the data of perception and refuse to draw inferences, each of us must believe that all the value in the Universe is experienced by his individual self. Color and taste, which so greatly increase our pleasure, contribute little or nothing to an object's enjoyment of itself; for things do not taste themselves, and only people with mirrors see themselves somewhat adequately. Our perceptions are not impartial witnesses of reality but are strongly prejudiced in our own favor. Our sensory apparatus evolved to promote our survival and enhance our enjoyment of life rather than to reveal to us the intimate nature of things. This course of development has given us much to be thankful for, but it has deprived us of much that would be precious to the enquiring mind.

To reflect on these facts makes it seem probable that, as

animals evolved and their psychic life became richer, they lost contact with the psychic aspect of the non-living world. The attractions and repulsions among the primary entities of the Universe, such as electrons, protons, and atoms, may be psychic at least as much as they are physical. It is not unlikely that the psychic pole takes the initiative, as when we ourselves act in response to a desire. The particles may approach each other for the enhanced feeling ~~which~~ that results from their union, which might be viewed as a psychic or spiritual union, as when we commune with a friend. Since the gleam of sentience in a proton or an atom may be slight, we might distinguish it as a micropsychic union. Although these entities may well seek each other for spiritual ends, animals desire lifeless things for other purposes. Overlooking sparks of sentience imperceptible by their own more massive consciousness, they appropriate substances such as air, water, and food, not for any psychic qualities which they might have, but because they are needed to build up and preserve the elaborate material foundation of animal life. This need for a wide variety of things regarded as merely material is greatest in man. We might say that the spiritualization of the living world has led to the materialization of the non-living world. This unfortunate development does not stop here, for the more highly evolved members of the living community materialize for their own ends the less highly evolved members, as when we treat a plant or an animal as merely a source of food or of something else that we need. The inorganic world, and far less the non-

human portion of the living world, is doubtless not wholly material or lacking in spirituality, but we commonly regard and use them as such for our own purposes.

If we accept, provisionally, the view that sentience pervades the Universe, it seems necessary to revise our estimate of the ratio of its pleasures to its pains. Without being so pessimistic as to affirm that the suffering of mankind exceeds its enjoyment, we can hardly deny that the former approaches the latter in magnitude. Doubtless the same is true throughout the animal kingdom, and possibly even among plants, many of which slowly succumb to cold or desiccation, while scarcely any wholly escape the attacks of insects and other animals. But the micropsychic world of protons, electrons, atoms, and molecules may be a realm of pleasures with scarcely any pains. The marriage of two of these minute particles may bring a glint of joy; and their continued union, however prolonged, may be satisfying to them. But it does not follow from this that their separation, as when a compound breaks down into its elements or a radioactive atom disintegrates, is painful; for we ourselves are pleased to meet friends and acquaintances, yet separation rarely brings a corresponding sorrow, unless it be the permanent separation of death. Quite the contrary, when we have said what we have to say, we are often slightly relieved by the friend's departure. But the ultimate elements of things are imperishable, or nearly so. Their separations are rarely final. Their existence appears to be an aeonian dance, in which the same partner may be held for a fraction of a second or a million centuries, but in which

separations are followed by new unions, each of which may be a joyous occasion. And the multiplication, a million million fold, of even the tiniest glint of satisfaction may give a sum of joy that we cannot conceive.

As atoms and molecules combined in increasingly complex patterns they finally generated new mode of consciousness, associated with organic wholes rather than with minute particles. This macro-psychic life was without precedent in the Universe: it was, apparently, far more intense than the micropsychic life upon which it supervened; it was capable of more varied modes, including perception and conceptual thought no less than feeling; and since it was associated with an unstable, vulnerable organism, it was highly susceptible to pain and sorrow, as primitive sentience seems not to be. Thus Being, in its incessant striving for joy and value, finally evolved a mode of sentience which brought suffering and disvalue into the Universe. But, simultaneously, it began to develop the intelligence which might diminish strife and pain.

Although to some readers the question of the occurrence of sentience at any point in the Universe except where they are immediately aware of it - in themselves - may seem to be fraught with such difficulties and uncertainties that it is best avoiddd, I believe it incumbent on us to approach it from every possible angle, for philosophy has no more pressing problem. It is of fundamental importance to ontology, to cosmology, and to ethics.

To ethics, because the rational, benevolent man wishes to know the effects of all his deeds, and he can hardly assess them unless he knows whether the beings they affect are sentient or devoid of feeling. To ontology, because any thorough consideration of Being must ask to what extent it has mental or psychic qualities. To cosmology, in which connection we are at present discussing it, because it is highly pertinent to the question of cosmic purpose.

When we try to explain the evolution of the Universe, two alternatives are open to us: Either it is fortuitous, as in the atomism of Democritus and Epicurus, or it is the working out of a purpose. If we reject the first alternative, as inadequate to explain the emergence of the higher modes of Being and the origin of consciousness, and accept the second, we are confronted by two further alternatives: Either the world process is directed by an Intelligence that stands above or beyond it, as on the theistic view, or its purpose is immanent. The vast amount of evil and suffering in the world, the many miscarriages of organic evolution, weigh strongly against the supposition that the world is governed by an intelligent, powerful, benevolent being. ~~(a matter to which we shall return in Chapter X)~~. This leaves the doctrine of immanent purpose as the only one acceptable by those who reject both the extreme view of materialism and the extreme view of theism.

Although it is easy to speak of an immanent purpose, it is most difficult to conceive how such a purpose exists. Like other thinkers, I wrestled long and earnestly with this problem, but my ideas remained vague until I adopted the ancient

and widely held doctrine that the inorganic no less than the living world is sentient. For many years I resisted this hypothesis, not because there is a whit of evidence against it, but simply because there is no observational evidence to support it. However, when I began to take into account all the reasons why the sentience of lifeless things would, even if present, elude observation, the negative evidence weighed less and less with me. And as the negative verdict of science lost its cogency, the philosophical reasons for accepting the affirmative view grew ever stronger. When I postulated a widely diffused sentience, problems on which my notions had been cloudy became clearer. The world process became more understandable as I began to conceive how purpose could pervade the world. Many of science's greatest triumphs are fruits of the theory that all material things are composed of extremely small particles with definite properties, which combine and recombine in predictable ways. I believe that the view that these particles are in some degree sentient, that they have a psychic no less than a material aspect, will be equally fruitful to philosophy.

If we accept the probable view that sentience was present from the beginning, or that it awoke at an early stage of the world process, then it is credible that each successive stage in the building up of the Universe represents an increase in realized value. Being's effort to bring forth the value latent in it did not remain wholly unrewarded until, after long ages, life arose on a few planets where conditions became favorable

for the origination and persistence of delicate organic substances. On the contrary, the earliest stages in the preparation of the conditions for life themselves represented an increase in value.

If sentience is associated with atoms and other particles, then it is not unreasonable to suppose that it may be enhanced in certain circumstances and depressed in others, and that the particles will spontaneously seek those situations which bring them the greatest satisfaction. Further, the whole direction of the world process suggests that particles find greater enjoyment in company with others than alone. Were this not true, repulsions should exceed attractions and highly organized bodies could hardly arise. We may apply these principles to the line of development which led to the origination of life and ultimately to ourselves. Without water, life in any familiar form is impossible. Each molecule of water is composed of two atoms of hydrogen and one of oxygen. Apparently, there is an increase of satisfaction or value when atoms of these elements unite to form a molecule of water; and it is to gain this enhanced existence that they so eagerly combine whenever conditions permit, and maintain their bonds so tenaciously. Similarly, in more elaborate molecules, such as the hydrocarbons and nitrates, existence is still more satisfactory; and this enhancement continues until the immensely complex molecules of even the simplest living things are reached. Compared with the intense joys that we sometimes experience, the glints of satisfaction yielded by the wedding of two atoms or the union

of two molecules may be almost negligibly slight, yet sufficient to induce these constructive processes and lead at long last to higher forms of life.

Those who have been accustomed to regard the Universe as the expression of a sublime idea in the mind of an omnipotent Creator, or as pervaded by a spirit filled with some grand purpose, may spurn with disgust the suggestion that its evolution is set in motion by the desire of its elementary particles for the satisfaction which they experience in closer union with their fellows. Such blind appetites, such paltry sensations, such dim and circumscribed satisfactions as, on the most liberal estimate, we can ascribe to them --how could these ever lead to the spiritual aspirations, the esthetic and intellectual enjoyments, experienced at the higher stages of evolution? But let us not too hastily disparage the potentialities of even the slightest increase in satisfaction derived from the closer union of elementary particles. Just as the particles themselves are capable of forming our bodies, so their appetite for union, which is responsible for our evolution as organisms, may also be the source of the noblest sentiments ~~which~~ that inspire us. Magnify these elementary feelings a thousand fold, tinge them with all the shades of meaning engendered in a complex world, and they may become love, devotion, craving for truth and beauty, yearning for God. Given the smallest inclination for union with similar beings and the slightest enhancement of sentience springing from such union, and it would be folly to assign arbitrary limits to the spiritual wealth which this tendency may in time produce.

Some of the questions that we have considered in this chapter are as difficult as they are important. The hypothesis that sentience is widely diffused through the inorganic no less than the living world, hence that value began to emerge at an early stage of the world process, makes the cosmic striving more understandable. Yet, on any view, it is mysterious, as Being itself is mysterious. Even if we are not certain why Being continues to strive for the realization of the values latent in it, we cannot doubt that it does so; for we, who are parts of Being, feel this striving within us, and we behold its effects in the world at large. The most evident of these effects is harmonization, the cosmic process that we shall consider in the second following chapter. Our understanding of this process, as we shall find in due course, is based on direct observation, and accordingly is independent of the answers to the difficult questions that we have just discussed.

CHAPTER V

THE GENESIS OF VALUE

Value is that which enhances existence, that which makes life precious. The first requisite for the presence of value appears to be consciousness; for we cannot conceive how any circumstances, however favorable, could make a wholly insentient object care whether it continues or ceases to be. It is, however, conceivable that certain self-induced states of consciousness should be so satisfying that the conscious being desires their continuance. Indeed, while our senses are as nearly quiescent as they can be, our minds sometimes fall into such a delightful reverie that we feel we are in heaven; and this must be especially true of the mystic's ecstatic trance. However, these minds of ours are the product of a long and varied experience, to which the external world has contributed immensely. The ordinary person discovers most of his values through intercourse with the surrounding world; and it is probable that without contact with the external world, the human mind would not experience value.

Philosophers have discussed at great length what value is, often without reaching conclusions. Without troubling ourselves about the metaphysical status of value, I think we might agree that a value is either an experience or a property or quality of an experience. If I am enchanted by a bird's song, I may say that this experience is a value, or that it has value; and it seems to be a matter of convenience or taste which expression I employ. The general term "value" refers to all such experiences, and it may be extended to include all the factors which enter into their

production.

As was stated, the great majority of our values, especially ~~those of~~ the more elementary sorts, come to us from the external world, provided either by an object, such as a lovely flower, or by a situation, such as engaging in absorbing work or being with a friend. We then say that the object or situation has value. Although, as an expression of gratitude, appreciation, or approval, this attribution of value to the object or situation is fitting; unfortunately, it fosters the belief that the value resides in the object, rather than in our experience of it. That value is not inherent in an object is clear from the fact that the same thing which pleases one person may disgust another and be almost neutral to a third person. Were value a property of the object, like its mass or dimensions, these diverse responses to the same thing would be inexplicable; all of us should like or dislike the same things, whereas actually it is difficult to find anything that pleases all people, even of the kind we call "normal." Value depends on the relation between the object and a mind which perceives it, not on the object alone. All the most brilliant and fragrant flowers that the earth could support would be quite valueless without sentient beings to see and smell them; not until it is actually appreciated by some responsive mind, be it man's or hummingbird's or insect's, does any flower become a source of value.

If, as I walk along a path through a flowery field, I happen to notice a blossom on my right but overlook one of the same kind on my left, the former produces value, the latter does not; yet

to refuse to attribute value to the poor unnoticed flower appears to be an invidious distinction. Surely there must be some way of recognizing the fact that both of these blossoms are equally worthy of my admiration, even if only one of them chances to excite it. Some writers would say that flowers are value-bearers. This term is not quite satisfactory, because it suggests that the object bears a value as a tree bears a fruit, fully formed and awaiting someone to pluck and enjoy it. Actually, no value exists before the moment when it is experienced. Each value, of the class we are now discussing, is produced by the interaction of a responsive mind and an appropriate object, as heat is generated by rubbing together two sticks. The responsive mind contributes at least as much to the genesis of the value as the object itself; as is evident from the fact that an unfeeling boor can view the most beautiful object without feeling that his life is thereby enhanced. An object capable of yielding value might be called a "value-generator" or "value-producer". All lovely flowers, all beautiful things everywhere, are potential value-generators; although only a small proportion of them may find the partner, a responsive mind, which must serve as the other parent of the value.

The foregoing discussion omitted the possibility that flowers, or other value-generators, may themselves enjoy values. If Wordsworth was correct when he affirmed his "faith that 'every flower enjoys the air it breathes," then assuredly they do experience values. And there can be no doubt that humans, especially if they be good, beautiful, wise, or otherwise endowed with virtues, are value-producers as well as enjoyers of values. But the value that

a flower, a lovely bird, or a good man engenders in me is quite distinct from all the values that these creatures may themselves experience. So far as the values which enhance my life are concerned, all of these beings are merely producers of values which do not exist until I experience them. Sometimes two beings are reciprocally value-generators and value-enjoyers, A exciting values in B and B engendering them in A. Lovers are an excellent example of this.

A certain school of thinkers, known as Value Realists, asserts that values exist, as eternal essences, apart from the minds that experience them. They adduce in support of this view the fact that we do not recognize values arbitrarily but in accordance with certain fixed standards. A generous deed, for example, is universally, or almost universally, admitted to have value; those who behold one of their kind perform such a deed feel increased satisfaction in their human state; their life is enhanced thereby. But it is common experience that similar conditions produce similar results. In so far as your mind is like mine, it will respond in the same way to the same situation. Every time we strike a match against the side of the matchbox, a flame bursts forth. Most people would say that it arises anew from the pre-existing materials. To the Realist, however, this explanation would hardly seem satisfactory. To be consistent, he should carry, in addition to the box of matches, a supply of flames, one of which he attaches to a match-stick at the moment of striking it. The trouble with Realism in most of its varieties, from Plato's down to our own day, is that it fails to do justice to the creativity of the world process and especially the creative

activity of our minds. To the Realist, an experienced value is just another impression struck off from worn type. Actually, each value, no matter how closely it resemble any earlier value, is a new creation, fresh as an opening bud.

Although the creation of a value-generator, as of a mind capable of responding to it, is usually a slow process; when the two interact, the value itself often springs up almost instantaneously. How swift is our response to beauty, our recognition of a noble deed, our appreciation of a courteous act! How long do these quickly generated values last? The obvious answer is, that they endure as long as they are remembered. But when we ponder this answer, we find ourselves involved in complications. Most values seem to be ephemeral. We rarely remember at the day's end all the values that it showered upon us. Yet before we fall asleep, we often say "This has been a delightful day," or "This has been a memorable day." A day is pleasant because its many separate incidents were pleasant, and outweighed the annoyances that were no doubt interspersed with its joys. Even values so slight that we soon forget them seem to leave a residue which colors our impression of the day, and the same is true of a longer period. Whether the satisfaction that we feel when we pass in retrospect a day or a year that has been well spent is a fresh value, or a compound of the values which the interval brought to us, belongs to the class of questions ~~which~~ that metaphysicians love to debate. Probably we shall be safest if we regard it as a new value, somehow engendered by the earlier values.

A similar problem arises when we recall any particular incident that delighted us. Is the satisfaction that we feel in remembering it the same value revived, or is it a different value? In support of the second alternative, it may be said that a memory is rarely a perfectly accurate reproduction of its original. Usually it is far less vivid than the occurrence which it purports to reproduce, and it lacks many of the details; correspondingly, the gratification that the recollection brings us is less intense than that which we originally experienced. At times, however, certain of the episodes of our life increase in value as we view them in longer perspective, seeing more clearly all that they have meant to us or appreciating more profoundly the qualities of character that long-past acts revealed. In other cases, exactly the opposite occurs: a bygone pleasure becomes increasingly painful as we reflect upon it with maturer judgment, either because it has had a baneful effect on our lives, or because we enjoyed it in circumstances that we now consider shameful.

The frequently wide divergence between the feelings which attended the original experience and those which accompany its reproduction by memory seems to indicate that the remembered value is in fact a new value, although obviously the offspring of the original value. Whatever may be the final verdict on this question, we cannot doubt that it is memory which preserves values, and without recollection each value would be promptly and irretrievably lost; although there might be a constant succession of values, all more or less similar, so long as the value-generator remained available ~~to us~~ and we continued to be responsive to it. And it is questionable whether we would not enjoy more

value in the course of our lives if we lacked memory, so that every time we became aware of a beautiful or interesting object it would strike us with all the freshness of utter novelty, as when we were young, not as a stale repetition of an earlier experience. Against this gain, we should have to weigh the loss of accumulated associations; all the pleasant and rewarding trains of thought stirred up by a familiar object, all the revealing comparisons that memory enables us to make, may more than compensate for the loss of exciting novelty, as we sometimes discover as we grow old.

The recollection of an experience that delighted us may, as we have seen, at length become painful. When this occurs, the original value has, in our present judgment, been converted into its opposite, a disvalue. As value enhances, so disvalue depresses existence, making it burdensome or painful. One whose life contained only disvalues would soon be driven to suicidal despair. Even the optimist must admit that disvalues are very numerous, and the pessimist contends that they far outweigh the values which the world contains. Why Being's striving to realize the values latent in it should yield so many disvalues, so much evil, is a problem that we shall tackle in later chapters.

To a being so sensitive to a myriad influences, so delicately adjusted to its environment, as a cultured human, scarcely any perceived object is perfectly neutral. Practically every perception simultaneously reveals to us that something exists and that it has value, or its opposite, disvalue. In most instances, no doubt, the valuational overtone of the perception is slight; yet in aggregate these scarcely noticed values or disvalues

exert a powerful influence on us. The countless details of a landscape, individually scarcely perceived, unite to make the view exhilarating or melancholy. All the slight nuances and inflections of a person's conversation, trivial in themselves, combine to make him an agreeable or a distasteful companion. Everything that lightens our burdens and cheers life's journey contributes value; every obstacle, however slight, increases the sum of disvalue.

Since values are so numerous, our understanding of their genesis will be greatly facilitated if we can classify them. In Western thought, the three great traditional classes of values are truth, goodness, and beauty. Whatever metaphysical status may have been assigned to them by other thinkers, for us truth has value only in the living act of being known; beauty, of being appreciated; goodness, of being gratefully recognized. These three categories certainly do not include the whole realm of value; we shall have occasion to notice other sorts, although we cannot attempt within the limits of a chapter to exhaust the subject. But in our analysis of values, we shall find it convenient to concentrate upon beauty, goodness, and truth.

One who desires a thorough understanding of the origin of values must consider both value-generators and value-enjoyers. How minds arose, and what peculiar properties make them responsive to value-producing situations, is certainly no small part of our problem. It is conceivable that the value-generators and the value-enjoyers arose independently and were afterward brought

into contact. According to the Biblical account, God made the world in this manner: first he created a sublime Cosmos and a delightful garden, then he made Adam and Eve to enjoy them. On the evolutionary view, our appreciative response to certain aspects of the world, such as the sunshine, the blue sky, and the green earth, must be attributed to the fact that our minds and sense organs evolved in the presence of these things which so powerfully affect our welfare. Conversely, the evolution of certain value-generators has been strongly influenced by mind's power of choice. According to the theory of sexual selection, the outstanding beauty of many birds and other animals, no less than the grace of the human form, have resulted from selective mating. But for simplicity in treatment, let us begin by considering certain aspects of value-generators, and especially such as we regard as beautiful.

What makes an object beautiful? Certain apparently simple things appear beautiful to us: a uniform expanse of bright color, a pure sound, a curve traced on a plain surface or in the air by a moving object. Analysis would show that these apparently simple things are more complex than they seem. The sensation of color is produced by countless vibrations of the light waves; that of sound is engendered by rhythmic pulsations of the air impinging upon our ears; the curve may be regarded as composed of numerous points or segments related to each other in a certain manner. Apparently the pleasing quality of the color, the sound, and the curve is to be attributed to the harmonious action of many separate stimuli, rather than to any single stimulus. However, since this is not a treatise on psychology or esthetics, we may

leave this question undecided, and pass at once to the consideration of the far more numerous class of beautiful objects which we immediately recognize as complex. All the lovely things that most profoundly affect us, those that yield the highest value, fall into this class, which includes beautiful plants and animals, landscapes, painting, statuary, music, and fine architecture.

What is the source of the pleasure which these beautiful things give us? In what does their beauty consist? In view of the immense variety of these objects, the foundation of their beauty must be sought in some general property, although more particular features may enhance it. The primary condition of beauty is unity in diversity. The distinguishable features of a beautiful object, be they few or many, are conjoined in an integrated pattern, a coherent whole. They may contrast with each other --and beauty may be greatly heightened by such contrasts -- but they cannot clash with each other. If the chief parts of a beautiful composition are themselves complex, the same must be true of these parts as is true of the whole. A thing of beauty is simultaneously one and many; its parts are many, but they form a harmonious whole.

We rightly esteem beautiful objects more highly when they are complex than when they are simple, like a pure tone or a single color, because they give greater play to our active powers and yield far more value. In some and perhaps most of us, the capacity for passive enjoyment is relatively slight. When first a lovely object greets our vision, it produces a throb of elation which, although it depends much on our nervous organization, owes scarcely anything to our mental acti-

vity. But like any sudden stimulus, this radiant vision soon diminishes in effectiveness; to maintain its hold on us, it must excite fresh nervous centers and arouse the mind's activity. If the object be complex, like a landscape, a beautiful living thing, or a stately building, our attention moves from the whole to each of its details, notices their perfection and studies their mutual relations, in this exercise passing repeatedly from whole to part and from part to the whole, becoming increasingly impressed with the manyness of the one and the unity of the many.

Why music pleases us is often regarded as a mystery, or an accidental result of our nervous organization. A musical composition does not, like a painting, portray objects in themselves delightful, interesting, or charged with meaning, such as a woodland glade where we should love to wander, a face that reveals wisdom or humor, or a scene fraught with emotion. If music conveys a definite message to us, it is usually because the composer has suggested it in his title; and even with this clue, we often find it difficult to maintain for long the mood which he intended to produce. Music owes much of its charm to just this circumstance, that in many of its forms it stimulates our reverie but does not determine its content; so that, while listening to it, we can indulge in whatever memories or fancies please us most. But this is certainly not the whole secret of music's power over us. Music enchants us because, when of high quality, it fulfills the fundamental condition of beauty: it is simultaneously many and one. The notes or separate sounds are many, yet they are combined into a coherent whole. It seems that any collection of objects or events, of whatever kind, which fulfill this fundamental condition

will please us, provided that we can adequately perceive them and they are not so intense as to strain or injure our nervous system.

When I behold a beautiful object, such as a blossoming shrub, I seem to stand contemplating a harmonious pattern that is external to me. But to a philosophic onlooker, the pattern may appear to be far more comprehensive, including the shrub, myself, and much beside. There is a sort of mutual adaptation between the plant and me: it must be so organized that it can attract and hold my attention; I must be so organized that I respond to its form, color, and fragrance. So long as it holds me under its spell, the shrub and I are conjoined in a higher synthesis, a symbiotic association or multiple organism whose fruit is this perception of beauty. But the value which now arises is dependent on much more than just the shrub and me. The earth and the rain-bearing clouds must support and nourish the plant; the air must sustain my respiration; the sun, to which plant and I owe life, must illuminate the scene. In each perception of beauty, many separate things are united in a comprehensive pattern and thereby achieve fulfillment.

From beauty we turn to goodness. The good is far more inclusive than the beautiful and the true and seems to contain them as its varieties, as Plato recognized when he placed it at the head of his ideal realm as both its source and its culminating point. As used in common speech, "good" is largely a term of approval, hence it may be applied to anything which pleases us or produces value. So far as any definite concept is attached to

this word, it is a relative term implying the adaptation of anything to its context, the harmonious association of one entity with another. If I am friendly with one neighbor but have frequent quarrels with another, the first neighbor will probably call me a good man, the second will say that I am bad. My disagreements with the second neighbor may be largely his fault, a consequence of his failure to respect my property; but he judges me from a purely personal point of view: I do not dwell in concord with him, hence I am not "good." Few men are sufficiently large-minded to judge their fellows from a wider viewpoint.

As with men, so with non-human creatures and inanimate objects. Those animals which eat our crops or otherwise molest are generally classified as bad; those which please us by their song or beauty and do not trouble us are regarded as good; although in themselves the first may be just as admirable as the second. If I am working at carpentry or in my garden and the tool which I take proves inadequate to my purposes, I am likely to say that it is "no good," although actually it may be a finely made instrument, well adapted to some other use. A far inferior tool that serves well in the present context will be called "good," for goodness is not an absolute but a relative quality.

Of goodness we may recognize two species, external and internal. The preceding examples were of external goodness, the adaptation of an object to, or its harmonious association with, something else. Internal goodness refers to the mutual adjustments between the parts of a complex thing: if they form a coherent, smoothly functioning whole, the object is called good; if they fail to do so, it is not good. A watch, for example, is good if

all its wheels, springs, and other parts are so adjusted to each other that it runs indefinitely at a perfectly uniform rate, provided that it is properly wound. Its many components form one harmonious whole. If we analyze the internal goodness of such an object, we find that it depends on the external goodness of each of its parts, which is perfectly adjusted to the surrounding parts. A simple entity, devoid of distinguishable parts, may have external goodness; but to say that it is good in itself seems to be meaningless.

Harmony among men depends largely on their moral qualities, hence this is the sort of goodness that most interests us, that generates the greatest value. A good man might be defined as one who would fit into a good society, so let us try to visualize such a society. It is, I take it, a society which helps each of its members to achieve the fullest possible development of his innate capacities, spiritual, intellectual, and physical. It likewise exists in harmony with surrounding societies, and with the natural world ~~which~~ that supports it. All this will be possible only if each member of the community develops a high degree of loyalty and responsibility to it. He must give much to his neighbors, because he receives much from them. He must have, in far larger measure than the majority of men, the widely recognized moral virtues of lovingness, generosity, justice, temperance, chastity, forgivingness, patience, and the rest. A society of such men and women would display a high degree of unity along with a high degree of diversity: the unity would be moral; the diversity would be in intellectual and artistic accomplishments, in knowledge and

skills. The community would be many yet one. To dwell in such a society, in company with such people, feeling hourly the loving good will ~~which~~ that pervades it, participating in all its varied endeavors, would be the most precious experience that anyone could have. Here it would be seen that goodness is, as Plato contended, the greatest source of value, which gathers up all the rest in a coherent synthesis.

Although the best men that we can conceive could hardly arise and exist except in an excellent society, good men are fortunately not restricted to such societies but provide an indispensable leaven for inferior ones. Indeed, in barbarous and dissolute communities, they shine the more brightly by contrast with their neighbors; as a lamp glows more brightly in the dark than in full sunshine. Aside from the values which moral qualities bring directly to one who possesses them, and the substantial benefits which we derive from the presence of good men among us, merely to know such men, even to hear or read about them, no matter how long ago or far away they lived, is an inestimable value; for it exalts our ideals and heightens our concept of what we, as men, may become.

As goodness is the harmonious adjustment of one entity to another, so its opposite, evil, is the failure to achieve such adjustment. Evil is strife, violence, destruction, with all the pain and anguish that they bring to sentient beings. Pain and unhappiness are expressions of disharmony in body or mind. In Chapter VII we shall consider the origin of evil.

Double space

The third of the great traditional values is truth, which I take to be a synonym of knowledge; if knowledge is not true, it is not knowledge, but only the false appearance thereof. In what does the value of truth or knowledge consist? Why is it precious to us? How does it enhance our lives? The practical-minded will say "Because it helps us to survive and get what we want". The more extensive and accurate our knowledge of nature, the greater our power becomes, the more comfortably and securely we live. If truth is sought only for such ends, if we seek it not for itself but for something else, it has instrumental but not ultimate value, and it does not deserve to be placed on a level with beauty, which is precious for its own sake or not at all.

But men seek knowledge for ends other than the power and wealth it may bring them. No matter how well we were fed and how comfortably we were housed, we should dwell in deepest night if we did not have at least a superficial acquaintance with the surrounding world; and in the degree that a mind is finely organized, it thirsts for wide and thorough knowledge for its own sake. To know any object is to enter into a sort of union with it, to make it ours. The more widely we know the world, the more we seem to possess it. To exist without knowing or being known would be a barren existence; so that in the measure that we give attention to, and become familiar with, any object, we seem to make its existence meaningful, at the same time that we enrich our own. The thirst for knowledge is one expression of the yearning of the part for the whole which is the primary source of value.

Most of our creative endeavors consist merely in changing pre-existing materials into forms which we hope will be more useful or beautiful. In knowing, however, we create an ideal world, which owes none of its substance to the actual world which our knowledge represents; we amplify and enrich existence by extending it into a new region or "dimension." The increase of knowledge is an absolute gain, unaccompanied by any loss, at least in all those fields where our investigations can be pursued without destruction of the objects that we study. In no other endeavor can we gain so much with so little tax upon the earth's bounty.

But the mind is more than a passive sheet of wax on which the external world impresses its form; it is an architect which builds an ideal world according to its own rules, ~~but~~ in conformity with certain suggestions that it receives from outside through the senses. Thus an idea is no mere copy of the external object which it represents. A mental image of a tree or a table can hardly be an exact replica of the corresponding ~~material~~ object; and without tearing it from my mind and examining it in just the same way that I examine the material thing, I see no method of learning just what its relation to that thing is. The resemblance of an idea to its object can, accordingly, never be our criterion of truth. How, then, shall we assay our knowledge? The only test that we can apply appears to be that of coherence or self-consistency. We believe,--and all our experience confirms --that the Universe, as a physical system if not as a moral community, forms a coherent, self-consistent whole; we can demand no less of the knowledge which claims to represent the Universe. Whenever two

supposed truths are incompatible with each other; whenever our theory does not fit the facts or our facts fail to conform to the theory; whenever our scientific predictions prove incorrect -- whenever these inconsistencies are revealed, we must reject some or all of our apparent truths as false.

The more adequate our knowledge, the more closely it all hangs together, the more coherent the pattern it forms. Hence the foundation of truth, as that of beauty and goodness, is unity in diversity. Conflict among our ideas is distressing; their agreement brings clarity and peace of mind. To have all the things we know fit together in one harmonious pattern would be precious to us, and this is the reason why we so persistently seek truth.

Double space

Among the higher values are love and friendship. I would not wish to have a friend whose experience and thoughts exactly duplicated my own. For what could I learn from such a friend, what intellectual stimulus could he provide, how could he help me, except in matters where mere weight of numbers is important? On the other hand, one whose ideals clashed with mine, who hated what I love and loved what I hate, could hardly be my friend. For the most rewarding friendship, then, both difference and similarity seem necessary; a friend is something more than "another self." The ideal friend would be one whose highest aspirations were the same as mine; whatever differences we had should converge at the highest point. But if my friend has had a widely different experience; if he sees sides of things that I overlook; if he can suggest different means for reaching the goals that we both hold dear, so much the better; we shall supplement each other's deficiencies. The foundation of friendship, as of beauty, good-

ness, and truth, is unity in diversity: not only is friendship impossible in the absence of a plurality of persons, its value is increased by differences in these persons, provided that they are not so great as to prevent their being bound together by the closest ties of affection and respect.

Love is stronger than friendship. That which we love truly we wish to enhance and preserve, so that we may always be near it. In this mutable world, love is perpetually beset by fear of losing the beloved; to prevent this tragedy, we yearn to join it to ourselves by the closest possible bonds and make it inseparable from us. But could we abolish every difference between the beloved and ourselves, as by becoming one person, love would be destroyed, or at least transmuted into self-love, which is a sentiment quite different from love for another. For love, as for other values, both unity and diversity are essential.

As one of the highest values that we can experience, love appears to deserve a place beside beauty, truth, and goodness. The only reason for not including it among them seems to be that they are more elementary and that love depends on them as they do not depend on it. We love things because they are beautiful or good; they are not beautiful or good because we love them, although an intense infatuation may make them appear so, and steadfast love may help them to become so. Yet, as a sentiment, love is quite distinct from the admiration for beauty or the reverence for goodness which first attracts us to the being that we come to love. This strong attraction, this yearning to preserve and protect, makes everything that inspires it far more

precious to us and immeasurably enhances our lives.

Even in this rapid survey of values, health and spontaneous activity must be included. Not only are all values experienced more intensely when vitality is high; merely to live as a perfectly functioning organism is delightful, as we discover especially in childhood and youth, when abundant energy gives rise to activities, such as running and skipping and romping with playmates, undertaken for no other reason than to feel the joy of movement in a healthy body. The foundation of health is the perfect co-ordination of all the organs and processes of the body, whose many parts, each sound in itself, are united into a single coherent, smoothly functioning whole. Rapid, controlled movements, in which sense organs, nerves, and limbs work in closest unison, give us a more vivid feeling of our body's dynamic unity.

All the values that we have examined, beauty, goodness, truth, love, health, have proved to be dependent on the same fundamental condition, unity in diversity, being simultaneously one and many. These values are modes of harmony, or, more correctly, our experiences of modes of harmony. Without multiplicity, harmony is impossible, for the word implies the joining of things numerically distinct. It is difficult for us to imagine any value that could exist in a perfectly homogeneous Universe, devoid of parts and contrasts.

Pure, undifferentiated Being might, if sentient, enjoy bliss; and some have declared that this is its outstanding attribute. But this changelessly blissful consciousness would appear to be deprived of all the modifications which make experience precious to us. Beauty, truth, and goodness depend upon relations; and in

undifferentiated Being there can be no relations, which arise only when there are two or more entities to be related. The pure, undifferentiated Being that we contemplate is, of course, the philosopher's Absolute; and the Absolute is, by definition, beyond relations. The blissful consciousness of pure Being might be imbued with love; but since there is nothing beyond or within itself to be loved, it could only love itself, perhaps with such infinite intellectual love as Spinoza believed his pantheistic God to feel for himself. But self-love is very different from love for another being. Our so-called self-love is really love of our existence in the midst of the manifold things that make it pleasant, rather than love of some transcendental principle within us; so that it provides no analogy whereby we can imagine pure Being's love for itself.

To realize the values that it potentially contains, Being must be simultaneously one and many. Yet, in a sense, Being can never lose its oneness; if it did, it might never regain unity, and it would certainly lack the power to bring harmony into diversity. The multiplicity which must be harmonized is not, then, at the very ground of Being but on a more superficial plane; it is derived rather than primitive, phenomenal rather than fundamental. Thus, for value to emerge, unity must exist on two planes: the deeper plane, where unity is never lost; and the superficial plane, where it can be lost and recovered. If unity on the deeper plane were sufficient to generate value, value would be an original property of Being, and no process would be necessary to bring it forth. To generate value, Being must be simultaneously one

and many; and the manyness must also be unified, but on a plane distinct from the original oneness.

An analogy will be helpful. The innumerable hairs on our head are held together by the unity of the body which grew them, and whether they be dishevelled or neatly combed, their relation to the body is much the same; just as the relation of phenomenal objects to Primal Being is much the same whether they are chaotic or joined in harmonious patterns. But the value which the hair produces depends very largely on its arrangement; tastefully combed, it can greatly enhance one's appearance; matted and tangled, it may make one repugnant.

This analogy would be more exact if the hairs were living parts of the body, which would shrivel away if detached from it, like strands of algae cast high on a sunny beach. Yet the superficiality of our hair makes it more rather than less appropriate as a figure for value. Value exists not at the heart of Being but at its surface, so that it may be destroyed, or replaced by disvalue, without shaking the foundation of Being. Value is the efflorescence, not the root, of Being. Just as flowers may be brought forth, or blasted, by conditions which hardly affect the root and stem of a plant; so value is generated and destroyed by events which hardly touch the foundation of Being. But just as a plant does not fulfill itself, does not realize its vital end, unless it blossoms; so Being does not complete itself without the efflorescence of value.

How the unity of Being produces the manyness of the phenomenal world, and how the countless parts are built into harmonious patterns, are problems which will occupy our attention in the following chapter.

CHAPTER VI

HARMONIZATION

Long ago, this Universe was far simpler, more homogeneous, than it is today. On this point the investigations of modern scientists support the insights of ancient philosophers. Life had not yet arisen; and all the beauty, all the joy, all the love that Being was capable of generating were still latent in it, like a statue in a block of marble.

In this undeveloped state, Being was restless, as though it dimly felt that it could become more than it was and yearned to bring forth the value potential in it. We now know the structure of values and how they arise. But did Primal Being know? If it had been pervaded or governed by an Intelligence that could see what was needed and guide it unerringly to the actualization of its potentialities, its advance should have been swift and direct, with never a time-consuming blunder, never a tragic involvement. The fact that its history has been far otherwise, that its striving to realize value has produced an immense amount of disvalue, weighs strongly against the supposition that its goal was clearly foreseen and its course intelligently plotted. Apparently, it had to grope its way toward a ~~dimly apprehended~~ vague goal. The clear vision of its objective, the understanding of the means, the simplest modes of procedure, were still to be developed.

An animal who cannot reason often employs the method of trial and error to reach whatever attracts it; indeed, reasoning itself is largely a process of trial and error, whereby we ar-

range and re-arrange our ideas, until at length a satisfactory solution of our problem becomes apparent. It is not impossible that Being, striving without intelligence to realize its own potentialities, has likewise been forced to proceed by trial and error. There is an old belief, held by the Indian thinkers and in the ancient West by Heraclitus and the Stoics, that the Universe is alternately created and destroyed. In this endless cyclic course, the phase of manifestation, when it exhibits all the varied phenomena of matter and mind, is succeeded by the phase of resorption, when it dissolves in the cosmic fire of the Stoics, or lapses again into the eternal mind of Brahman according to the Indians, and all its familiar features vanish. The Stoics, in conformity with their strict determinism, held that each cosmic cycle must be an exact repetition of all its predecessors, so that each man lived again, or, perhaps more properly, had his identical counterpart, who performed the same acts and thought the same thoughts as his precursor in the endless sequence.

If in fact there is such a succession of cosmic cycles, it seems more likely that each one represents Being's attempt to realize by a different method the values it potentially contains. In our present epoch, it strives by means of minute particles, which it builds into atoms, molecules, and larger aggregates. Perhaps in a former epoch it operated in a more continuous medium, lacking distinct particles, by means that we can scarcely conceive. Failing by one method to achieve a satisfactorily high level of value, it draws itself together again, dissolves the structures that have arisen, and, after an interval of repose, tries again by another route. Since each cycle occupies an

aeon, this procedure requires an immensely long time; but infinite time seems to be available to Being. The hypothesis that each cosmic epoch is constituted by different processes or natural laws is at least as probable as the oppressive doctrine of eternal recurrence, and the trial of various methods should be far more profitable to the Universe in the long run. Diverse procedures should generate different values; and it is not impossible that these, or some of them, are preserved when the world dissolves, but on another plane. The preservation of values will occupy our attention in a later chapter.

All the evidence points to the conclusion that our Universe was once far more homogeneous than it is at present. When we consider how diverse forms and structures might arise from a homogeneous substratum, two methods occur to us. One is that of a sculptor who carves a statue from a solid block of marble. Since he chisels away and discards all the marble which he does not need in the statue, we may call this method "guided destruction." It seems feasible only when there is a guiding intelligence. One might also shatter the marble into minute fragments and laboriously build up a statue with them. If the fragments were endowed with attractive forces, they might spontaneously draw together in various configurations; and after much shuffling and recombination, something worth preserving might emerge. The attractive forces themselves might be capable of a remarkable development; they might be the forerunners of love.

A modern speculation holds that all the matter of our Universe was once collected in a single mass of "nuclear fluid," far too dense to exhibit atomic structure, and charged with in-

calculable energy. Suddenly, this mass of primal stuff exploded and began flying outward in all directions. As the pressure and temperature dropped, the particles that were born of its fragmentation united into the various kinds of atoms, of which at last the nebulae and stars were formed. The matter composing these celestial objects would preserve its original centrifugal movement. Astronomers have observed that the farther away a galaxy is, the more strongly its spectral lines are displaced toward the red end of the spectrum, according to the Döppler Effect; and this fact is most readily explained by the supposition that the galaxies are receding from the earth with a velocity proportional to their distance from it. The theory that the Universe is expanding is a very bold speculation to be based on a single class of facts, yet no alternative explanation of these facts seems at present to be available. If indeed all the matter of the Universe ever existed in a single mass, its fragmentation was the indispensable prelude to the emergence of structures which could generate values; for in such a condensed mass neither structure nor value seems possible. After the single inconceivably violent explosion, the attractive forces which were henceforth to govern the development of the Universe could come into play. Its whole subsequent history might be interpreted as the persistent effort to recover unity, but on a higher plane, not inconsistent with diversity.

Double space

The whole grand movement by which particles in space are built up into stars, planets, and, finally, living things, some of which at last become able to plan their own future, is called "evolution, a word which in the last century has acquired wide currency. Despite the vast amount of study which has been devoted to evo-

lution, especially by biologists who have minutely investigated its causes, the concept has never, to my knowledge, received adequate philosophical analysis.

I have before me a volume entitled Evolution and Ethics, published in London in 1947. It contains, along with much introductory matter and supplementary discussions, the Romanes Lecture with this title delivered at Oxford in 1893 by the great evolutionary biologist, Thomas Henry Huxley, and another lecture on the same subject given by his distinguished grandson, Sir Julian Huxley, under the same auspices, fifty years later. The grandfather argued that the moral man will resist evolution; the grandson, that he will promote it to the limit of his power. Obviously, they had focussed their attention on different aspects of evolution: the elder Huxley, on the relentless strife, the carnage, the suffering, which accompany it in the living world; the younger, on its constructive achievements, on the fact that from the simplest organisms it has produced man, with all his intellectual, moral, and esthetic powers, and may raise him much higher, if he will co-operate intelligently with it. Yet both Huxleys use the same name for the process which one, for moral reasons, opposes and the other, for similar reasons, supports.[1] Such diverse attitudes toward evolution are not confined to these two capable biologists, but are widespread in modern thought. A more thorough analysis of this complex phenomenon should lead to greater clarity, and help to bring divergent views into harmony.

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[1] Between the dates of the two Romanes Lectures, P. Kropotkin published an important book called Mutual Aid: A Factor in Evolution, which called attention to the role of cooperation in evolutionary advance.

In the first place, there is evident on this planet, and throughout the Universe as far as we can tell, a persistent constructive tendency, a movement to build its raw materials into patterns of ever-increasing coherence and amplitude. Lacking comprehensive guidance by a governing Intelligence, this process runs into vast difficulties, its various currents collide, strife and destruction supervene on the primarily creative movement. The actual course of events, which we call "evolution," is the outcome of the original constructive tendency as modified by its tragic involvement. But the primary movement itself is a phenomenon so distinct, so clearly distinguishable from its secondary effects, that it deserves to be recognized by a separate name. In an earlier book,[2] I called it "harmonization."

In First Principles, Herbert Spencer gave one of the most acute and comprehensive analyses of general evolution that has so far appeared. Although published in 1862, some three years after Darwin's The Origin of Species, this work is an elaboration of concepts which Spencer had developed several years earlier, and it reveals little influence by Darwin's views. The struggle for existence, the clash of form with form and the consequent "selection," which since Darwin have loomed so big in most discussions of biological evolution, are far from prominent in the work of Spencer, who undertook to explain the course of cosmic development in terms of space, time, matter, motion, and force. Since he gave much attention to the primary constructive movement, and little to the destructive clashes and their consequences so prominent in the living world, Spencer's book comes closer to

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[2] The Quest of the Divine (Meador Publishing Co., Boston, 1956).

being an account of harmonization than of evolution as currently conceived. ¶ "Evolution," concluded Spencer in his famous Formula, "is an integration of matter and concomitant dissipation of motion; during which the matter passes from an indefinite, incoherent homogeneity to a definite, coherent heterogeneity; and during which the retained motion undergoes a parallel transformation."[3] If in this definition we substitute "harmonization" for "evolution," it will serve our present purposes admirably. More simply stated, Harmonization is the building up of the materials of the Universe into patterns of increasing coherence, complexity, and amplitude. The most obvious of these materials is ponderable matter, but the definition applies equally well, whatever we conceive them to be. Harmonization is the process whereby multiplicity is bound into unity on the phenomenal level and value emerges.

In the building up of the Universe by harmonization, three stages may be recognized: (1) the formation of the materials, (2) the preparation of the conditions for the higher stages of harmonization, and (3) the creation of the generators and enjoyers of the higher values. We shall consider them in this order.

(1). Modern science agrees with the ancient insight of Leucippus and Democritus that the material world is composed of a vast number of invisibly small particles, each of which has definite properties, and preserves its identity throughout a long and varied career, in the course of which it may enter into

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[3] p. 407 of the fourth American edition, Appleton, New York, 1896.

the most diverse combinations with other particles. The name "atom" --indivisible--was given to these particles by the ancient physicists, who supposed that there was a large, but not infinite, number of kinds, differing in size and shape but not otherwise. Modern chemistry has reduced the number of kinds to about a hundred, those of hydrogen, oxygen, helium, iron, sulphur, and all the other elements. The relative, and then the absolute, weight of each kind of atom was determined.

By the time it was discovered that the chemist's atoms were not simple but complex structures, the name had become so firmly established in modern scientific and popular literature that to change it was impracticable, although obviously it was no longer strictly applicable. What in modern terminology corresponds to an atom of the ancients is not a hydrogen or an oxygen atom but one of the "ultimate particles" of which each of our modern atoms is believed to be composed. The reduction of the species of the ultimate constituents of matter from an indefinitely large number to three principal kinds --neutrons, protons, and electrons[4]--would have been welcomed by the ancient atomists; for philosophers have consistently striven to reduce the Universe and our experience thereof to the fewest possible unanalyzable constituents and principles. We now regard the ultimate particles as centers of force or wave-like agitations in space rather than as solid bodies, which the ancients conceived them to be. Indeed, the concept of solidity, which we derive from the impenetrability of tangible things like stones and boards, seems hardly applicable to particles so exceedingly small.

[4]In this book, "ultimate particle" is consistently used to designate a neutron, proton, or electron; "particle" refers to any very small body.

On another point, too, we must part company with the ancient atomists, especially the Epicureans, who adopted, and gave wide currency to, the physical speculations of Democritus. They believed the atoms to be separated by an absolute void. This assumption proved to be a source of embarrassment to them. Nothing can attract anything else across a void; and to get the evolution of their atomic Universe started, the Epicureans found it necessary to attribute to their solid, feelingless atoms something very like free will, which caused them, at unpredictable intervals, to swerve sideward as they fell through space and join with a companion.

Modern scientists were obliged by the phenomena of gravitation, magnetic and electrical attraction, and also by the wave theory of light, to postulate an exceedingly tenuous, imponderable medium, the space-filling ether; because in a void all of these things are inconceivable. The concept of the ether would be useful only if we knew parts of space where it is absent -- if we could distinguish between ether-filled space and etherless space. Through etherless space light should not pass, and one body should not exert a gravitational or electrical attraction on another. (Repulsions would still be explicable on the assumption that they were caused by streams of exceedingly minute particles emanating from solid bodies.) Since there is no slightest evidence for the occurrence of such inert space, the concept of the ether is superfluous. Space itself performs all the functions for which the ether was imagined. We must decide against the atomists in favor of Plato, Aristotle, and the Stoics, who denied the existence of a void, at least within the Universe.

¶ Far from being a void or a vacuum, merely a place in which

bodies can exist, space is a plenum with positive properties. It permits and at the same time controls movement, transmits light and gravitational and electrical forces; and it appears to be the active agent in arranging and shaping the things it contains. In seemingly empty space, where our senses detect nothing, there is something real and definite, whose marvellous properties baffle our groping intelligence. By means of space, Being preserves its continuity and remains indissolubly one. Multiplicity occurs in the contents of space, which we must regard as modifications or manifestations of Primal Being. It is these contents which must acquire unity while still preserving their diversity, in order that value may arise.

If our present cosmic era was in fact ushered in by the tremendous explosion of the condensed parent material of all the matter in the Universe, the formation of its countless myriads of atoms of various kinds may have been very rapid. The neutrons, protons, and electrons, into which the primitive material separated as the pressure fell, were brought together by their swift darting and held by mutual attraction. Doubtless at first many different combinations arose, so that for a while there were far more kinds of atoms than at present. But only those that proved stable survived to form the ninety-odd, naturally-occurring elements that we know today. The conversion of the restless swarm of ultimate particles into atoms, each with a definite structure consisting of a nucleus of protons and neutrons surrounded by revolving electrons, somewhat as the sun is surrounded by planets, was the first act of harmonization. It provided the Universe with its structural units or building blocks, through whose arrangement and re-arrange-

Double space

ment all its diverse configurations arose.

(2). Although matter exists over a tremendous range of physical conditions, to form complex structures it requires rather special circumstances. Thinly scattered through interstellar space, it remains at a low level of organization. Likewise, when it is drawn into huge masses, as in the stars and larger planets, the more central parts of these masses are subject to such tremendous pressure that no complex molecular structure could endure; the very atoms appear to be stripped of their electrons, which results in a great economy of space. At high temperatures, the particles of matter are so extremely mobile that compounds are unstable, especially if the molecules are large and complex. At the lowest temperature, absolute zero or -273° Centigrade (-459.6° Fahrenheit), atoms are no longer thermally agitated and maintain indefinitely whatever arrangement they have acquired. But in this inactive state they do not form new structures, so that the temperature which is most favorable for the preservation of complex molecules is least favorable for their formation. Taking all these factors into consideration, it appears that conditions most propitious for ~~the~~ building atoms into complex patterns will be found neither in matter thinly diffused through space nor in that within massive solid bodies, but on or near the surface of such bodies; neither where matter is incandescent and intensely agitated nor where it rests quiescent at extremely low temperatures, but at moderate temperatures.

The solid state of matter is not favorable for the elaboration of complex molecules, because in it chemical reactions are slow, unless pulverized materials are intimately mixed and heated.

In liquids and gases, reactions are more rapid. The dissolved state is favorable for a great variety of chemical processes, especially when the solvent is water, in which many molecules spontaneously split into electrically charged parts called ions, which readily unite with ions bearing the opposite charge. It was no accident that life arose in water, and vital processes are strictly dependent on this fluid.[9] But water, compounded of two gases, itself readily passes into the gaseous state; and darting gaseous particles fly off through space unless restrained by a strong gravitational field. Hence the smaller celestial bodies, like Mercury and the Moon, cannot hold an atmosphere and accordingly lack water at their surfaces. But if the body is as massive as Jupiter or Saturn, it will retain too much hydrogen, the most abundant element in the Universe, which combines with nitrogen to form ammonia and with carbon to form methane, both of which are poisonous to the familiar forms of life. The solid rocky core of Jupiter appears to be enveloped by a very thick layer of frozen ammonia, methane, and water, around which is a deep atmosphere of hydrogen and helium. Only planets of intermediate size provide conditions favorable for the emergence of life and all the values that living things are capable of realizing.

Apparently, no celestial body which bears an atmosphere of moderate density and liquid water at its surface can long maintain its temperature above the freezing point of water without heat from an outside source. It must receive from some more massive, incandescent body radiant energy to replace that which it incessantly dissipates into space. Hence it is only on plan-

ets, which revolve about a central sun, that conditions favorable for building up complex molecules, hence for the origin of life, are found. But if the planet is too close to its sun, it will be exposed to such intense radiation that life would be destroyed; if too distant, it will receive insufficient heat and the liquids at its surface will freeze, as in our Solar System is true of all the planets beyond Mars. In order to become a fit abode for life, a planet must fulfill very special conditions of size and distance from its sun.

It has become evident that, for harmonization to proceed, the matter of the Universe, thinly scattered through vast expanses in consequence of a primal explosion or possibly as its original state, had first to be gathered into massive bodies of various sizes. This was accomplished by the mutual attraction of the particles themselves. Gravitation was the first great agent of harmonization, the shaper of our Universe, with all its galaxies, suns, planets, and moons. There has been much speculation as to how the matter which forms the planets came to be separated from the stars about which they circulate. According to the nebular hypothesis of Kant and Laplace, as a vast cloud of thinly diffused material contracted to form a sun, it began to rotate, and finally acquired such velocity that in its outer equatorial regions centrifugal force balanced gravitational attraction. No longer drawn inward, the material of this zone was left behind as a ring, which somehow condensed into a single mass, the planet. This process was repeated for each of the planets which the solar system acquired. ¶ Other scientists, finding difficulties in this hypothesis,

have supposed that the material that formed the planets was thrown out of the fluid mass of the sun by a huge tidal wave stirred up by the gravitational attraction of another star that passed close to it. The stars are so thinly scattered through the vastitude of space that such near-collisions are of very rare occurrence; and if the genesis of planets is dependent on such an event, it appears that very few of the stars can have these attendants. But by the nebular hypothesis, which, with modern revisions, is again favorably viewed by physicists, the formation of planets is a normal part of the life history of a star; so that a large proportion of the billions of stars which the Universe contains should preside over a family of planets.

A planetary system, with its several planets revolving rhythmically in fixed orbits about the central sun, with many of these planets accompanied by moons which circulate about them with similar regularity, is an excellent example of the kind of pattern ~~which~~ that harmonization constructs. Our own Solar System is the greatest integrated pattern of which we have definite information; and even today, when we know that it occupies an almost negligible part of the immensity of space, one who contemplates it with his intellectual vision can appreciate the reverence felt for it by the ancient philosophers, who attributed divinity to the Sun, Moon, and planets. This grand system combines unity with diversity, freedom with order. Its principal parts are so related that they do not clash together and destroy each other but abide in harmony for ages. Each is free to pursue whatever development its resources permit; while the Sun sends forth his rays impartially, for all to receive.

Until it had accomplished the huge preliminary task of building planetary systems, until the surfaces of some of the planets had cooled, harmonization could not proceed to raise Being to higher levels. Even if we make the extremely liberal assumptions that most of the stars are surrounded by planets, that as in our Solar System a quarter or a third of the planets are at some period of their history able to support life, and that life arises wherever a suitable environment develops, it is evident that it is restricted to an almost infinitesimally small proportion of space. And in any cosmic epoch, only a minute fraction of the matter in the Universe can enter into those higher formations which matter is intrinsically capable of forming. To create and maintain the conditions necessary for this advance, immense quantities of matter must lie under restraining pressure beneath the crust of planets massive enough to hold an atmosphere. Far vaster quantities form the fiery suns which radiate energy to the planets; and perhaps half the matter of the Universe is scattered through the interstellar spaces as unproductive dust. Being seems everywhere to strive to realize the values it potentially contains, but, as far as we can tell, only in a few favored regions can the higher values emerge. This is the first great difficulty that we notice as we attempt to trace its creative advance. Those restricted regions of the Universe where Being begins to realize the higher values are its expression points, which reveal what it is capable of achieving. Their importance is not to be gauged by the small amount of space which they occupy but by their key positions in the Universe. The privileged creatures which inhabit these favored regions are Being's organs, by means

of which it realizes its ends.

(3). After harmonization, operating on a large scale, has rounded off the stars and planets, it can proceed on a small scale to raise the materials of the Universe to higher levels of organization. In cooling matter, it has two modes of procedure, crystallization and the elaboration of molecules. Crystals may be composed of a single kind of atom or of a compound, containing atoms of several kinds. In them the constituent particles are arranged with great regularity, layer upon layer; if one shatters certain kinds of crystals, each fragment has the same shape as the whole. The precious gems are crystals whose color, brilliance, and durability have from early times excited the admiration and cupidity of men. A far more delicate beauty is exhibited by the evanescent hexagonal crystals of snowflakes. Crystals are the earliest products of harmonization, on the small scale, which reveal to senses like ours that it is productive of beauty.

Might we not say that the crystalline state is the atoms' heaven? In it all their desires, which the chemist knows as valence bonds, are satisfied. Each atom dwells in such perfect harmony with all its neighbors in the crystal that they may remain for long ages without alteration. An atom in a crystal seems to exist in a state corresponding to that which the ancient philosophers called "eternity": it is immovably fixed; its past, present, and future are the same; so long as the crystal's environment remains favorable, it dwells in an almost

changeless realm. Even if a crystal endures but an hour, as is often true of ice crystals, to an atom, whose vital pulsations are far more rapid than man's, this may correspond to a long human life. In crystals, atoms seem to have achieved a satisfying state ~~which~~ that precludes further effort. One might suppose that the crystalline heaven is the goal of all matter. Yet there seems to be no possible arrangement of the material of the Universe which would permit every atom to exist simultaneously in crystals. In the interior of the denser stars and planets, where atoms are stripped of their electrons, crystals cannot form. If these great masses were broken up, gravitation would draw the fragments together again. The Universe seems to be so constituted that its elements must continue to circulate until they realize values higher than the crystalline heaven attains.

In the gaseous, liquid, and dissolved states, atoms continue restlessly to re-arrange themselves, flitting from partner to partner, as though seeking some still unrealized objective. Although we sometimes think of one chemical as attacking another, as a pack of wolves assaults a deer and tears it to pieces, the comparison is inexact. For all the violent ebullition

of hydrogen when we drop a bit of sodium on water, the atoms of the metal apparently do not rudely tear hydrogen atoms from molecules of water, then take their places, forming sodium hydroxide. Even in the purest water, the molecules spontaneously split into hydrogen ions, each of which bears a positive charge, and hydroxyl ions with a negative charge. Although, at moderate temperatures, the proportion of water molecules so ionized is very small, if the ions are somehow removed, other molecules rapidly split apart to replace them and preserve the normal equilibrium between the whole water molecules and their electrically charged fractions. Each of these ions has, so to speak, a free hand reaching out to grasp that of some ion with the opposite charge. As the positively charged sodium atoms unite with the negatively charged hydroxyl ions, more water molecules dissociate to maintain the equilibrium; and the hydrogen ions, now deprived of the possibility of rejoining their former partners, accumulate until they rise into the air as gaseous hydrogen.

Likewise, in many other chemical reactions, momentarily disengaged components of one of the original compounds snatch up similarly free components of the second compound; just as, in a dance, unpaired participants of one sex join the first unaccompanied dancer of the opposite sex whom they can find. In the constant interchange of partners which occurs when two interacting chemicals are in contact, the more stable of the resulting molecules increase in number, while the less stable diminish. Often complex molecules are more stable than simpler ones. Thus the effect of chemical reactions, especially at moderate tempera-

tures, is on the whole to build atoms into patterns of increasing complexity, coherence, and amplitude.

Although much speculation has been devoted to the origin of life, the most probable view, ably presented by A. I. Oparin, is that it arose as a result of the increasing complication of matter, by means of its own internal forces, in tepid seas rich in solutes, and at a time when the earth's atmosphere differed greatly in composition from that of today. The chief actors in this growing elaboration of matter were carbon, with its high valence and ability to form innumerable compounds, hydrogen, oxygen, and nitrogen, with sulphur, phosphorus, potassium, calcium, and other elements playing important auxiliary roles. When associations of complex molecules acquired the capacity to release and control energy and to synthesize other molecules like themselves, living substance began to contrast with its lifeless ambient. To safeguard its many delicately balanced reactions, each living thing found it necessary to separate itself from its environment by a semipermeable membrane, through which it could take what it needed from outside while refusing admittance to unwanted substances, and through which it could extrude its waste products while zealously guarding its precious constituents. Thus living matter began early to delimit itself from its environment; and in the advance of life to higher forms, increasing insulation played a prominent role.

After life arose, possibly two thousand million years ago, it became the chief sphere of harmonization on this planet. By its inherent capacity to multiply and to change, which will en-

gage our attention in the following chapter, it produced myriads of organisms of countless kinds, each of which contains a greater variety of materials, bound into closer unity, than any inorganic body of comparable size. The growth of a living thing, especially of an autotrophic plant, is a perfect example of harmonization. The seed of a green plant contains the pattern of organization of its ancestors in the dormant germ, which is provided with enough nutritive material to give it a start in life. As soon as it spreads its first leaves to the light, the seedling's development depends on its own constructive activity. With water and mineral salts drawn up by its roots from the soil, with carbon dioxide from the air and energy which its green pigment captures from the sunlight, it builds carbohydrates, then proteins and other substances, to support its continuing growth. It combines simple, scattered, inorganic materials into a coherent pattern, which daily increases in complexity and amplitude. With many atoms and molecules it makes one living thing. Its increasing beauty culminates in its floral display. It is beneficent, too, providing nectar for the insects that transfer its pollen, and often fruit for a variety of animals. We do not know to what extent plants enjoy value, but we cannot doubt that they generate it on a grand scale.

In animals, harmonization is less pure than in self-supporting plants. Since they are unable to build organic substances from simple inorganic materials, they must derive nourishment from other living things, often by destructive violence. Whether they are vegetarian or carnivorous, all of their food is ultimately derived from the synthetic activity of plants. Most of this food

must be reduced to simpler forms, by the process of digestion, before the animal's body can absorb it to support its growth and other activities. After it gains possession of the necessary plastic substances, its growth proceeds much as that of a plant. In animals, harmonization begins with materials at a higher level of organization than in the case of vegetables, but it also proceeds farther, especially in the more advanced types of animals like the higher vertebrates. Such an animal, with its nervous system, sense organs, circulatory system, limbs for locomotion, and many other structures, is more complex than any plant; and its parts are more closely dependent on each other. Its greater coherence is proved by the fact that a detached part will die, as will the whole animal if deprived of certain of its organs; whereas a twig of a woody plant will often take root and grow independently, and the plant itself may survive the loss of most of its organs, sprouting anew from its stump or roots. A higher animal exhibits a hierarchy of patterns: atoms are joined to form molecules; molecules are built into cells; cells are arranged in tissues; tissues form organs; and of organs the organism is composed. All of these units, of whatever grade, must work together in closest harmony to support the life of a healthy animal.

This animal, itself a triumph of organization, a community of communities of communities, often joins with others of its kind to form a community of still higher order. The first step in the formation of a society is the care of offspring by the parents. Many mutual adjustments, some of the utmost delicacy, must be achieved before two individuals can co-operate closely in the generation and care of their progeny. Moreover, the reactions

of the young must be perfectly adjusted to the behavior of their parents, as is evident to everyone who has watched a pair of birds rear their brood and reflected on what he witnessed. When the young remain with their parents after becoming self-supporting, and perhaps help to attend younger brothers and sisters, a society begins to arise.

The largest and most complex societies, and almost the only ones that exhibit a high degree of specialization of functions, are those of certain insects and of men. A primitive human community was hardly more than an expanded family, whose members co-operated in a manner that now excites our envy, but which was often intensely hostile to neighboring communities. By conquest and federation, the small communities and city-states of former times have become the great nations of today; and a world-wide community of friendly countries is our ideal. In no human society, and probably not even in any insect society, do individuals co-operate as closely as the cells and organs of a healthy body. Doubtless such close integration of human beings is not desirable, for it seems to be incompatible with the fullest development of the diverse capacities of each. Yet everywhere men yearn for closer harmony with their neighbors. The ideal relation between humans appears to be something intermediate between that which prevails among the organs of an animal body, which co-operate closely yet enjoy little independence, and that among the planets in the Solar System, which move independently without injuring each other but are too aloof for the exchange of beneficent influences and mutual help. Harmony among men depends on morality, which in turn is a product of harmonization operating in the

psychic sphere.

Although there are reasons for supposing that even plants are in some degree sentient; in the absence of all but the most rudimentary organs of sense and of a developed central nervous system, their psychic life is evidently of a low order. The physical basis for the mental activity of the more advanced animals is the brain, nervous system, and sensory organs such as eyes, ears, nose, and tactile cells, which are formed by harmonization along with the rest of the body, as we have already seen. ¶ In the functioning of all this complex machinery, further harmonization is evident. Through my open window I see a flower. Of the sunlight that falls on it, some is selectively absorbed and the rest is reflected outward in all directions. Each of my eyes catches a narrow pencil of these divergent rays and focuses them on the retina. Here the luminous vibrations, of inconceivable rapidity, produce chemical changes in the many rods and cones over which the image is spread. From these excited visual cells, impulses proceed along the nerves to my brain. In a manner which eludes my introspection and which psychology cannot elucidate, the innumerable luminous vibrations, the many cells and fibers, the two slightly differing flat images in my two eyes, yield a single, colored, three-dimensional impression, that of the flower. ¶ Moreover, I spontaneously associate the flower's fragrance with its image; and if I touch and taste it, the tactile and gustatory stimuli are joined with the visual and olfactory stimuli in a meaningful mass. Many separate physical events have been bound

together into a single mental event, my perception of the flower as a colored, fragrant, smooth-textured object which enhances my life. This miracle, repeated hundreds of times every day in every active person, is one of the highest achievements of harmonization.

In the course of my life, I have seen innumerable flowers, differing widely in color, size, shape, and the arrangement of their organs; yet in all I have recognized an underlying similarity in structure and function. By the further synthetic activity of my mind, ~~there~~ has grown up the concept or general idea of flower. In like manner, there have arisen the ideas of leaf, stem, and root, and also of plant, of which these are parts. By a similar process, I have acquired the concept of animal; and by recognizing certain basic resemblances between animals and plants, that of an organism or living thing. Like every other active intellect, mine has constantly striven for coherence among all its ideas, whencesoever they came; for, as we earlier saw (p.), such harmony among all the contents of a mind is its only criterion of truth; and only in truth does it find rest. Thus, through the continued action of harmonization, combining many nervous excitations to yield a single image of the external world, uniting such impressions into concepts, concepts into more inclusive concepts, and these into a system, has grown up an integrated view of the world, which I ceaselessly strive to make more inclusive, coherent, and concordant with experience.

The mind is more than a mirror of the Universe. Although, in the measure that it matures, it finds increasing gratification in knowing and appreciating reality, its original function was to

guide its possessor through the perils of a competitive world; and its success in this difficult task was the strongest stimulus to its evolution. In the practical arts, of which technology is a modern development, human intelligence has endeavored, not always wisely, to mold external things, from bits of stone and clay to the total environment, to our needs, so that we may live more securely and comfortably. Whether, as is generally true in the living world, natural processes adapt the organism to its environment, or, as among men, beavers, and a few other animals, an attempt is made to adapt the environment to the organism, this adjustment is an aspect of harmonization. The fine arts strive to create beauty; and we have already learned that this is achieved by combining varied elements into a coherent whole, that is, by harmonization.

Harmonization is active in every body and in the subconscious foundations of every mind, for without it there is neither life nor thought. But, as we shall soon see, the long ancestral struggle to survive in a frequently hostile environment has engendered attitudes and passions that make us insensitive to it. In the measure that we disburden ourselves of these ugly accretions, we become responsive to the process that constitutes our being -- we become moral. Morality is the attempt of an intelligent being to bring ever greater concord into life, so that it may realize in fullest measure the values accessible to it. This endeavor has two complementary aspects: to make one's own thoughts and acts more harmonious, and to increase harmony between self and other beings of every kind. ¶ Morality in the strict sense is pos-

sible only for creatures who can foresee the future, assess alternative courses of action, and choose that which promises most to advance their moral ideal. When a moral agent comes into conflict with any other organized being, of whatever kind, he considers the other's needs in relation to his own, and tries to plot a course which will permit both to perfect themselves. If conflicting interests make sacrifices inevitable, he tries to hold them to a minimum for all concerned, not merely for himself. The immoral or amoral being, on the contrary, tries to satisfy its own desires without considering how much it injures other creatures. The harmonization which acts within, unperceived by it, exerts little influence on its deliberate endeavors.

Finally, we come to religion as the highest phase of harmonization. In The Quest of the Divine, I defined religion as "Man's attempt to attain harmony by conciliating that which he can neither comprehend nor control, yet which profoundly affects his welfare." This definition is especially applicable to the more primitive religions, the "religions of preservation," which are, above all, efforts to assure the continued prosperity of a tribe or a nation by propitiating the unseen powers which, in the view of primitive man, control the procession of the seasons, the movements of the sun and moon, the fall of rain, the growth of crops, and other natural processes on which life depends. Since these powers were commonly conceived as anthropomorphic, the usual procedure was to appeal to their avarice or vanity by sacrificial offerings and adulation.

As, with growing civilization, men gained greater control over

their environment and lived less precariously, yet for numerous reasons failed to attain the security and happiness for which they thirsted, religions of a new type, the "religions of emancipation", arose in the more advanced cultures from the eastern Mediterranean to China, chiefly in the first millenium before Christ. The emphasis now shifted from controlling the environment to self-control. Those who accepted these new religions and religious philosophies strove, in the first place, to cleanse themselves of all those fierce passions and insatiable desires which had grown up rankly in mankind. They substituted rectitude of conduct for the earlier religions' elaborate ritual practices and numerous taboos, superstition's swarming progeny. At their best, these new religions strove to increase harmony, not only within each human spirit, but between men and all creatures. To advance their aims, they often enlisted the services of painting, sculpture, music, architecture, and poetry. Thus spiritual aspirations, morality, and art came to a focus in religion.

This chapter has touched briefly on a number of subjects whose adequate treatment would require a volume, or a number of them. I have assumed some familiarity with these topics by the cultured reader, and my single aim has been to show that a single process runs through the Universe, from the earliest to the latest stages in its development, and is responsible for all creative advance. The ground we have covered is summarized in the attached table of the Modes of Harmonization.

MODES OF HARMONIZATION

Physical

Large scale

1. Genesis of suns and planetary systems

Small scale

2. Formation of atoms from the ultimate particles
3. Formation of molecules
4. Growth of crystals

Organic

↓

5. Origin of life
6. Multiplication of simplest organisms
7. Growth of multicellular organisms
8. Adjustment of living things to their environment
9. Development of parental care
10. Formation of societies
11. Growth of minds
    - Perception
    - Formation of universals
    - Elaboration of conceptual systems
12. Improvement of environment by the practical arts
13. Increase of beauty by the fine arts
14. Moral endeavor
15. Religion, traditional and philosophic

↑

Psychic

In this listing, the several modes of harmonization are numbered in the order in which they probably began, except that the second mode, and at least the earlier phases of the third and fourth, preceded mode one, the formation of suns and planetary systems. At the present time, all of the fifteen modes of harmonization proceed simultaneously in our part of the Universe, with the possible exceptions of the first, second, and fifth. Although our Solar System long ago acquired its distinctive features, similar systems may even now be taking shape in distant regions of our galaxy. Some thinkers opine that new matter is constantly but slowly springing up in interstellar space. And although we have no evidence that life, which arose on this planet when conditions at its surface were very different from those which prevail today, still occasionally originates from lifeless matter, we cannot dismiss the possibility.

In the foregoing sequence, three stages of harmonization may profitably be distinguished. Primary harmonization is wholly undirected and depends upon the constant movement of matter, as by convection and thermal agitation, to bring particles of various kinds close enough ~~together~~ to respond to mutual attraction and be drawn together into stable combinations. Examples are the formation of atoms from the ultimate particles, the formation of molecules from atoms, the formation of the first bit of crystal in a saturated solution or in a cooling liquid, and probably also the genesis of the earliest living thing. The origin of our Solar System is an example of primary harmonization on the grand scale.

The ceaseless flux of the Universe is by many taken as an indication that it is without a goal, but is driven by its intrinsic energy to restless, purposeless movement. But its incessant change may also be interpreted as a manifestation of its persistent striving to realize the value it potentially contains. By far the greater part of the matter in the Universe is still at a very low level of organization, at which values are rudimentary or lacking; hence it hurries on and on, seeking conditions in which it can participate in higher formations. After atoms have entered into close association with other atoms, as in the more stable molecules and crystals, they maintain their bonds indefinitely, unless some external agent splits them asunder. It is chiefly in its unorganized or slightly organized states that matter is restless. Indeed, it sometimes appears that its striving for organization and value is too easily satisfied; for in crystals it may rest quiescent for ages in a state which, as far as we can tell, realizes little value. Heat is the goad ~~which~~ that prevents matter from settling down comfortably in stable patterns, by prodding it into restless activity, which may result in new and higher forms. By the constant reshuffling of atoms and molecules which it effects, heat promotes primary harmonization; yet as it courses uncontrolled through the Universe, it likewise destroys much.

If all harmonization were of the undirected primary sort, creation could hardly proceed far; for everything would have to be built from fresh beginnings, without the help of older patterns. <u>Secondary harmonization</u> overcomes this difficulty. In this, structures formed by the first method serve as patterns or guides

for further construction. Thus, when into a saturated saline solution a small crystal of the same salt is dropped, the crystal promptly grows; although in its absence the solution might become supersaturated before crystallization begins. The introduced crystal provides a pattern on which the dissolved molecules align themselves, without waiting for random movements to bring a number of them into the proper configuration to start the process of crystallization.

The best example of secondary harmonization is the growth and reproduction of organisms, which is always controlled by pre-existing structures, especially the chromosomes. These small but complex constituents of each nucleus not only govern the development and functioning of the plant or animal in which they occur, but they can make other chromosomes like themselves, as they do whenever a cell divides, and in a special manner when reproductive cells are formed. Without secondary harmonization, life could hardly have advanced beyond the simplest organisms, and even these could not reproduce.

At long last, harmonization creates minds in some degree capable of directing processes in the external world, as likewise in other minds. When harmonization is guided by intelligence, it may be called <u>tertiary harmonization</u>, examples of which are the construction of a house or a useful machine, the creation of a work of art, the training and education of children, one's effort to grow in moral perfection or in wisdom, the organization of a good society, and the like. If, from the beginning, the world process had been directed by a foreseeing, benevolent Intelligence, with sufficient power not only to control the movements of great

masses of matter like suns and planets but likewise to place atoms just where they were needed in molecules, all harmonization would have been of this third type. In this case, creation should have proceeded straight to its goal, and the effort to bring forth the value latent in Primal Being should not have yielded any disvalue. There would nowhere be strife, ugliness, and suffering.

But in our actual world, it appears that everything had to evolve. Primal Being could not have been pure potentiality; for what is merely potential does not exist at all, hence lacks the power to start any movement; yet it appears to have been as close to pure potentiality as was compatible with its future development. As the Universe began slowly to develop, the very means for its further development had to be originated. At long last, there emerged intelligent beings, some of whom strove to understand the world in which they found themselves. Recognizing that foreseeing intelligence, capable of guiding the course of events toward an ideal end, is just what this world has long lacked, they desire intensely to dedicate their intelligence to the service of the process which created them and to help it forward. Only by this course can intelligence assume its proper place in the Universe.

To those who view things superficially, moral intelligence contrasts so strongly with anything they can discover beyond mankind, that it seems to lack antecedents in the Universe at large. But we have traced a continuous advance, from the earliest stages in the organization of matter, through the lower forms of life, to intelligent and moral life. Every advance has consisted in building up the primary materials of the Universe into patterns of increasing complexity, coherence, and amplitude. The essence

of morality is the effort to arrange living things and their activities in harmonious patterns which eliminate friction and permit each to perfect itself according to its nature. Morality is just the fundamental process of the Universe, now at long last become aware of itself and applying intelligence to advance its ends. In view of this unbroken continuity throughout the whole process, we may recognize a moralness pervading the Cosmos. From this arose the protomorality of animals, who perhaps do not foresee the future nor make deliberate choices, but who are governed by innate patterns of behavior that in many ways reduce strife among them and promote the welfare of themselves and their associates. Finally, as minds ~~grew~~ increased in power and foresight, morality in the strict sense grew out of the protomorality of animals. Morality is the effort to increase goodness, by which we mean the harmonious adjustment of one entity to another; and this is just what harmonization has been doing from the beginning.

CHAPTER VII

ORGANIC EVOLUTION AND THE ORIGIN OF EVIL

The last chapter outlined the development of the world as though it were a straightforward process, in which stage followed stage without complications, until the primary constituents of the Universe had been built into living things which display and appreciate beauty, think, and pursue ideals. Although we admitted incidentally that there were complications, we did not dwell on them. Actually, the complications have been so great, the striving to realize value has brought forth so much disvalue, that to many thinkers a single beneficent creative agent has seemed inadequate to explain the world. Not only did there appear to be a creator of good but likewise a creator of evil, of equal or slightly inferior power.

Thus arose the Iranian dualism, according to which Ormuzd or Ahura Mazda, God of purest light, engaged in secular strife with his opposite, Ahriman, the power of darkness and evil, for the possession of the world. The Judeo-Christian Satan, the fallen angel who plots against God, appears to be an attenuated version of the Zoroastrian Ahriman. In ancient Egypt, where life depended on the delicate balance between the waters of the periodically rising Nile and the dryness of the encompassing desert, the strife was portrayed as the struggle between the beneficent Osiris, who represented moisture and fertility, and his wicked brother Set, who personified the devastating drought. In Norse mythology, the opposites were the good god Balder and the crafty Loki. According to Plutarch, in his day most thoughtful men believed that powers

of good and evil contended for the possession of the world. This seemed the most natural explanation of the presence of so much strife, wickedness, and suffering in a Cosmos which likewise contained much goodness, beauty, and joy.

Any serious attempt to explain the Universe must take full cognizance of the evil no less than the good that it contains, of disvalue no less than value. It has long been the custom of those who prefer a monistic to a dualistic interpretation of the world, deriving it wholly from a single perfect Source, to discount evil, calling it unreal, illusory, mere appearance, or simply the absence of good. This was the course taken by the ancient Indians, who viewed all things as emanations from the supreme and ever-blissful Brahman; by the Stoics, who believed the world to be governed by absolute Providence; by Christian mystics, and modern Hegelians. But good and evil, as we earlier learned (p.), are names that we apply to relations. When relations are harmonious, we acknowledge goodness; when they are inharmonious, with conflict, suffering, and destruction, we recognize evil. As relations rather than independent entities, the existential status of evil and good are exactly the same; so that if we refuse to recognize one, we must, to be consistent, deny recognition to the other.

In its effort to give a purely mathematical description of the world, accounting for everything in terms of energy operating in space and time, modern science disregards both good and evil. But we who have known joy and suffering are sure that the Universe has aspects which science overlooks. The scientific simplification, extremely useful for certain purposes, must be supplemented by philosophic interpretation, in order to provide an en-

lightening world view.

Not to recognize and acknowledge evil, where it actually exists, is one of the most insidious forms of evil. An uncompromising dualism, such as that of Zarathustra, is more honest and respectable, more loyal to the facts, than all those monisms which try to maintain their position by denying that evil is "real." None the less, the world's duality from the moral point of view must be reconciled with its unity from the scientific point of view. Modern science finds the Universe to be a coherent system, at least with regard to the physical transformations that occur in it. Our demand for that coherence of all our experience, which is our single criterion of truth, would be perpetually frustrated if, from the beginning, two opposing principles had been trying to create different kinds of worlds in the same space. The moral duality of the world appears to have been superposed on its physical unity, as a later development. The vast amount of evil that forces itself on our attention seems to result from the difficulties and complications which harmonization encounters, rather than from the operation of some contrary process of comparable scope and persistence. One of these difficulties has already been noticed, that of finding the conditions in which creation can advance to higher levels (p.). But this is only the beginning of its troubles.

Since evil arises from conflict, doubtless we must look for its beginning in the often destructive clashes of darting atoms and molecules, the disintegrative action of hard radiations, in the nebulae before ever suns and planets tookshape. Since we are not certain whether atoms suffer when rudely sundered from their

companions in a molecule or deprived of some of their constituent particles, perhaps we should say that here we detect the formal condition of evil rather than evil in its fullness, which includes suffering. Only in the living world are we sure that there is pain, despair, fear, and all the other accompaniments of evil, of which anyone who surveys the situation with unflinching honesty must recognize an almost overwhelming amount. Here only do we detect evil in its ugliest and most acute form, moral evil, the deliberate intention to injure another, the pursuit of real or imaginary advantages without regard for the more remote consequences of one's acts. Some philosophers have held that this is the only real evil; and certain thinkers, including the authors of Genesis, have traced all the world's ills to moral evil. But, as we proceed, it will become clear that moral evil arose from physical evil, the clash of form with form, rather than the reverse.

"What," the reader may ask at this point, "has all this to do with organic evolution, the subject of this chapter?" Its relevance becomes obvious as soon as we begin to consider the causes of suffering in the living world. Cicero relates that Dicaearchus, a learned student of Aristotle, gathered statistics to show that more men had been destroyed by the assaults of men, in wars and revolutions, than by all other causes combined, including floods, epidemics, famines, and the sudden incursions of wild animals, by which whole tribes had been exterminated.[1] The same appears to be as true in the twentieth century A. D. as it was in the fourth ~~and third~~ century B. C., especially if we include among the

[1]Cicero, De Officiis, Book II, 16.

deaths for which men are responsible the epidemics and famines directly caused by war.

For our present purposes, it will be more illuminating to make a division somewhat different from that of the ancient Peripatetic philosopher. Let us place on one side all that living creatures of every kind suffer from lifeless nature --from volcanic eruptions, earthquakes, violent winds, heat and cold, floods, droughts, lightning strokes, and the like. Against this let us place all the mutilation, pain, and death which living things inflict on each other, in which reckoning we must include all diseases caused by bacteria and other microorganisms, no less than the ravages of larger parasites and the destruction caused by predation, the suffering and death which men inflict on other animals in the abattoir and the experimental laboratory and on the hunting field, and their violence against each other in time of peace as well as in war. Vast as is the number of organisms that languish or are suddenly snuffed out by the violence of the elements, it pales to insignificance beside the destruction for which living things are responsible. Natural cataclysms are intermittent, and many favored areas of the earth may escape them for centuries; the strife of organism with organism goes on incessantly, day and night, wherever life exists. Life would certainly be far safer and more pleasant for all endowed with it if there were less of it.

The basic cause of the incessant strife in the living world is the great fecundity of organisms, their tendency to multiply far beyond the earth's capacity to support them. But without life

only the more rudimentary forms of value seem possible; and unless we condemn the universal striving to increase value, we must approve the multiplication of living things. Evil springs from the too intense efforts to increase the amount of goodness and value in the world. As we have seen, only in very restricted portions of the Universe does matter find conditions in which it can form those more elaborate patterns into which matter everywhere strives to enter. When at last a favorable ambient is encountered, as on the surface of a cooling planet with a moderately dense atmosphere, matter begins to organize itself with such an unrestrained rush that collisions inevitably occur. So many patterns are started, at points so close together, that in growing they collide and compete for the space and materials necessary for their completion. It is as though many people were crowding to procure seats to witness some splendid performance, in a theatre too small to accomodate the multitude. They come with pacific intentions, thinking only of the pleasure or instruction they will derive from the spectacle; but before long, as they jostle together and compete for the inadequate seats, they begin to lose their temper; and soon they may be fighting. Evil is a secondary effect of the universal striving toward order and goodness. Disvalues spring up because no guiding and restraining hand is placed upon the movement to realize values. By its very intensity, harmonization indirectly generates disharmonies.

"Yes," one will say, "if planted too close together, even innocent seedlings compete for nutriments and space; and those that get the better start kill their neighbors by overshadowing and

depriving them of light. Even gentle and benevolent men may fight for food to keep their families alive. But what of all the cunning and diabolical methods of destruction that nature exhibits, the venomous fangs, the cruel tusks and talons, the menacing horns, the insidious traps; what of the countless parasites that slowly and painfully kill creatures more highly organized than themselves; what, too, of the attitudes that men and other animals display, rage, hatred, vengefulness, and destructive fury? This is surely a strange brood for a beneficent process to beget!"

To account for this fearful brood, one must understand the methods of organic evolution. Modern students are almost unanimous in attributing evolutionary change to two principal factors, variation in the progeny of the same parents and natural selection. That such variation occurs is familiar to everyone who has bred animals or plants or has noticed the manifold differences, corporeal and psychic, between himself and his brothers and sisters; we shall presently consider its causes. Selection means selective elimination; it is called "natural" simply to distinguish it from the "artificial" selection which man has long practiced to make his domestic plants and animals more useful or pleasing to himself. Selection is rigorous in the living world because far more individuals of almost every kind are produced than the earth can support. If every seed grew to maturity, the land would be covered by a solid mass of vegetation. If every bird's egg yielded an adult bird, the air would be crowded with wings. If every insect laid its full complement of eggs and all of them developed to maturity, the swarming insects would devour everything green,

Competition is most intense between individuals of the same species because their needs are the same and they must vie with each other for their share of a limited food supply.

Natural selection acts in the most diverse ways, and its agents are both the living and lifeless components of an organism's total environment. If browse is scarce on the African savanna, the giraffes with shorter necks may starve, while those whose longer necks enable them to reach higher twigs may thrive and reproduce. The slower, less alert antelopes will most often be seized by lions and other carnivores, while the swifter, more wary individuals escape and leave progeny. Most of the variations ~~which~~ that penalize an individual or confer an advantage in the struggle for existence, and on which selection operates, are less spectacula but not for that reason less important, than the foregoing examples. A plant which inherits a high capacity to tolerate a mineral that is ~~usually~~ toxic to most vegetation will soon overrun an area where this mineral abounds in the soil. Conversely, a plant that can thrive with a minimum of an essential element will be at a great advantage on ground where this element is scarce. Variation in habit no less than in structure and metabolism may favor or penalize the individual who happens to acquire it. A bird that builds its nest where it is more than ordinarily difficult to find or to reach should rear more fledglings than others of its kind. The noisiest nestlings are most likely to draw the attention of predators and be devoured. The ways in which selection acts are innumerable.

Natural selection is constantly at work increasing the adaptation of organisms of all classes to their environment in all its

aspects. It does not accomplish this by giving special advantages to the strongest or most efficient individuals, as a careful breeder lavishes special care on his most promising animals or plants; the environment is passive with respect to their merits. Whatever advantages the better-adapted individuals may have were conferred upon them by the random action of genetic variation, not by natural selection, which favors them merely by reducing competition from the slightly less efficient members of their own species. The majority of these individuals that are ruthlessly eliminated are well able to live and reproduce, and would flourish if permitted to survive. Contrary to what occurs in artificial selection, the active agents in natural selection are all destructive: predation, parasitism, freezing, desiccation, deficiency of light in the case of plants. Only the death of young individuals and those of reproductive age affects the evolution of the species. The destruction of those too old to bear progeny is a loss to themselves alone. It is evident that no ancestor of any organism now living was ever removed by selection before it reproduced.

If offspring always resembled their parents in every detail of structure, functioning, and behavior, the removal of excess individuals could hardly be selective, and evolution could not occur. What is the source of the variability which provides material for selection? Lamarck, one of the pioneer evolutionists of modern times, believed that the effective variations were acquired by individuals through their own efforts to survive and were transmitted to their offspring. If, of two brothers, one while still a boy becomes a laborer while the other sticks closely to his books and becomes a scholar, the first will probably become

brawny and slow-witted, the second less muscular but quicker of mind. Lamarck believed that variations of this sort were heritable, but subsequent studies have almost uniformly failed to support his view. We now know that post-natal changes in the parent's constitution do not affect the offspring, except in so far as the greater or less vigor of the female or seed-bearing parent results in more or less adequate nourishment of the embryo. The events which lead to evolutionary change occur only in the tissues which produce the reproductive cells or in these cells themselves, not in other regions of the parent's body.

Each cell of a plant or animal contains a nucleus, a small, roundish body embedded in the protoplasm and visible under high magnification in properly prepared material. The nucleus contains chromosomes, which as the cell and its nucleus prepare to divide are distinguishable as separate, usually elongated bodies, which strongly absorb the stain which the microscopist uses to make his material easier to see. The number of chromosomes in each nucleus varies within wide limits in the animal and vegetable kingdoms but is usually constant in a species. These chromosomes contain the genes which control heredity. Each gene appears to consist of one or a few very large, complex ~~protein~~ molecules of deoxyribonucleic acid (DNA), which govern the growth and functioning of the organism in which they occur. Certain genes have special control over certain features of the animal or plant; one may determine the color of a fly's eyes, another the length of its wings, and so forth. But many features are controlled by several genes, and the action of any gene is more or less modified by many or all of the associated genes. In the greatly enlarged chromosomes in the salivary glands of

certain flies, single genes, or more probably small groups of them, are visible under high magnification as darkly staining, transverse bands. This discovery gave greater reality to structures that were originally hypothetical entities, postulated to explain the facts of heredity.

With few exceptions among animals and plants, two parents must co-operate to produce offspring; and wherever sexual reproduction occurs, the egg and the sperm each contain half as many chromosomes as are found in the cells of the parent's body. ~~After the~~ The fusion of these sexual cells restores the full complement, which is retained in all subsequent divisions of the body cells by the longitudinal splitting of each chromosome and the transmission of one of the daughter chromosomes to each of the daughter cells. Accordingly, the growth and functioning of the new individual is controlled by two sets of genes, one of which was contributed by each parent. If the two genes of a pair differ in their effects on the organism, one, which is said to be dominant, often suppresses the expression of its partner, which is said to be recessive; but it is probable that no gene is quite without influence on the organism in which it occurs. If, in the following generation, the recessive gene happens to be paired with a partner which is likewise recessive, the character which was latent in the parent will come to light in the offspring. The evolutionary importance of sexual reproduction is that it effects a constant shuffling of the genes and their wide diffusion through an interbreeding population. One need only count his ancestors ten generations back, to realize from what varied sources his own heredity has been derived.

The large, complex molecules of the genes are very stable

structures. This is evident from the fact that changes in them are revealed by changes in the organism they control; yet many vegetable and animal types of both land and sea have persisted with scarcely any alteration for countless generations -- the opossums, for example, have changed little since the Cretaceous Period, some eighty million years ago. However, the arrangement of the atoms in the molecules of the genes is subject to alteration by external influences, of which the chief are the impact of radiations of very high frequency, including ultra-violet light, x-rays, and the emanations of radioactive elements. Thermal agitation seems also to be responsible for changes in the structure of the genes, which occur with greater frequency at high temperatures; and they may be produced artificially by certain chemicals, such as colchidine. ¶ An alteration in the master pattern or governing mechanism of an organism inevitably causes a change or mutation in the organism itself. Apparently, no single feature of any living thing is exempt from these mutations, which may be great or small, may affect the color, size, proportions, or functioning of a single organ or the whole body or, in the case of an animal, may be revealed as aberrations in behavior. This, then, is the origin of the variations on which selection operates.

In an organism that lives prosperously, all the structures and functions form a coherent pattern, and the manifold of genes which governs them must also form a coherent pattern. If one makes a random change in a harmonious pattern, it is far more likely to impair than to improve it; for the elements which will fit concordantly are few, whereas those that will fail to fit are innumerable. The random changes ~~which~~ that occur in genes may be compared

to the slips which a compositor makes in setting type. If, while proofreading a long book, an author finds a single sentence improved by the typesetter's mistakes, he is lucky. Similarly, most mutations deteriorate rather than improve the structure and functioning of the organism which receives them, making it less rather than better adapted to its ancestral environment. Sometimes the mutant animal or plant has the good fortune to reach a different environment to which its altered constitution fits it. More often, it will succumb in the struggle to exist. Occasionally a mutation will confer an advantage on a plant or animal, which then thrives and multiplies more than the original type. A series of mutations in the same direction, occurring over the generations, may produce a new and highly successful species. But countless individuals which fail to receive these favorable mutations, or which receive deleterious ones, must be eliminated to effect such an evolutionary change.

It has become apparent that organic evolution is promoted by violence of two sorts, first on a very small scale, by the impact on the genes of some of the less completely harmonized components of the Universe, then on a larger scale, by conflict among the organisms affected by these changes and by the inclemencies of the environment. If we concede that mammals, birds, and flowering plants are in any respect higher than the one-celled organisms ~~which~~ that were their remote ancestors, we must further recognize that evolution is, on the whole, constructive. But how can violence and destruction be constructive? Since it is evident that somewhere a construct-

ive principle is active, evolutionists, unable to find anything more adequate, sometimes assert that natural selection is constructive. Yet it operates, not by giving special advantages to the more promising types of organisms, as a good teacher will take special pains with a gifted pupil, but by penalizing and destroying the inept, as no good teacher will do. ¶ Natural selection is the scissors in the hands of Atropos, the third of the Fates. A scissors is, no doubt, constructive in the hands of a competent seamstress, just as a chisel is constructive in the hands of a skilled woodcarver; although they cut off and destroy good cloth or wood, which are themselves the products of quite different constructive processes. Moreover, these tools are constructive only when guided by a creative intelligence; in the hands of an untrained child, they are simply destructive. Yet we fail to detect evidence that a creative Intelligence guides organic evolution. Such an intelligence should lead creation toward its goal with fewer miscarriages and far less carnage.

The constructive principle ~~which~~ that evolutionists have overlooked is harmonization, without which variation and selection would effect nothing except the degeneration of life --without which, indeed, they would have no material on which to work. Harmonization produced life by building up the raw materials of the Universe into patterns of ever-increasing coherence, complexity, and amplitude, until finally it arrived at living protoplasm, able to respond to stimuli and reproduce itself. Harmonization acts more intensely in the living than in the lifeless world; life is above all an intensification of harmonization. When the pattern of molecules, cells, and tissues which is a living organism is dis-

torted or disrupted by some external agent, yet not severely enough to cause death, harmonization rearranges the altered components, bringing them together in the most coherent pattern they are now capable of composing; as we witness when lesions heal and lost tissues or organs are replaced.¶ Similarly, when a complex molecule of a gene is disarranged, as by the impact of a hard radiation, harmonization restores the integrity of the disrupted pattern, as far as possible adjusting the altered gene to all the associated genes, so that they continue to form a coherent, functioning whole, able to govern the development and activities of a sound organism; as though a sentence which had been mutilated by a typesetter's slip had by its own effort made certain internal adjustments, so that it again became a meaningful and grammatical statement, although it no longer stood just as the author had written it. If harmonization fails to achieve this reintegration of the genic complex, the fertilized egg may not divide; while less complete failure may result in an embryo that dies before birth, in an animal or plant that sees the light but dies while still immature, or in an older organism that functions poorly and cannot meet the stresses of its environment, becoming an easy prey to predators or disease.

Not only does harmonization often restore the coherence of the complex of genes which was upset when the structure of one of them was rudely altered, not only does it govern the growth of the organism, but it effects many special adjustments. If certain organs or functions are impaired by a mutation, others may carry part of their load. If the organism which differs from its parents is an animal, it may move restlessly until it finds

a more favorable habitat. If an intelligent animal, it may discover new methods of foraging, or make some other innovation that increases its success in living and reproducing.

~~Those~~ Habits ~~which are~~ acquired by an ~~intelligent~~ enterprising individual in the course of its life do not alter its genetic constitution and are accordingly not innate in its offspring; although in the case of a social animal, or at least one in which the young remain for some time with their parents, the innovation may be transmitted to other individuals by example. Moreover, in adopting a new mode of life, the animal changes the conditions in which natural selection operates, and accordingly alters its effects. It appears that sometimes the combined action of variation and selection succeed in building an innate foundation for an acquired habit that promotes survival, so that the intelligent innovation of the ancestors may finally become innate or instinctive in the descendants --the phenomenon known as "Organic selection."

In the choice of mates, too, animals may strongly influence the direction of evolution, in a manner for which we have reason to be grateful; for much of nature's beauty has resulted from sexual selection. Naturalists could hardly account for the brilliant coloration and lavish ornamental plumage of certain birds, including birds-of-paradise, peacocks and other pheasants, hummingbirds, cotingas, and certain other groups, until Charles Darwin attributed their splendor to selective mating. A considerable proportion of the world's most ornate birds are polygamous or promiscuous; the males do not, as in the majority of birds, pair with one female whom they help to rear the young, but by

means of calling and displaying in a definite locality, they try to win as many temporary partners as they can. Their displays include the postures and movements which most effectively show whatever ornaments or bright colors they possess. Often, as in manakins, hummingbirds, and ruffs, a number of displaying males are stationed close together in a courtship assembly, where the rivals dwell amicably, or at most indulge in mock combats in which injuries are seldom inflicted. ¶ The female who visits the assembly chooses the male who most attracts her, and her choice is, as a rule, respected by the less fortunate rivals. The male with the most brilliant plumage, the most energetic displays, is most likely to win her and transmit his special features to their descendants, with resultant increase in the beauty and vigor of the race. In certain lizards and fishes, and even in fiddler crabs and jumping spiders, brilliant coloration is associated with displaying to the females; and its evolution accordingly appears to have been promoted by sexual selection.

These displays of bright ornaments and complex movements are inexplicable, unless they appeal to the mind of the animal that responds to them. As evolution raises animal life to higher levels, its course is no longer controlled solely by genetic variation and selection by the environment, but nascent mind plays an increasingly important role, by seeking favorable habitats, by choosing mates, ~~intelligently~~ adjusting behavior to changing conditions, and finally by deliberate efforts to improve the environment. Indeed, if mind were without influence on the course of evolution, it would not itself have evolved. Evolution affects only the mind's innate foundation in the structure of the brain

and nervous system; the developing and functioning of each individual mind is, as we learned, an aspect of harmonization.

One who surveys the course of cosmic development can hardly fail to be impressed by harmonization's capacity to overcome obstacles and turn reverses to its advantage. If planets are in fact composed of material drawn from a star by the gravitational attraction of another that sped close by it, this provides the first example of the tendency to which I refer: harmonization was gathering a vast volume of diffuse matter into a star; a near-collision tore some of this material away; the lost matter was molded into planets, on which creation could advance to higher levels and finally bring forth living things.

The growth and functioning of each plant and animal is controlled by its genes, which must form a coherent pattern in order to govern the development of a sound organism. Thermal agitation, or the impact of hard radiation, from time to time disrupt the master pattern on which the organism's integrity depends. Harmonization gathers the altered genes into a new unity, and the animal or plant which now develops may be in some ways superior to its ancestors. The accidents whose immediate effect is to disorganize living things become the means for their progressive evolution.

After animals became abundant, they competed fiercely for the means of subsistence and often destroyed each other --a tragic and unexpected consequence of the universal striving for harmony and value. But competition sharpens their intelligence, which grows until they become capable of foresight and deliberate choice, and finally develop into moral beings who recognize the evil of

strife and try to avoid it. ¶ Each time that some new complication threatens to wreck harmonization and halt its creative advance, this difficulty is made the means of further advance. If it had avoided all complications, harmonization might have raised matter to a relatively low grade of organization, such as the crystalline state, and rested comfortably in this achievement. The jogs that it has received have helped it to march forward to higher levels.

I earlier said (p.) that moral evil grew out of physical evil, and it is now necessary to show how this occurred. The very first living things on this planet could not have depended on other living things for nourishment, for at first there were no others on which they could prey. They either synthesized their own food from inorganic materials, in the manner of green plants and certain microorganisms, or else they utilized energy-yielding compounds which the lifeless environment afforded. The second method seems more probable, for the complex chemical transformations involved in photosynthesis and similar processes must themselves be the outcome of a long evolution. But with the reduction of the quantity of the nutrient compounds that appear to have been formed spontaneously in the primitive atmosphere and seas, which in composition differed in important respects from those of the present day, the food problem grew acute. Probably long before multicellular organisms arose, certain primitive forms of life began to devour other living things, as we now find among the protozoa. Thus began predation, which, along with its more subtle variant, parasitism, is the greatest evil which life has brought forth, directly or indirectly the principal source of all its woes.

Footnote to preceding page:

[1]I am aware that this statement will raise a storm of protest from ecologists, conservationists, wildlife managers, etc., who will point out that predation removes chiefly the aged and ailing individuals, that it prevents overpopulation with consequent starvation, and so forth; hence that it must be regarded as beneficent and, in a sense, ethical --strange ethics, that approves in other animals the violence and killing that practically all moralists, religious and philosophical, have condemned in ourselves! But we should not forget that the predators are themselves largely responsible for the rate of reproduction that causes overpopulation when they are removed. The predators' victims had to rear enough progeny to meet this drain, else they would have become extinct. But this adjustment of the rate of reproduction to the average annual mortality is a slow process, requiring many generations; and when one of the factors contributing to mortality is reduced in intensity or eliminated, the now excessive rate of multiplication causes overpopulation, which, especially in the larger herbivorous mammals, may lead to the depletion of the food supply and horrible starvation. If there had never been any predation, the species now preyed upon would probably have long ago achieved a lower reproductive rate, adjusted to their lower annual mortality and the food-supplying capacity of their ancestral habitat. As to the diseased individuals which the predators are credited with removing, they are themselves victims of predation of another kind --the subtle parasitic variety. The crux of the whole problem is whether, as some zoologists contend, animals which carefully attend their offspring, like mammals and most birds, inevitably rear as many progeny as they can adequately nourish, or whether their reproductive rate is adjusted to the maintenance of an optimum population density, even if this entails rearing fewer offspring than they could adequately feed. I have elsewhere set forth some of my reasons for supporting the second of these alternatives (The Ibis, vol. 91, pp. 430-455, 1949; vol. 109, pp. 579-599, 1967).

As living creatures slowly increased in size and complexity, the relation between predator and prey became more ~~involved~~ subtle. At first, no doubt, the predatory protozoon had merely to advance upon a passive bit of protoplasm , flow around it, and enclose it in its own body, as the amoeba now does. But any habitual victim of such predation that acquired means of escaping would enjoy an advantage in the struggle to survive and multiply, while those that lacked mobility or methods of defense would face extinction. As, in consequence of the growing scarcity of the more passive victims, prey became harder to obtain, the predators that developed better methods of capturing it also increased more rapidly than their less efficient neighbors. Thus began an aeonian race, in which every improvement in the means of escape of the hunted was followed by an increase in the efficiency of the hunters, which in turn led to further protective adaptations in the victims, and so on, down the geologic ages.

The outcome of this tragic contest between predators and their prey is the situation familiar to every student of nature. On the one hand, we find a vast array of predatory creatures, beneath the water, on land, in the air, armed with tentacles, teeth, and talons, overtaking their victims in swift pursuit, pouncing upon them from ambush, or else catching them with nets, pitfalls, or deceptive lures; on the other hand, an equally amazing array of the hunted, striving to preserve their lives by flight, by enclosing themselves in protective armament, by covering themselves with forbidding spines, by developing an unpleasant smell or taste, or else by their deceptive resemblance to some inedible object, such as a thorn, a flake of bark, a twig, or to another insect whose taste

or sting gives it immunity from predation. And to increase the irony of the situation, many of the hunted are themselves predatory on weaker creatures.

The methods by which predators hunt and their victims try to elude them are treated in detail in a thousand books on natural history. What is generally overlooked, although it chiefly concerns us here, is the psychic consequences of this strife. Just as the struggle for existence has profoundly modified the organs of animals, so it has modified their psychic complexion no less profoundly. It is useless to equip a predator with offensive weapons unless it is also endowed with the fierceness to employ them; it is equally useless to give swift legs or wings to the hunted, unless it have the impulse to flee. Whatever an animal does, it does more intensely under the influence of the appropriate emotion. Each of the passions as is well known, has its typical somatic accompaniments, such as increased blood pressure, rapid breathing, and muscular contractions in anger; rapid beating of the heart, pallor, trembling, dryness of the mouth, and erection of the hair in fear; etc. The quality and characteristic expression of an emotion are largely determined by these glandular, vascular, and muscular alterations; and William James contended, cogently enough, that without these somatic changes we should have no emotions to color our purely cognitive perception of life's predicaments.

Since the passions are so strongly colored, if not wholly constituted, by bodily changes, the capacity to feel them must be controlled by the genes, as is true of other physical characters. Accordingly, they will evolve by the method of variation and selection, just as the body does. Hence it was inevitable that animals who

contended sharply with others of their kind for mates and the means of subsistence, who struck down other animals and tore their quivering flesh for food, or who were constantly menaced by this horrible fate, developed strong passions.

Through much of his evolutionary history, man was not only a predator but he lived in dread of the larger carnivores, great serpents, and other powerful antagonists, as likewise of attack by neighboring human groups. As in other animals, males vied with each other for the possession of females; and the latter, no doubt, often tried to lure attractive males away from rival females. In these circumstances, man became strongly infected with the whole gamut of emotions which it seems possible for living things to have. Anger, hatred, vengefulness, malice, destructive fury, along with fear, jealousy, and suspicion --all the passions and disruptive attitudes which prompt men to plan and execute evil deeds and which the wise and the good everywhere have striven to subdue and cast from their minds --are our hideous legacy from our human and subhuman ancestors through countless generations. They are not, like love, benevolence, and compassion, feelings natural to a creature formed by harmonization, the true expression of its formative process; on the contrary, they are accretions foisted upon animal life by the struggle for existence, and they should fall away just in the measure that this fierce conflict is mitigated.

The same aeonian struggle that produced crude predation also gave rise to its more insidious variant, parasitism. Although predators apparently cause more deaths, it is probable that parasites, which find it advantageous to keep alive the host whose

strength they slowly sap, are responsible for more suffering in the living world. Outright predation at least promotes the development, in both the hunters and the hunted, of keen eyes, acute ears, sensitive noses, and other sensory apparatus, as of swift, strong bodies and cunning minds; and all of these qualities may finally, in improved circumstances, be put to better uses. The parasite requires perhaps one sense and some degree of mobility in order to find its host; but once comfortably installed in the host's tissues, it needs neither senses, intelligence, nor strength, but only the capacity to absorb nutriment from the surrounding body fluids, to transmute this into its own tissue, and to reproduce. The parasite succeeds in the struggle for existence without becoming burdened by ugly passions, but at the price, apparently, of losing all except the most somnolent feeling. Although the physiologist, contemplating the many subtle adjustments that the parasite must make, may find it just as well adapted, just as admirable, as any self-supporting animal; to most of us, it seems to have followed a downward course. It warns us that variation and selection do not always lead life to the realization of higher values, but often divert harmonization from its true goal.

After this rapid glance at organic evolution and analysis of its relation to harmonization, let us return to a matter which we noticed early in the preceding chapter, the divergent views of Sir Julian Huxley and his grandfather on the attitude which the moral man should take toward evolution. Should he resist it, as the elder Huxley contended, or promote it, as the grandson urged?

Since evolution has lifted us up from the simplest forms of

life and seems capable of raising our descendants still higher, who can doubt that we should promote it --provided that we can do so by means that we can approve. The first question that we must ask is, Can we approve, can we practice with an untroubled conscience, the methods which have chiefly contributed to organic evolution, variation and selection? Could we reach into human germ plasm and make certain small adjustments in the molecular structure ~~of the molecules~~ of the genes, foreseeing just what effect on the body and mind of the future progeny each rearrangement would have, we might rapidly improve the human stock. But it is doubtful whether men will ever acquire sufficient knowledge and skill directly to reconstruct the genes of any living thing.

This failing, we can increase the variability of human babies by exposing their parents to radioactive materials, as is now being done to domestic animals and plants, in an effort to make them more useful to men. But as we have already noticed, most mutations, whether natural or artificially induced, are injurious. For the sake of a few individuals of superior type, we should engender a brood of monsters. The fear that this will occur is the base of much of the opposition to the continued testing of nuclear weapons, which pollute the atmosphere with radioactive dust. The attempt to promote human evolution by inducing greater variability would need to be seconded by a ruthless elimination of the deleterious mutations, that would outrage all our finer sensibilities and have morally disastrous consequences. No well-wisher of humanity could seriously consider this method. Indeed, one imbued with a modicum of the attitude ~~which~~ that Albert Schweitzer has called "reverence for life" cannot approve its application to domestic

animals, and perhaps not even to plants.

Without trying to increase the variability of human babies, selection alone might effect some improvement in mankind, as was long ago recognized by Plato. If every young man and woman would choose a nuptial partner with some regard for the physical, moral, and intellectual attributes of the children they would together beget and rear, the quality of the race could be slowly raised. But the process would be slow; and the first notable improvement in the descendants would be due in larger measure to the high ideals that parents brought to the task of rearing their children than to genetic changes. Since people tend to exaggerate their own virtues and gloze over their defects, it would be advantageous to have a board of experienced judges to tell those who contemplate marriage whether or not they are likely to beget desirable progeny. Enamored men and women would probably resent this interference in what they hold to be their private affairs; although, indeed, the quality of the children who are born into any community profoundly concerns all its members, those of future generations even more than those now alive. And in view of the mixture of excellent and inferior qualities which most of us are, and the imperfect state of our knowledge of the inheritance of mental and even physical characteristics, it is probable that judges fully sensible to their heavy responsibility would deny parenthood only to those who revealed rather grave defects known to be heritable, or who are incompetent to rear children.

It seems, then, that the best and safest way to promote human evolution is by loyally supporting the one truly constructive factor in evolution —harmonization. We must try to bring greater

harmony into those aspects of life that we can control, without waiting for genetic changes that we cannot control. In the first place, we must improve in character and conduct, which is the course that the wise of all ages and lands have exhorted men to follow. We must improve the organization of society, giving more attention to how institutions and economic arrangements affect the quality of men and women, ceasing to make the production of salable commodities and the increase of luxuries our chief criteria of progress. We must cultivate greater harmony with the natural world that surrounds and sustains us. Above all, we must spare no effort to give every child an education which calls forth all the excellent qualities latent in him and imbues him with lofty ideals, rather than merely crams his head with facts that are soon forgotten. All these endeavors are aspects of harmonization, for they bring the varied elements of individual and social life into ampler, more coherent patterns.

Although, by this course, we make no attempt directly to control the course of human organic evolution, we subtly alter the conditions in which evolutionary factors operate; and, as we have already noticed (p.), this cannot fail to have effect in the long run. Like a natural environment, the social environment favors the multiplication of the types best adapted to it and tends to eliminate the poorly adjusted types. Although, as society grows complex, such selection becomes less rigorous than in a state of nature, it is far from ineffective. Those individuals who seem to be made for their society, who readily adopt its customs, who unresistingly accept its valuations and ideals, as a rule soon settle into a satisfying niche in the social organi-

zation, marry early, and beget children. Those who rebel against the practices of the community into which they happened to be born, who cannot accept its valuations, who find its ideals too low or else too high, who ~~long~~ thirst for some different mode of life, may take long to find a permanent occupation, marry late, and leave few offspring, who are themselves likely to acquire the rebellious attitudes for which they have an inherited predisposition and to which they are exposed in impressionable childhood; or else these misfits may emigrate in search of a more congenial ambient.

Thus, in a military society, the warriors will be the preferred husbands of well-born maidens, and, despite losses in battle, they will reproduce more rapidly than the mild, contemplative men, who, finding no place for themselves in the rude culture, will often seek religious seclusion and leave no descendants. There will likewise be an adequate population of the oppressed serfs who till the soil, because no military society can dispense with them, unless it lives wholly by predation. A competitive industrial society will favor the development of an enterprising, aggressive, self-seeking type and of large numbers of unambitious factory workers, whose chief desire is for creature comforts and the vicarious excitements of commercial amusements. Where almsgiving is regarded as meritorious, there will be no lack of the eleemosynary poor, who could not survive in a society which refused to support them.

From these considerations, it appears that, in order to promote the growth of whatever human qualities we deem most desirable, we should first of all create a society in which these qualities

are exercised and cherished. One kind of social organization will favor the development of gentle, magnanimous, co-operative men and women, who esteem spiritual enlightenment above material goods; other social and economic arrangements will tend to produce selfish, aggressive individuals, who prefer material wealth to things of the spirit. This brings us to the great difficulty that all projects for human improvement inevitably face: while it is true that each type of social organization favors the increase of those qualities which are best adapted to it, the society itself reflects the actual character of the people who compose it. If we had a different kind of society, it would slowly create a different type of man; but before we can achieve this different kind of society, we must have people who are fitted for it. A society which does not express the character of the majority of its members is unstable; for few people have sufficient idealism freely to conform to social institutions ~~that are~~ uncongenial to themselves, because they are sustained by the hope that these institutions will elevate the character and increase the happiness of their descendants. Although science and technology have demonstrated that they can rapidly change our physical milieu, the improvement of man himself is necessarily slow.

One who dispassionately assesses all the obstacles to the improvement of humanity in beauty, vigor, intelligence, and the innate foundation of moral qualities, can hardly avoid discouragement; and recent prophets have painted most unattractive, even horrifying, pictures of mankind a few generations hence. One course, however, is always open to anyone who earnestly desires

to raise men to higher levels: the moral and spiritual elevation of himself and of those younger people whom he may be able to influence. If enough individuals would adopt this attitude, we could face the future with confidence. We have not yet fully realized the potentialities of our actual genetic endowment. If further progress along the highway of organic evolution is blocked by insuperable obstacles, the road of moral and spiritual progress is open, and no one can foresee how far we may travel along it. By this road we shall go safely, for we follow the course of pure harmonization, without the perilous complications that biological evolution involves. We should gradually succeed in casting off all that terrible burden of disruptive passions and attitudes that the struggle for existence imposed upon our ancestors. Free from hatred, rage, greed, avarice, jealousy, and vengefulness, filled with love and benevolence for all beings, men may at last become perfect expressions of the process which forms them.

CHAPTER VIII

THE YOUTHFUL UNIVERSE

We stand beneath the starry sky and reflect upon the immensity of space. The sun rises, reminding us of its vast store of power and the admirable regularity of the movements of our Solar System. The sublimity of the starlit night, the lovely tints of dawn, give way to the beauty of the brightening earth, with its soaring peaks and winding streams, green hills and stately trees. A bird sings and brings to mind the wonder of the living world, whose least creature is too marvellously intricate for man to create. We vibrate with fresh morning vitality, we feel, we think, we try to understand ourselves, only to find that we are even less explicable than the things that surround us. We seem to live in a Universe of such unlimited power and resources that it could accomplish whatever it strove to do.

As day advances with its toils and perplexities, other aspects of the world come to our attention. A hawk strikes down a singing bird. We notice a caterpillar that is being devoured alive by the larvae of the ichneumon fly. Word comes that a neighbor is dying miserably of a dreaded disease. We go to the village for the mail and are oppressed by the squalor in which the people live; our hearts sink as we notice the blank apathy or the active malice in the faces of some. The daily paper is full of the quarrels, hatreds, and disasters of a tortured world.

These contrasts fill us with doubt and dismay, and meteoric loyalty wavers. We are at a loss

~~How can we~~ reconcile these two aspects of creation, its beauty and its ugliness, its joy and its misery, its magnificent achievements and its hideous defects? Certainly the power that

can produce a solar system, a singing bird, and a thinking man could overcome these defects if it cared. Must it not be that a Universe which can accomplish so much that is sublime and admirable, yet includes so much that is evil and revolting, lacks a definite direction and a goal?

The very success of the creative process blinds us to the difficulties ~~which~~ that it has had to overcome, to those which still confront it. When we behold its marvellous achievements, so far beyond our human skill, we imagine its power to be unlimited; and we thence conclude that the only reason why it has not made a better world, why it permits the continuance of so many cruel and ugly things, ~~it~~ is that, devoid of purpose, it creates by accident. But when we reflect on the obstacles which beset the creative process, what effort and striving were needed to raise the world even to its present imperfect state, our attitude changes. We then perceive that cruelty and ugliness are the price that it necessarily paid to create a world in which beauty and love abound; they are not proof that it is indifferent to what it brings forth.

The Biblical account of creation by divine fiat, no less than the Hindu notion that the visible Universe is but Brahman's play of fancy, and many another cosmogony conceived in the same careless vein, have done immense harm, by accustoming men to the belief that to make a world was as simple and easy as ordering an automobile from a dealer. On this view, the world's manifold imperfections are inexplicable, or can be explained only by putting the blame on man's perverse "free will." But we will always ask why a God who could create a world so easily did not take more

pains and make a better one. Those old myths, such as the Babylonian, the Norse, and the Aztec, which portray the creative god as struggling with and overcoming a huge primordial monster -- Tiamat, Ymir, Cipactli--of whose flesh and bones the world was fashioned, in some respects reveal greater insight than the speculations of the succeeding stage of human culture, for they at least recognize that creation involves effort and struggle, that it is more than placing an order at a magical fair. Plato, who in the Timaeus represented the Demiurge as persuading Necessity to co-operate in guiding the greater part of the things that become toward what is best, also showed some appreciation of the difficulties of the undertaking; as did Leibniz in his doctrine of compossibles. Biologists who study evolution are also familiar with the difficulties of creation, at least in one of its phases; but they are so involved in the manifold complexities of genes, mutations, clines, and similar technicalities that they nearly always fail to grasp the wider implications of the evolutionary process.

Few men have sufficiently appreciated the difficulties of creation on a cosmic scale. To start with substance in its most primitive, undifferentiated form, and, with neither model nor precedent nor plan nor guidance, bring forth all the value potentially within it --this is the colossal task which at the beginning Being faced. Moreover, it had only a few simple modes of procedure, tropes of matter (to use Santayana's term) such as gravitational attraction, electrical attraction and repulsion, electromagnetic pulsations, and the like, by the infinite complication of which everything had to be accomplished. No wonder that there

were many miscarriages, that the creative process often went off on a wrong track (as when it formed the huge saurians of the Mesozoic Era), that at times it seems on the point of foundering in the immensity of its entanglements. The marvel is that, beginning as a blind groping toward self-realization, it has achieved so much. Its accomplishments can be accounted for by the abundance of its materials, the immensity of the time at its disposal, and the tireless persistence of its dominant process, harmonization.

Human inventors of recent times have approached their problems, not with matter in its primal state, but with organized materials, such as metals, wood, rubber, and vegetable fibers. Moreover, many of the elements that would enter into their inventions, such as the wheel, the lever, and the piston, were already familiar to them. Yet even with this start, it required many years of patient effort by many men, the construction of numerous models which failed to work or worked poorly, before steam engines, internal combustion engines, aeroplanes, and the like were perfected. To keep these facts in mind will help us dimly to grasp the magnitude of the task which Being faced when it began to create with no developed matter, no experience, no single one of the forms that it needed --in short, with hardly more than bare potentiality.

When we begin to appreciate the titanic difficulties of creation as likewise the magnitude of its achievements, we regard the Universe with greater affection and loyalty, and take a more hopeful view of its future --and our own. For to appreciate the difficulties which the creative process has confronted and partly overcome is likewise to have a keen sense of the intensity, the urgency, the perseverance of the striving to develop its poten-

tialities, which is at the root of the process. And it should, moreover, make us forgive its crudities, from which we and all creatures suffer. It would be tragic if a creature which the world process has produced with such immense toil, which is in certain respects its highest product in this particular part of time and space, should not finally comprehend the movement to which he owes his origin, so that instead of becoming alienated from it, he may co-operate with it, and apply his special and unique gifts to forwarding it, to the limit of his strength.

It will help us to appreciate the difficulties ~~which~~ that beset creation if we glance briefly at a few of the most general problems which had to be solved. The success of harmonization depends on finding the mean between four pairs of extremes, which are:

1. <u>The mean between the mobility and stability of matter.</u>— The movements of particles of all classes, from protons and electrons to atoms and molecules and even larger aggregates, are indispensable for bringing them together in different combinations, so that compounds and larger patterns can be built up. The more mobile the particles, the more encounters there will be in a given interval of time; and many of these may bring about favorable groupings. But if matter is too mobile, no patterns can be maintained. At very high temperatures, as in the stars, there is a maximum number of encounters; but the life of all but the most heat-resistant compounds is very brief. At absolute zero, most structures are stable; but the slowness or lack of movement of particles of all kinds is unfavorable for the origination of new patterns. On this planet, the optimum balance between mobility

and stability is found in the relatively small range of temperatures between the freezing and boiling points of water, and it is within this range that life flourishes. But, as we have learned (p.), only in extremely limited portions of the Universe are equally favorable conditions found.

2. The mean between permanence and growth.—All true creative activity aims at permanence; for creation is the joining of bonds; and the more firmly they are joined, the longer they hold. The conscientious builder wishes his edifice to stand for centuries; the highest aspiration of the writer and the artist is to produce something that men will treasure for generations; and even the actor and declaimer, whose words fade from the air, tries to make a lasting impression on ~~his~~ their audience. As a creative activity, harmonization strives to build enduring patterns.

Although stability is the goal of creation, it resists further creation; for if development is to continue, a pattern must be plastic and not rigid. Some structures are so firmly bound together that they are incapable of further development; others so plastic that they readily acquire different forms, yet retain none of them. An example of the former is a crystal, whose component atoms are conjoined in so stable a pattern that they resist transformation, with the result that its growth is restricted to the addition of new layers at its surface. An example of the latter is a cloud, which constantly changes from shape to shape, but holds no shape long. Continued fruitful transformation requires a medium that avoids these two extremes. The genes in the chromosomes of living things combine great stability with a modicum of

plasticity, and this makes organic evolution possible. The organisms whose development these genes control, however, lose most of their plasticity as they mature. Our own bodies, for example, cease to grow in the third decade of our lives; and thereafter we can do little to increase their size, beauty, strength, or efficiency; our principal effort is to retard their deterioration. Many plants, especially trees, grow for centuries; but their growth is largely superficial, as in a crystal. New lengths are periodically added to the twigs, new layers to the wood and bark. The older parts, however, do not participate in this renewed growth; often they die and serve merely as a rigid framework for the tender young tissues.

A mind, however, exhibits the happiest combination of permanence and the capacity to grow. It retains its experiences indefinitely in the form of memories, the oldest of which may join with its latest acquisitions in a fruitful synthesis; as when a fact that we learn today unites with a fact that we have long known to point out a fresh interpretation or elucidate one of nature's secrets. The mind's attitudes and valuations may change slowly, or at times swiftly, to the end of life. Its growth is not superficial, like that of a crystal or a tree, but pervades its whole mass. Thus a mind, which combines permanence with the capacity for continuous development as no physical structure seems able to do, is an exceptionally promising medium for creative advance. But long ages were needed to form such a mind.

3. <u>The mean between isolation and crowding</u>.—If growing patterns are too crowded, they clash together, compete for the space and materials necessary for their completion, and often

destroy each other, thus giving rise to all the evils that we have already noticed. But if they are too widely separated, they cannot exchange benign influences, support each other, or combine in a higher synthesis. In the living world, and especially among men, to achieve the optimum mean between these two hurtful extremes is most difficult but of the greatest importance.

4. The mean between individuality and universality.—In a sense, this problem applies to all created things, which to be fruitful parts of the whole and generate values must combine unity with multiplicity, as we noticed in Chapter V. But to strike the proper balance between individuality and universality, the sense of distinctness and the sense of unity with the whole, is the peculiar and most difficult task of self-conscious beings. The man who fails to recognize his oneness with a larger whole dooms himself to sterile spiritual isolation, a loss to the Universe, to society, and, ultimately, to himself. But the person who refuses to recognize and cherish his individuality and uniqueness sets himself in opposition to harmonization, which strives to produce unity in diversity rather than insipid homogeneity; and he closes the door to his own fullest development.

Some of these four conditions of creative advance are subject to our control; others are largely beyond it. As living things, we arose in an ambient with a favorable balance between the mobility and stability of matter and we must, on the whole, accept it as we find it, grateful that it supports our lives and our intelligent endeavors to improve our immediate environment. As to the mean between permanence and plasticity, human choice is important in many fields, such as the materials which builders, artists,

artizans, and engineers use in their work; but in our most important constructive endeavor, the perfecting of human bodies and minds and the societies which they compose, we must accept the materials --ourselves--much as nature has given them to us. Our task is to promote the growth of healthy bodies, to train and enlighten minds and purify them of disruptive passions, to organize societies; but we must accomplish this with bodies and minds whose basic constitution is determined by heredity, over which we exercise little control. To achieve the golden mean between isolation and crowding, at least in the human world, is within our power, and is one of the most urgent of the problems which confront us. Finally, to find the mean between individuality and universality is, in ourselves, largely a matter of understanding ourselves and our relation to the whole of which we are parts; and this, as we have seen, is one of the principal objectives of philosophy. We shall return to this important problem in Chapter IX.

In minds we found a unique blending of permanence with the capacity for continued growth. In this medium, more than in any other that it has produced, harmonization should be able to advance indefinitely, raising creation to ever higher levels by joining ever more varied contents into coherent patterns. Moreover, intelligence, one of the primary attributes of mind, can overcome many of the obstacles and deadlocks which block creative advance. Yet the creation of intelligent minds is, of all the tasks which harmonization ever faced, one of the most difficult and hazardous. Intelligence slowly grew up in animals governed

by instincts or innate patterns of behavior. The ideas of such animals, in so far as they are present, appear also to be joined in fixed patterns, corresponding to their inherited modes of procedure. But the basic condition of creative intelligence is the release of ideas from fixed patterns, so that they may freely re-arrange themselves in new and fruitful combinations; and the only patterns of ideas which will prove fruitful to living things are those which somehow correspond to the structure of reality.

To arrange ideas in patterns which correspond to reality has been the greatest task facing mankind ever since our remote forebears began to think. If cranial capacity is an index of mental capacity, our ancestors of ten or twenty thousand years ago had the innate ability to remember, to imagine, and to reason just as well as we do, and in some instances better. Doubtless they had a rich and varied experience, derived directly from nature rather than ~~indirectly~~ from books; and their minds were stored with vivid impressions, the gift of keen senses. But lacking the intellectual discipline which three millenia of philosophic and scientific endeavor have transmitted to us, they hardly knew how to combine their ideas in fruitful patterns, whereby they could understand and control the world in which they lived. Indeed, the history of the sciences suggests that not until most of the possible wrong explanations of a phenomenon have been tried and found inadequate will the correct explanation, which if often the simplest is by no means the most obvious, occur to some original thinker. Accordingly, our ancestors, whose restless minds swarmed with ideas that they vainly tried to arrange in patterns that reflected the structure of reality, blundered, suffered, and inflicted much

needless suffering on other beings. And we of the twentieth century, despite our ability to fly and to reach the moon, ~~satellites,~~ are still handicapped by the same incapacity.

Intelligence does not provide its own motives; the ends which it serves arise from older and deeper strata of our complex nature. The same intelligence which can create can also destroy, if so commanded by the will. Hence intelligence is a most dangerous instrument to give to an animal moved by an unstable mixture of contending passions. If controlled by the love and benevolence which are expressions of our inmost selves, it can bring immense benefits, by serving a process which above all has needed intelligent co-operation. If intelligence fall under the sway of greed, malice, hatred, jealousy, egoism, or some other of the disruptive passions that have been imposed on animals by the struggle to exist, it can cause vast destruction and immense misery. ¶ A large share of the ills which have afflicted the world since the dawn of history may be attributed to the fact that intelligence, still half-formed and subject to countless aberrations, has been in large measure controlled by wild, disruptive passions, among the most pernicious of which is the craving for power, wealth, and luxury. To this we must ascribe the long swathes of destruction cut by brutal conquerors often miscalled "great," the corpse-strewn fields of battle, the smoking ruins of innumerable cities, the enslavement or extermination of whole populations, the bloody persecutions in the name of religion, the ruthless exploitation of the natural world, and half of the unspeakable horrors inflicted by man upon man and his fellow creatures. The last ten thousand years or so might be designated ~~as~~ "The Era of the Troubled Child-

hood of Intelligence." One who views the contemporary scene hardly dares to predict whether intelligence will finally come of age and give this planet the benefits that it is capable of bringing to it, or cancel the constructive work of millions of years in an orgy of insensate destruction. So perilous is the undertaking of bringing intelligence into the world!

The present age appears to be not only the most critical period in the development of this planet, but likewise the most tragic. Doubtless a creative process, which in response to an immanent force and without external guidance raises creatures from the most rudimentary state to full awareness of themselves and of the whole of which they are parts, necessarily passes through such a stage. For a long while, the highest organisms were hardly conscious of themselves; their pleasures and pains were feeble and evanescent. Tragedy began when, with advancing nervous organization, they suffered acutely without understanding why, with no philosophy to help them bear adversity, with no religion for consolation. Tragedy grew more profound as the most advanced minds began to view the world process somewhat broadly, and to become aware of the disparity between the potentialities and the actualities of creation, between what life is and what it might become, between the cosmic striving toward harmony and value and its huge involvement in disharmony and disvalue. Sensitive to the creative energy within them, they yearn to promote harmonization. In particular, they are impatient to help mankind to emerge from the fetid slough in which it flounders and reach the celestial heights which seem attainable; for this

appears to be the most pressing need for the advancement of creation as a whole, on this planet.

But the great majority of men, ignorant and burdened by the disruptive passions foisted upon them by the long struggle to survive, engrossed in the pursuit of the means of subsistence or of superfluous luxuries, are scarcely aware of the creative energy within them, and indifferent to its goal. In vain the enlightened few strive to awaken them to full awareness of the magnitude of the dilemma they face. They will remain dull and apathetic until they reach a higher stage of spiritual development, and this evolution must proceed at its own slow pace. Those who see the crisis and feel its urgency can hardly restrain themselves from threats and exhortations, yet watchful waiting is what the situation chiefly imposes on them. And while, with agonizing doubts, they compare what the world is with what intelligence inspired by benevolence could make it, their plight is a hundred times more pathetic than that of animals who suffer and die without even imagining that things could be different.

The world process is Being's striving to realize the value potential within it. Naturally, this is a striving for what is pleasant and good, for nothing that we know desires to injure and torment itself. But as it becomes ever more deeply involved in the intricacies of the world process, this is just what Being succeeds in doing. A process directed toward the realization of values brings forth countless disvalues; a yearning for joy brings suffering; a thirst for beauty finds ugliness; a longing for the good becomes entangled in evil. And often it seems that the suffering, ugliness, and evil outweigh the joy, beauty, and

goodness; that the world process engenders more disvalues than values and swerves ever farther from its goal.

This tragic predicament inevitably produces a reaction. Beginning as weariness and loss of zest in living, this negative movement matures in elaborate philosophic and religious schemes for extricating oneself from the world process, and, in its more altruistic expressions, for helping all sentient beings to escape from it. Among the more primitive manifestations of this tendency are the widespread habit of looking back to one's childhood as the best time of one's life and wishing that it were possible to return to it, and the scarcely conscious yearning for the warmth and freedom from stress that each of us enjoyed in his mother's womb, which certain psychologists have asserted to be present in us. The myth of the Golden Age, when men were far better and happier than in this harsh Age of Iron, and the common view that ancient seers had religious insights deeper, truer, and more valuable than those of any recent thinkers, are further expressions of this distrust of creative advance.

This yearning to retrace the course of evolution reaches its full and systematic development in certain of the religions and philosophies of India, particularly the Vedanta and Buddhism in their original forms, as likewise in all mysticism, in whatever tradition, that follows the <u>via negativa</u> -the attempt to erase from the mind every external impression and every definite thought, so that an ineffable sense of Oneness may take possession of it. The foundation of all these doctrines and practices is the conviction that not by the course of diversification with unification which the world process has actually followed, but

by returning to the undifferentiated state of Primal Being, is the highest value to be realized. Not in manyness, however harmoniously united its myriad entities become, but in oneness beyond all distinctions, is true happiness and fulfillment, or at lowest surcease of suffering, to be found. If this view be true, the world process is a colossal mistake; in embarking on it, Being set off on a wrong course; salvation consists in somehow extricating ourselves from this tragic involvement.

Of all the religions and philosophies which preach the backward course, Buddhism, as taught by its founder, is one of the most logically consistent; and it has been amazingly successful, although not without paying the usual penalty of popular success, the distortion of the original doctrine. In his first preaching, after his enlightenment, to his five former disciples in the deer park at Benares, Gautama Buddha proclaimed an insight profound and true, that differentiated existence, especially as manifested in organic life, springs from desire; that craving is the cause of our involvement in space, time, and matter. But we must be careful to understand by "craving" in this context the most primitive form of desire, Being's primordial striving for self-realization, not desire as we feel it in minds which are themselves formed by the aeonian action of this striving.

The next step in Gautama's argument is also true: suffering springs from desire. But it is equally true that all happiness and joy and fulfillment, and whatever else gives worth to existence, spring from desire, or whatever we decide to call that stirring in Primal Being which set the world process in motion. It is just the omission of this other side of the picture that

gives Buddhism its peculiar character. Whether now, or at any period of our planet's history, sorrow outweighs joy, disvalue exceeds value, is certainly a debatable question. If it does, and will always continue to do so, Buddha's prescription for curing life's predicament, loss of individuality and perhaps also of all consciousness --scholars argue over the precise meaning of Nirvana--through the utter extinction of desire, appears to be the most promising course. Devout Buddhists, especially of the Mahayana school, have long held faith that by this means all sentient beings may eventually be released from the cruel wheel of existence.

Yet it is a course which does not inspire confidence in one who has followed the world's development. If the world process is indeed a Himalayan blunder, I see no hope for us, the multitude of sentient beings, who are its products. We seem too deeply involved in it ever to extricate ourselves from its meshes. With what chance of success can weak organic beings swim against the Universal current? Although Buddhism is often called a pessimistic religion, I believe that, if we judge its founder in the light of his basic premise, the first of the Four Noble Truths, that life is intrinsically miserable, he was far too optimistic. Our best hope appears to be to rectify Gautama's one-sided exposition, recognizing that joy no less than sorrow, value no less than disvalue, spring from craving, and to work from this truth toward our goal.

Doubtless organic life is too delicately balanced, too dependent on a thousand circumstances that it cannot control, ever

to be exempt from pain and sorrow. Yet it is capable of achievements which outweigh many pangs, for which indeed our trials and sufferings serve but as a foil, as everyone knows who has even partly achieved worthy goals in spite of much opposition and hardship. What chiefly oppresses a thoughtful person is not his toothache, his rheumatism, extremes of heat and cold, but the vast and hideous brood of men's ignorance, greed, and folly. Since we are parts of Being, and the course of the world process in this particular part of space depends somewhat on our own choices, our faith that this process may, with our intelligent co-operation, produce far more value than disvalue, is one of the conditions for leading it forth from this Tragic Age into a Triumphant Era.

Double Space

The contradictions which the Universe reveals, the contrast between its glorious achievements and its dismal failures, make one hesitate to pass judgment on it. But I believe that we can best understand the Universe if we compare it to an energetic, resourceful, fatherless youth, who aspires to accomplish something for which he finds no precedent. Without a clear picture of his methods or even his goal, but with unquenchable faith in himself, he works indefatigably, he makes mistakes, he suffers from them, he begins over and over --and at last he achieves even more than he dreamt. If it had had adequate guidance, the Universe would have proceeded toward its goal in a more direct and efficient manner, and there would be little or no evil. But like an aspiring, inexperienced youth, lacking the counsels of one older and wiser than himself, the Universe strives, blunders, and suffers. Those who have aspired greatly, and in consequence blundered

greatly and suffered greatly, are best prepared to understand the macrocosm from their experience of the microcosm.

Some think that the vast amount of strife, pain, and frustration that the Universe contains is proof that it is without purpose or goal. To others, who view the situation more profoundly, these disharmonies simply reveal the intensity of its striving to accomplish a great and difficult task; just as fetid sweat shows that a man has been working hard. Wherever intelligence emerges and assumes direction of the world process or some small segment thereof, there should be a relaxation of the fierce intensity that marked its early stages, when such guidance was lacking. Excessive intensity is incompatible with intelligent direction.

As we begin to understand the Universe, even gropingly and imperfectly, we love it for what it strives to become; we admire it for what it has achieved; we forgive it the ugliness and evil that it contains, because its task has been so difficult; we do all that we can to forward its advance toward greater perfection, for we recognize that its continued progress depends on the efforts of the intelligent beings that it has created. In short, we develop cosmic loyalty.

CHAPTER IX

ORGANS OF THE UNIVERSE

Philosophy is the attempt to give life significance, coherence, and stability by seeing it whole, and in relation to a greater whole. The last seven chapters were devoted to the discovery of some of the main features of the whole in relation to which we must see our lives in order to make them fruitful. Before proceeding to discuss our relation to this whole, let us briefly review our principal conclusions. We found reason to believe that the whole to which we must relate ourselves is nothing less than the Universe, which we must regard as purposeful, for there is unbroken continuity between our highest purposes and the primal stirrings of Being which set the world process in motion. This process is interpreted as the striving of Being to fulfill itself by bringing forth and making actual the value latent in it, to pass from bare Being to full Being.

This conclusion led us to consider what value is and how it is engendered. Value is that which enhances existence, that which makes life precious. It is a mode of experience, hence it cannot occur in the absence of consciousness. The great majority of values arise through the interaction of an appreciative mind or value-enjoyer and some object or situation which we called a value-generator. The latter is typically a harmonious pattern, exhibiting unity in diversity. Moreover, at the moment when a value is born, the value-enjoyer and the value-generator are joined in a higher synthesis which extends far beyond themselves.

To bring forth the value that it potentially contains, Being must become many, and the many must be unified in harmonious patterns.

We next proceeded to consider how this condition is achieved. The most probable view is that the world process started with the differentiation of an originally homogeneous mass, which shattered into innumerable fragments that began flying outward in all directions, giving rise to the expanding Universe of modern astronomy. Beneath the superficial multiplicity thereby achieved, Being preserved its oneness by means of the continuity of space, which, far from being a vacuum even in those regions that appear quite empty to us, is a plenum with marvellous properties and actively shapes the matter that it contains. After the primal fragmentation had produced manyness, the resulting particles strove to regain their original unity. Thus harmonization, the dominant process of the Universe, started building its materials into patterns of ever increasing coherence, complexity, and amplitude. Operating on a large scale, it rounded off great masses of matter into suns and planets. On a small scale, it built the ultimate particles into atoms, atoms into molecules, molecules into living cells, cells into tissues, organs, and complex organisms. Harmonization effects mental no less than physical growth and is the primary source of moral effort.

Lacking close control by a cosmic Intelligence, harmonization runs into complications. It initiates so many patterns, so close together, that in growing they inevitably collide and compete for the space and materials necessary for their completion. Moreover, the complex ~~protein~~ DNA molecules, known as genes, which govern the

development and functioning of plants and animals, are from time to time altered by the impact of radiation or by some other physical agent, and this causes the progeny to differ somewhat from their parents. These two conditions, variation and the struggle for existence, with resulting natural selection, are responsible for organic evolution, which has produced the immense variety of living things that our planet bears. Evolution has transformed primitive one-celled organisms into the higher animals, including man. It has filled the earth with beautiful vegetable and animal forms and other sources of value, together with sentient beings capable of enjoying them; but it has accomplished this at the price of burdening animals with violent passions, that are often serviceable in the struggle for existence but disruptive of organized society and the source of countless ills. Thus evil arose as a secondary effect of the universal impulsion toward order and goodness. Being's striving to realize the value potential in it yielded also disvalue on a vast scale.

It has become evident that the whole to which we must relate our lives is an exceedingly complex mixture of good and evil. To achieve the proper relationship to such a whole is so difficult that men are often tempted to abandon the effort and to be satisfied if they can adjust themselves to the beings that most closely surround them, in particular, to their fellow citizens. But just as a cabinet-maker cannot place two pieces of wood in the proper relation to each other without placing them also in the correct relation to the article of furniture that he is making; so we cannot cultivate proper relations with our fellow men without achieving a correct relationship to the Universe as a

whole. Hard as the undertaking is, we cannot reject it.

In the preceding chapter, we noticed that the involvement of the world process in immense difficulties long ago led to a reaction, a yearning to reverse its direction. There grew up a number of religions and philosophies which teach that the highest spiritual achievement is to divest ourselves of individuality or personality, to lose the sense of "I"; so that we may identify ourselves without a remainder with the undifferentiated ground of Being. This point of view is well presented by Aldous Huxley in his erudite book, The Perennial Philosophy. According to him and the writers whom he freely quotes, enlightenment or spiritual growth is the recognition of our unity with the divine ground of Being and the concomitant loss of the illusion of individuality.

Far from being the loss of the sense of individuality, spiritual growth is, I am certain, a heightening of our awareness of individuality. But, at the same time, it is an increase in our awareness of the manifold bonds that tie each of us to the rest of Being, of our basic sameness with all living things and other aspects of reality. And that it must be both of these things simultaneously is evident from the fact that spiritual growth is, among other things, the increase of insight, so that we see more clearly all aspects of our peculiar situation as unique centers in the Universe: both the truth of difference and the truth of sameness. We must hold fast to these two perceptions with all the strength of our intelligence, all the fervor of our will; for to forget either of them is to lose our spiritual balance and fall

from our proper station in the Universe --in a word, to lose ourselves.

While we recognize that the sense of sameness and the sense of difference are equally indispensable to the fullest development of our spiritual life, we must also concede that they do not come to us with equal ease. The sense of difference is a product of the conditions of organic life: we receive it as our birthright and need rarely make an effort to increase it; on the contrary, it is too strong in the natural man. The sense of sameness comes to us through understanding and reflection, as a precious, hard-earned acquisition. To this extent, we must agree with the seers of all lands who have insisted that spiritual growth is the increasing recognition of oneness with something greater than ourselves. But we dissent when they insist on the simultaneous loss of individuality. The laboriously acquired sense of sameness must blend with the spontaneous sense of difference, not displace it. And the sense of difference, of personality, is thereby transmuted, acquiring a value it never had while it dominated our whole outlook.

The sense of difference is well developed in us, because it is essential to organic life and practical affairs. To carry on its vital processes, an organism must insulate itself from its environment. Even a one-celled organism does this, by enclosing its protoplasm in a semipermeable membrane, which regulates the ingress and outgo of solutes. Without this protection, indispensable elements that are rare in the environment would be lost by outward diffusion, while deleterious substances could enter freely. Multicellular creatures achieve a still higher degree of

insulation by means of their covering of waxy epidermis, bark, and hairs in the case of plants; of skin, scales, feathers, and fur in animals. These integuments retard the loss of water by terrestrial organisms, and the dissipation of vital heat by warm-blooded animals in cool climates. The more perfect its insulation, the greater the organism's capacity to flourish in inimical environments.

The fundamental condition of organic life is the sharp delimitation of each organism from its environment. To lose this distinctness is to lose life; to preserve it is one of the prime requisites for life's maintenance. The first task of nascent intelligence is to safeguard the animal in which it arises, by guiding it away from danger and to the satisfaction of its vital needs. Thus intelligence was, from the beginning, committed to the preservation of distinctness. Moreover, most kinds of practical activity require attention to the differences between things rather than their sameness. Not that gasoline and water are both colorless liquids, but that one is combustible and not drinkable, the other drinkable and not combustible, is what we need to know about them in order to use them properly. To manipulate objects successfully, we must pay attention to their solid outlines rather than to the subtile bonds which bind them to the surrounding world. The predatory animal, the hunter, the herdsman, the farmer, all those who exploit other living things, necessarily overlook the manifold resemblances between their victims and themselves; for the full recognition of life's unity would stop such exploitation. As society is now organized in most parts of the world, each man must much of the time treat his fellows as competitors,

whose interests clash with his, rather than as similar beings, whose needs are almost identical with his. Thus, in a hundred ways, the conditions of life, and especially of animal life, foment the sense of distinctness between each individual and the things that surround him. The practical intelligence inevitably exaggerates differences. Selfishness, pride, cruelty, merciless exploitation are the hideous brood of this situation.

Yet despite the dangerous aberrations of individuality and the sense of difference which accompanies it, we must cherish it as a precious possession. The only experience that we know is the experience of individuals, and without experience there is no value. Moreover, to generate value the world must be simultaneously one and many, and manyness implies distinctions. Without individuality, Being could not realize the values potential in it, and all its aeonian striving would be vain. But the sense of difference must be chastened by the sense of sameness, the vivid awareness that the unique experience and special constellation of attributes that constitutes an individual is sustained by the larger world, that each individual is one in substance with the Universe, that the same energy that supports his life and thought flows through all things, that he is a brother of every living creature, that in body and mind he is formed by the universal process of harmonization. Indeed, until one has firmly grasped his sameness no less than his difference, he has not become an individual in the fullest sense, for he has not seen himself in true relation to the whole of which he is a part. To be a perfect individual is not to set oneself in opposition to the Universe but rather to take the Universe unto oneself in grateful acknowledgement. The untutored mind exaggerates

differences; the mystic mind minimizes them; but the truly enlightened mind gives full recognition to both sameness and difference.

There is no power in heaven or earth that could authoritatively command us to relinquish our individuality. A God who required that we destroy every trace of individuality, in order to reach or know him, would discredit himself. We should ask why, if uniform sameness is superior to unity in diversity, he started or permitted the world process, which is above all the production and harmonization of multiplicity. If individuality is not worth preserving, how could he ever justify the immense strife and suffering that has been the price of the creation of individuals? How could we love, or yearn for union with, a God who would permit anything so stupid? And one who loves God would not wish to lose oneself in him; for love, whose condition is unity in diversity rather than sameness, would thereby be destroyed, or converted into self-love, which is quite different.

In the evolution of consciousness, three stages may be recognized. The first is that which seems to prevail in infants and very young children, in whom sensations and other mental contents are not sharply divided into two classes, those of internal and those of external origin. No clear distinction is made between the "I" and the "Not I." An internal sensation, such as a stomach ache, and a sensation originating beyond the body, such as a color or a sound, are projected on the same plane. This, at least, is what certain psychologists, such as Professor

Jean Piaget, teach about the consciousness of babies. Perhaps a corresponding condition exists in animals, especially in those of lower intelligence.

From this condition, in which the self and the surrounding world are reflected in consciousness as a single continuum, there rapidly develops, in the growing human mind, an opposite state, in which the distinction between the self and the non-self is too sharply drawn. Many factors, practical and social, conspire to create this situation. In the first place, we soon discover that operations which affect certain regions of the primitive continuum of consciousness can bring us acute pain or intense pleasure, whereas alterations in other regions of the continuum lack this effect. When the sky changes from blue to gray by clouding over, we are as a rule only mildly interested; but fluctuations in the temperature of the surrounding air, which affect the temperature of our skin, may bring severe discomfort. If a child's companion receives a sweet, he does not himself feel the delightful sensation which ensues when the sweet goes into his own mouth. Moreover, as was earlier remarked, the necessity to act upon the surrounding world, to make it conform to our vital needs and avoid its perils, has caused the human mind to exaggerate the distinctions between things; and one of these distinctions which it inevitably magnifies is that between the self and the rest of the world. In addition, society, by apportioning praise and blame, by holding us responsible for a certain class of events --those caused by our own volition --but not for other events in the external world, strengthens this tendency to draw a sharp line between oneself and everything else.

The third stage in the development of consciousness is, in a sense, a synthesis of the first two stages. The ~~completely~~ enlightened mind is aware both of its sameness with the rest of the Universe and its difference from it, its individuality and uniqueness. It knows the immense importance of preserving this dual outlook and the tragic consequences of losing it. As long as it is simultaneously aware of sameness and difference, it can never be cruel or selfish; and, at the same time, it will never fall into the error of depreciating the importance of its own development. The consciousness ~~which~~ that has reached this highest stage of development might be called "mature" or "cosmic" consciousness.

A mind in the first stage, which makes little or no distinction between the self and the rest of the world, cannot cause much harm; because of its low intelligence, it cannot devise clever schemes for exploiting other beings. But a mind in the second stage, which exaggerates the distinction between the ego and the non-ego, may have excellent practical intelligence; for this kind of intelligence depends largely on noticing the differences between things. This powerful intelligence, coupled with the intense selfishness which results from the failure to recognize one's sameness with other beings, makes a mind exceedingly dangerous, capable of the ruthless exploitation of other creatures. This stage of mental evolution might well be designated "barbarian consciousness." Only a minority of mankind have so far passed beyond this frightful phase of evolution.

The mature or cosmic mind may have just as much practical intelligence as the barbarian mind, and perhaps more; but it will use this intelligence far differently, to promote the welfare of

all beings and not merely to increase one's own power or pleasure. The mature mind is the hope of the world.

How can I be sure that I shall never lose the firm foundation of my spiritual life, the simultaneous perception of my uniqueness in the Universe and my sameness with it? By what symbol can I grasp it? The most adequate symbol that occurs to me is an organ of a living body. Each organ is an integral part of the body yet has pronounced individual features, and it is just these peculiarities which make it valuable to the body. If an eye were to become flesh and skin like the rest of the face, its usefulness would be lost. An organ cannot live apart from its body, and the latter is impaired by the loss of its organ. If the body is diseased, the efficiency of the organ is often diminished; while if the organ is injured, it serves the body poorly. The body nourishes its organ unstintedly; while the latter serves the body freely, without demanding any other reward. If all the organs and tissues were to lose their peculiar features, converting the body into a homogeneous mass of cells, it would not gain thereby; on the contrary, its life would be reduced to the most primitive level; it would lack movement and thought and all but the most rudimentary sensibility.

Every organ has its special functions. What, then, are the functions of this organ of the Cosmos which I am? I am the organ wherewith it strives to know and understand itself, to become aware of the values that it generates, to achieve the happiness for which all Being hungers. My eyes are its instruments, wherewith it sees the beauty that it has created; my ears are its in-

struments, wherewith it hears the melodies that it produces; my nostrils are its instruments, wherewith it smells the fragrance that it distills. My spirit is its conscience, wherewith it passes judgment on itself. My reason is its intelligence, wherewith it strives to overcome the disharmonies that arose while it was laboring to create me. I am only an infinitesimal part of the Universe; yet only by dividing itself into small, highly differentiated parts, like you and me, could Being realize the wealth of its own potentialities.

Were I to neglect to exercise these functions, neither contemplating the wonder and beauty of the Universe, nor striving to understand it, nor doing what little I can to smooth out its disharmonies, I should be a dead loss to it, like a sightless eye or a deaf ear. All the long effort to create me would be misspent. The sun's light and the earth's bounty would be wasted on me. The least that I can do for the effort that has been lavished on me is to return grateful recognition of the glory of creation. To exercise my function well, I must spare no effort to become the most perfect organ, the most complete man, that I can become.

A magnificent panorama spreads out in the remote wilderness, unseen by human eyes; a noble tree stands in the midst of the forest, where no one has ever responded to its grandeur; a bird pours exquisite music on the desert air; a flower spreads its frail loveliness on a mountain which no man has scaled. Finally, there arrives one who responds to these things, whose spirit is quickened by the wide outlook, who admires the stately tree, who listens enchanted to the singing bird, who loves the flower's delicate beauty. The landscape, the tree, the bird, the flower

have acquired fresh significance. Something they lacked has been added to them. Perhaps it would exceed the mark to say that one who views them appreciatively has performed a service to them; yet, by his grateful response, he has given them a new meaning and carried to a higher level the process that created them. One of our chief functions is to advance creation in just this fashion. We are organs wherewith the Cosmos actualizes the values that it potentially contains. This is our cosmic significance.

Not only are we enjoyers of values, we are also generators of values, both indirectly, by means of the things that we create with our minds and hands, and directly, by our mere presence to other people. If we are handsome, witty, affable, upright in character, cheerful, good companions, or display any other quality that people appreciate, we enhance their lives, hence we are value-generators. Naturally, we wish to play this role as well as we can, not only because we are not without a trace of human vanity, but beaause this appears to be one of our proper functions as organs of the Universe. Which of these two functions, that of enjoyers or producers of values, is it most incumbent on us to discharge? Should we freely admire, or should we, as many people do, strain all our resources to win admiration, at the price of often withholding it?

We reflect that it was easier to produce beautiful and wonderful things than to create beings capable of wonder and the appreciation of beauty. Plants are marvellous and lovely; but only certain animals, we believe, appreciate their beauty. And the evolution of the higher animals was much more difficult than that of plants, involving far more strife and more serious miscarriages.

Hence, long before man appeared on this planet, it contained many things worthy of love and admiration: magnificent views, colorful sunrises and sunsets, superb trees, fragrant flowers, bright tuneful birds. But, it is probable, the earth still bore no beings capable of responding to these things as they deserve, of loving and appreciating them as much as we do. Our peculiar contribution to the world is, then, our capacity to love and admire, to respond to value-generators --or, at least, to do so more adequately than other creatures seem able to do.

Important as it is to our happiness and that of our associates to make ourselves admirable and lovable, it is still more important that we love, admire, and appreciate. And this, our peculiar contribution to the Universe, is a greater source of happiness to ourselves; because loving and admiring are active states, whereas to be loved or admired is a passive state -- although, it must be added, one that must often be achieved by active affort. Moreover, those who freely love and admire compete with nobody; but those who crave admiration often contend sharply with their fellows for other people's attention, and much bitterness is thereby engendered.

In the measure that we are happy and joyous, appreciative of the value that the Cosmos contains, the Universe acquires significance, the world process attains partial fulfillment, the primal urge toward self-realization is triumphant. But we must enjoy with full awareness that we are parts of a larger whole, and that it is our duty to help all other parts to appreciate the values that the Universe has achieved. If we are indifferent to the other parts, we have not realized our relation to the whole, and the Universe

has failed to reach fulfillment in us.

To view oneself as an organ of the Universe defines one's relatio to all the other creatures that are likewise its organs. For the proper functioning of an organism, many organs must work together in harmony. An organ that fails to co-operate with the other organs is diseased, and physicians often remove it to preserve the body's health. But what of our relation to the wicked? Are they not parts of the Universe, no less than the good? A principal difference between good and wicked men is that the former are keenly aware of their relation to the whole and feel responsible to it; the latter, lacking this steadying and ennobling awareness, have an inadequate sense of responsibility. Their failure to recognize that they are organs of the Universe is a chief cause of their wickedness.

Unhappily, the harm that the wicked do is not limited to the immediate victims of their evil deeds. Lacking the simultaneous awareness of difference and sameness which is the basis of individuality, they make it more difficult for other men to preserve their sense of sameness with the Universe. For ~~the~~ good people can hardly feel oneness with the wicked, nor avoid a certain spiritual shrinking away from a Universe that contains evil men. How easy it would be to acknowledge our sameness with all beings, if we beheld only goodness and beauty in the world! But one who regards himself as an organ of the Universe will reflect that each organ of his body performs its proper task to the best of its ability, even when some of the other organs are diseased. The heart does not withhold blood from an eye because it is inflamed, from a finger because it is bruised — to do so would close the door to the organ's recovery and

ensure its total loss. Just as the heart sends its blood impartially to all the organs of the body, the defective no less than the sound; so the enlightened man radiates benign influences impartially to all creatures, both those that recognize that they are his co-organs in the same organism and those that do not.

More and more, I regard the creatures which surround me, animate and inanimate, as so many samples of Universal Being. All are parcels of the same substance, each with its peculiar set of attributes. When we call a man "good" or "bad," we pass judgment not only on the man himself but on the Universe, as likewise on the society that produced and educated him. If he is good, it is because beneficent tendencies that were at work long before his birth, and extend far beyond him in the Universe, have come to a focus in him; if he is wicked, he is similarly a focus of evil tendencies that were active aeons before he was born. To view creatures in this fashion helps me to understand them and forgive their shortcomings and transgressions. But to regard myself as a bit of the universal substance with a unique set of attributes does not diminish my sense of responsibility for my own acts; for I feel that in me Being is becoming critical of itself and conscious of its aims.

There are people who admit that man is, in his entirety, part of nature, yet strenuously oppose any attempt to "humanize" nature or the Universe, by which they mean the attribution to it of any of those qualities which we call "human," in the laudatory sense. Since these qualities are subjective, we are certain of their presence only in ourselves, although we cannot be sure that they

are not far more widely diffused.

This refusal to "humanize" a Universe which contains man as an integral part is not only inconsistent, but it gives us a twisted outlook that readily becomes despairing. Man, viewed objectively, without recognition of his inner qualities, is an absurd and fearful creature, who passes through the world like a destructive whirlwind, killing countless other creatures and cramming them into himself, laying waste whole forests, polluting the oceans, rushing restlessly to and fro, and signifying nothing. It is only when we pay attention to man's spiritual qualities, his aspirations, his sympathies, his appreciation of the beautiful and the good, his occasional regret for the destruction that he causes, that he becomes endurable and perhaps lovable. And just as man must be a thing of unmitigated terror to any creature unable to detect the spirit within him, so the Universe is a terrifying vortex to one who fails to recognize the human element in it.

What are these so-called human qualities that give meaning and value to the Universe, that make us feel at home in it? Among them we include sympathy, compassion, appreciation of beauty, conscience. Where do we find these attributes? In ourselves, we are certain; elsewhere in the Universe, we hope, but we are not sure. How, then, can we say that they belong to the Universe? Does vision belong to me? Certainly! If my eyes are gouged out, can I see? Of course not! How, then, can I affirm that I can see; is it not rather my eyes that see? I can so affirm because my eyes are my organs; they developed as integral parts of my body; they are supported by all its vital activities.

Without my heart and lungs and stomach, my eyes can no more see than these organs can see without them. It is really my whole body, my whole self, that develops the faculty of vision; but I necessarily see with my organs of sight, my eyes. Similarly, if the Universe has a conscience, or esthetic sensibility, it exercises these functions by means of the special conscientious or esthetic organs that it has developed: yourself, myself, and doubtless far more selves, scattered through its vastness, than we can imagine. It is just as unfair to remove these conscientious selves from the Universe, by an act of mental abstraction, and then declare that it is without a conscience, as to tear out a man's eyes and then ~~scorn~~ to disparage him because he is sightless.

When a volcano ravages a smiling countryside, or we discover a swarm of ants devouring living nestlings, we often sadly exclaim "Nature is cruel!" But when we see a man succor some suffering creature, we proudly proclaim "Man is compassionate!" But is this just? If, because of one animal's behavior, we call nature cruel, should we not, in view of another animal's conduct, say that nature is compassionate? Are not men parts of nature, or the Universe, no less than volcanoes and ants? As a later development, they seem to be a truer revelation of the direction in which it is moving, of what it is striving to become. Just as, when we stand in rapt wonder beneath the starry sky, we should realize that Being is, through us, appreciating itself; so, when we protest against the strife and harshness of nature, we should recall that, through us, nature is condemning its own harshness. ¶ Our indignation is proof that Being is trying to overcome the crudities

in which the creative process inevitably became involved. For ages it was striving, groping blindly perhaps, to express its care for the welfare of all its creatures; and at last it succeeded in doing so somewhat adequately --yet how inadequately! -- through us. We, then, are the organs by which nature, or the Universe, expresses its repugnance to the strife that arose as a secondary effect of harmonization. Of course, if we deny that we are parts of the Universe, if we deprive it of its organs for caring, then it does not care. But this is equivalent to saying that I cannot see, because my eyes, being distinct entities, are not parts of me.

Did the Universe, or this particular part of it, have a conscience before man arose? Does a newborn babe have a conscience? Certainly not, but he is on the way to getting a conscience. Similarly, the Universe was getting a conscience, and all the other qualities ~~which~~ that we call human in the laudatory sense, long before man, or even life, arose on this planet. If it had not been doing so, these qualities would not anywhere exist.

I think of the Universe as undergoing a process of self-discovery or self-revelation, whereby the value potentially present in Primal Being, unassessed by any intelligence, is slowly brought to light by harmonization. I regard myself as a part or organ of the Universe, one among a myriad others, whereby it reveals and discovers its own nature. I try to keep constantly in mind my sameness with the Universe and at the same time my difference from all the rest of it --as the eye is of the same substance as the body, yet numerically and qualitatively different

from all the rest of it -- for to lose either of these perceptions is to misunderstand one's relation to the whole and miss the significance of life. As an organ of a Universe which strives ceaselessly to achieve the fullest realization of its potentialities, I must aspire to be both a generator and an enjoyer of values - an enjoyer and a source of enjoyment to others. Some parts of the Universe, which are themselves apparently unaware of values, provide values for those more highly organized beings which are capable of appreciating them; others seek to enjoy but fail to yield enjoyment; but the most highly evolved parts of the Universe know and enjoy it, and are at the same time sources of value.

As a developing system, the Universe has probably not yet reached the highest level that it will attain. Where will these strivings toward a higher level and fuller self-realization be felt, in its least developed or most highly organized parts? Obviously, the parts which have already advanced farthest will be most keenly aware of the stage next ahead in the universal advance. Therefore, I must regard my highest and most constant aspirations, not as personal desires without relation to the Whole, but as the Whole yearning through its more developed organs toward a higher level of experience. My aspirations are the aspirations of the Cosmos, become sharper and more articulate in myself and those like me; ~~and~~ it is constantly striving to realize them through us. But I must be careful not to confuse the selfish and often violent appetites of my secondary nature, imposed upon my kind by the struggle for existence, with the loving and generous aspirations of my pure primary nature, which alone are ex-

pressions of that striving for self-realization which Being is always and everywhere trying to satisfy.

Since the beginning of the world, the creative energy has been working to form me. Doubtless it did not deliberately set about to produce a creature just like me; but I am the being which necessarily resulted, at this particular point in space and time, from its incessant effort to raise creation to the highest possible level. I bear within me many imperfections, lingering reminders of the difficulties that harmonization faced in its long creative task and could not wholly overcome. But it has lifted me to the point where I am aware of myself, and of the creative energy within me, and of the direction it takes, and of the impediments that retard its further advance. It has endowed me with the capacity to forward or to oppose this advance, as I choose. Could I, ~~refuse to be its agent~~, without despising myself, refuse to me its agent?

To think of oneself as an organ of the Universe makes one humble at the same time that it gives him a sense of dignity, importance, and responsibility. He is humble because he realizes that not only his existence, but all the values that enhance it, depend on his being an organic part of a larger system, isolated from which he could neither live nor enjoy the experiences which give life significance. At the same time, he becomes aware that he occupies a privileged place in the Universe, which has taken a long age to make him what he is, and that, according to his conduct, he can advance or retard, however slightly, its progress toward its goal.

Those who try to disinflate human pride by reminding us of what an infinitesimally small part of cosmic space is occupied by our bodies, or even by the planet on which we dwell, have wholly missed the point. We have many reasons to be humble, but our physical smallness and weakness is not among them. As far as we can tell, the only thing that gives significance to this vast Universe and all it contains is knowledge of it and awareness of the values it generates; and this is a function of conscious beings, of minds. The dimensions and importance of these minds are certainly not to be measured in terms of the bodies with which they are associated. A mind is as great as its thoughts; and if these reach out to embrace the whole Cosmos, it acquires cosmic magnitude.

That serious attitude toward the whole of life which is the essence of religion may, it seems, have any one of four foundations: loyalty to God, loyalty to the Universe, loyalty to humanity, or loyalty to one's own ideals or principles of conduct. However, if we view God as the Creator of the Universe, our estimate of him will depend on our appraisal of the world that he made. If we believe that it contains more evil than good, that there is nothing at work in the Universe as a whole to raise creation to higher levels, then it is difficult to love or be loyal to the Deity who designed it, and theistic religion crumbles.

Doubt that a benevolent Creator can be the author of a world like ours drives many men of good will to humanism, which is loyalty to the best interests of humanity. But without reverent regard for something beyond their own kind, men too easily become engrossed in petty, competitive pursuits, losing nobility of character and unity of purpose. The involution of humanity in its own selfish interests causes human character to deteriorate, until mankind seems unworthy of our loyalty and the foundation of humanism is undermined.

One who despairs that mankind as a whole, or at least a substantial proportion of humanity, will ever attain such excellence that he can revere it, may finally take refuge in his personal ideals. He may say to himself, "However mean and despicable humanity may be, I at least shall spare no effort to make myself the kind of person which I believe that all men should be." Yet it is most difficult to preserve such an attitude in the midst of scoffing or indifferent neighbors and a world which seems to provide no foundation for it. Only a thoughtful man

is likely to develop this attitude, and such a man will try to trace to their ultimate source the aspirations or principles that set him apart from his neighbors. When he does so, he must, I believe, discover their source in the larger Universe of which he is a part, somewhat as has been done in the preceding chapters. Thus the solitary idealist will find reasons to be loyal to the cosmic process that created him and planted the seed of his noble aspirations within him. In the absence of this stabilizing allegiance, his high ideals are almost certain to wither like uprooted trees. Thus, whether one's religion is theistic or humanistic or simply self-reverence, it will hardly be tenable unless it includes pious regard for the Universe. Cosmic loyalty is the one secure foundation of religion.

CHAPTER X

THE MORAL ENERGY WITHIN US

Morality is the application of foresighted intelligence to the promotion of harmony. To bring forth such intelligence from the diffuse cosmic dust required an immense preliminary labor of harmonization. First, it was necessary to condense some of this dust into a solar system, with an incandescent central sun to provide a continuing source of heat to the more rapidly cooling smaller bodies that circulated around it. Then, on the surface of a planet, atoms of various kinds were built into patterns of increasing complexity, until finally there arose large molecules that could guide the formation of others like themselves; life began to appear in the tepid waters that gathered in the hollows of the cooling earth. With extreme slowness, larger and more complex organisms evolved; and some of them ventured forth upon the land. Sensory organs and nervous systems were gradually improved, giving animals ever more adequate knowledge of their surroundings and control over their movements. Intelligence slowly increased, until some of the more favored animals could look ahead and choose among alternative possibilities. Now, at long last, these animals, whose bodies and minds had been formed by harmonization working blindly in the fecund depths of Being, could intelligently co-operate with the process that made them. Harmonization had provided itself with foreseeing minds to guide its further advance. This, in brief, is the place of morality in the cosmic scheme.

In Classical times, each of the great systems of philosophy, including the Stoic, the Epicurean, and the Peripatetic, devel-

oped an ethic or moral doctrine joined by the closest bonds to its cosmology or view of the Universe. To the Stoics, righteousness consisted in living according to nature; and since they viewed man as naturally a rational animal, sharing the Reason that governed the Universe and ordered all things for the best, to live in accordance with nature was, for them, likewise to live according to reason. The Epicureans, who viewed the Universe as a purposeless play of eternal atoms, advocated a life of quiet withdrawal from civic affairs, tempered by studied moderation and embellished by earnest friendship. The Peripatetics, whose founder had taught that nature does nothing in vain, advocated the pursuit of all the goods natural to man, the full and balanced development of all our faculties, corporeal, intellectual, and moral, with the emphasis on philosophic contemplation for the favored few. Even the sceptics found it necessary to have a moral doctrine, which, since they were certain of nothing, they based upon what they considered the most probable view of the Universe and of man. Thus Cicero, an adherent of the sceptical New Academy, wrote a famous treatise on ethics, which taught standards of conduct so high that even today De Officiis may be studied with profit.

After a careful survey of modern European philosophy, Albert Schweitzer concluded that it had failed to provide an ethical-optimistic view of the world that might serve as a foundation for a satisfactory ethical system, and accordingly he reached his fundamental moral principle, "reverence for life," by "ethical mysticism" or intuition rather than by derivation from cosmological or biological principles. Others, among whom Sir Julian Huxley is an outstanding example, have attempted to establish

an ethic on organic evolution. We have already (p.) noticed some of the difficulties in finding moral guidance in evolution, and how some thinkers, including Sir Julian's grandfather, have held that morality consists in resisting rather than in promoting the evolutionary process. Although everything good and beautiful in the living world has been molded in the long evolutionary struggle, this struggle has involved a vast amount of strife and carnage; according to whether we fix our attention on the products or on the methods of evolution, we approve or condemn it. And even if we confine our attention to its products, we find that they range all the way from fawns and doves to sharks and tigers; from creatures which, like man, have thus far continued to rise in the scale to the host of parasites that have risen a short way only to fall again; and, in the higher animals, from loving, friendly, helpful attitudes to violent passions disruptive of society. One who seeks moral guidance in organic evolution must, first of all, decide which aspect or branch of the process he will select. The principle of selection is obviously not furnished by the process itself.

Our present doctrine provides, at last, a firm cosmological foundation for an ethic. A Universe that strives, by means of harmonization, to realize the values that were potentially present in Primal Being, does not fail to give us moral orientation. Indeed, there are two methods by which we may derive our ethic from such a Universe: we may look either to the goal or to the movement which carries it toward the goal, that is, to harmonization, which is essentially a moral process. To choose between

these alternative methods is not easy, and we must make our choice with great circumspection.

If we base our ethic directly on Being's striving to realize the value latent in it, morality will consist in the sustained, intelligently directed effort to increase value. This is certainly a natural foundation for morality; because every thinking being desires to enhance his life, making it as rich and satisfying as he can; and value is the name ~~which~~ that we give to experiences which make life precious. Too often, however, men proceed at random, without carefully weighing the values that they so feverishly seek, so that some which were eagerly expected turn out to be other than they seemed, while in innumerable instances slight, transient satisfactions are permitted to deprive us of great and enduring ones. One of the principal tasks of ethics is to prevent such disasters.

Morality was originally man's effort to safeguard vital values, including life itself and all those instinctive satisfactions, arising from individual or social activities, which enhanced it. This is clearly evident when we consider any fundamental code, such as the Decalogue. The attitudes enjoined and the acts prohibited by such a code --to honor one's parents, to refrain from theft, perjury, adultery, and murder --are such that the widespread disregard of these injunctions would result in the dissolution of society, the frequent loss of life, and the consequent loss of vital satisfactions. Although morality was at first concerned only or chiefly with the preservation of values that have a non-moral origin; as men grew in moral insight and re-

fined their ethical concepts, they discovered, quite unexpectedly, that the moral effort was itself a source of values --values which some philosophies, such as Stoicism, have placed far higher than those more elementary values which morality strives to safeguard. Thus we are led to recognize two distinct classes of values, primary and secondary, which should be clearly distinguished by all those who endeavor to increase value.

Primary values spring directly from sentient existence, when it is pleasant or satisfying, and from all those experiences which yield pleasure immediately, without the need of reflection or contemplation. Primary values include all purely sensual gratifications, such as those of taste, smell, and touch, and all agreeable activities, from running, swimming, or flying as outlets for exuberant animal spirits to participation in games of skill or chance. Likewise, creative work, from that of the gardener and artisan to that of the writer and artist, is an important source of primary values. These values may be called "values of participation".

Secondary values are values of reflection or contemplation. They spring, not directly from one's own existence and activities, but from witnessing, and thinking about, the existence and activities of other beings, or from reflection upon one's own existence, qualities, or activities. Truth or knowledge is perhaps the most typical of the secondary values; for knowledge, when esteemed for its own sake, derives its whole value from its reference to something external to itself; so that it cannot, by its very nature, be a primary value --although the activity

of studying or thinking, as opposed to the possession of ideas supposed to be true, may be a primary value. The enjoyment of beauty, except possibly when it is the immediate, unreflective awareness of beautiful colors or sounds, is likewise a secondary value, for its full appreciation requires detachment and thoughtful contemplation. Even the satisfaction which a comely person derives from his own beauty is a secondary value; for it does not spring directly from the perfection of his own form but from the objectification of this form, as by viewing it in a mirror, or reflecting upon the impression it makes on other people.

The status of goodness or moral virtue is more complex, for it may be either a primary or a secondary value, or both simultaneously. The comfort or exaltation that we derive from the moral goodness of those who surround us, or even from reading about excellent men in distant lands or epochs, is among the highest of the secondary values, for the world is enhanced in our view by the very existence of such people. Similarly, the gratifying belief that one has himself acted nobly or generously, or lived virtuously, is a secondary value, which we experience when we contemplate ourselves or our conduct at leisure, when we objectify ourselves. But goodness is also an immediate source of satisfaction or primary value; for when we are good all our thoughts and deeds form a harmonious pattern, and this is one of the prime requisites of happiness. One does not need to contemplate his own goodness in order to savor its value, and perhaps it contributes most to our contentment when we are oblivious of it.

The secondary values depend upon the primary values, both logically and in the order of their evolution. If creatures existed barrenly, without finding any satisfaction in their existence, doubtless we should derive no pleasure from contemplating them. If the moral virtues did not preserve life and safeguard the vital satisfactions of self and others, they would never have won admiration and applause. The secondary values appear to be largely confined to man, although it is possible that certain other animals, such as birds which produce and apparently appreciate ~~music~~ beautiful song, participate in them to some extent. But before men attained their present intellectual and spiritual level, they knew only the primary values of animal life, most of which spring from the satisfaction of basic vital needs. Our ancestors, like other animals, enjoyed life and its pleasures precariously, amid a thousand perils. Their intelligence grew because it was continually called into action to preserve and enrich their lives in a harsh environment. Finally, human minds, exercised and sharpened by this struggle to preserve an existence made precious by the primary values that it included, reached the level at which reflective thought, and the consequent appreciation of secondary values, became possible. Since our capacity for experiencing primary values is to a great extent limited by our animal needs and animal strength, it is in the realm of secondary values that our endeavor to increase the sum of value can be most profitably exerted. The rise of a whole new constellation of values as an indirect and unexpected outcome of man's struggle to preserve primary values, especially by moral effort, should encourage an ethic of value, and strenght-

en our faith in the moralness of the Universe.

If the Universe is to attain the maximum of value, it would seem that every part of the Universe must likewise realize the maximum that it is capable of achieving. Since all values are not of equal worth, for each human life to attain the greatest amount within its reach, we should need to assess all possible values and arrange them in a scale, with the least at the bottom and the greatest at the top. This would be a difficult, if not an impossible, task; for a value that is great to one individual is often slight to another: for example, some find more value in hearing a symphony and others in watching a game. Moreover, since the realization of certain values precludes the realization of certain other values, both because of the temporal and spatial limitations of our lives and because some values are mutually exclusive, these conflicts would need to be resolved in a rational effort to maximize the value achieved by any individual.

An ethic of values must recognize that every positive value, no matter how slight and transient, no matter how low in the scale of creation the being that experiences it may be, adds to the totality of value in the Universe and accordingly increases its perfection; so that the suppression of any value whatever is, when possible, to be avoided, and no slightest value is to be eliminated without a hearing. Yet, from what has just been said, it is evident that the complexities of our actual world frequently demand the sacrifice of some values in favor of others. Such occasions for sacrifice fall into two major classes;

(1) when values attainable by one value-enjoyer are relinquished in favor of other values to be experienced by the same value-enjoyer; and (2) when values of one value-enjoyer are neglected for the sake of values to be experienced by one or more other value-enjoyers.

Conflicts of the first class are, as a rule and at least in theory, , easier to resolve than those of the second class. Because time sets a limit to the number of values each of us can enjoy in our mortal span, all of us must repeatedly relinquish certain values in order to realize others; and the usual principle of selection is that lower values should be sacrificed to higher values, less enduring values to more enduring values. To play games, or merely to bask in the sunshine, are values which have a legitimate place in every life; yet one who pursues the higher values of knowledge or beauty must frequently deny himself such pleasures. But wholly to exclude the simpler, more elementary values in favor of the higher ones would impoverish life. We cannot, without exhausting ourselves, live always at our highest level; and we must from time to time turn to the more elementary values for refreshment and relaxation. That life will be richest and most rewarding which achieves a harmonious blending of all the true values which our human existence offers.

Profitably to consider the second class of conflicts, we must divide it into two subclasses: (2a) when one voluntarily forgos certain values in order to enhance the lives of others; and (2b) when one forcibly deprives other beings of values in order to enhance his own life, or that of a third party. Under (2a) fall cases of altruistic endeavor. Many a man has relinquished pleas-

ures, even the high values to be found in domesticity, science, or art, in order to serve his fellows. Sometimes it may be questionable whether the values that he has helped others to attain outweigh those which he has himself forgone; but any comparison of total gains and losses must take into account the great moral value of the altruistic endeavor itself, regardless of its fruitfulness, which is always more or less dependent on circumstances beyond the generous person's control. To give oneself unselfishly to others is not only a source of considerable satisfaction to self; it is often inspiring to onlookers who reap no direct benefit from this effort. Because altruistic endeavor tends to create values of two sorts --direct, primary benefits to its recipients and the secondary, moral value inherent in the effort itself --it must be undertaken very clumsily, or in exceptionally unfavorable circumstances, not to yield an absolute increase in value. Yet it would seem to require a very intense sense of mission, and unusual confidence in one's ability to make others accept and appreciate the benefits that he intends for them, to cause any man to deny himself all intellectual adventures, esthetic delights, and domestic felicities in order to serve his fellows --a course which might produce a smaller total of value than could be attained by giving more attention to one's own development.

The discussion of the second subclass (2b) involves us in still greater complexities. It includes all those cases in which, to support or enhance our own lives, we impose restrictions or sacrifices on weaker beings of whatever kind. Many, if not all, of these victims to our appetites or our ambitions are value-

enjoyers as well as value-generators. The primary difficulty is our inability to assess the enjoyments of creatures which differ from ourselves, and to measure the loss of value which their coercion or destruction entails. But even in the absence of such information, we can with assurance recognize certain values and disvalues incidental to our treatment of dependent humans, animals, and even inanimate things. The moral value generated by altruistic self-negation does not arise when other beings are sacrificed to our uses, because their sacrifice is not voluntary but forced. The moral value is now on the other side: any forbearance ~~which~~ that we display by abstaining from the exploitation of creatures over which we have power --as when a master frees a slave, or a rider permits his tired horse to rest, or we refuse to kill animals for food or sport --is a value of high order, appreciated by every man of awakened moral insight. Contrariwise, those who torture or kill sentient beings for amusement, or who witness such persecution with pleasure, are generating great moral disvalues, as is painfully obvious to the perceptive onlooker and may some day become evident to the persecutors themselves.

Although we cannot directly assess the pleasures and pains, the values and disvalues, of non-human creatures, we are not without principles for our guidance when we attempt to deal with them with some consideration for the values involved. If we are correct in believing that the world process is set in motion by Being's striving for the enhancement that accompanies

higher organization, then it follows that the more highly organized a creature is, the greater its capacity for enjoyment, and doubtless also the greater the pain to which it is susceptible. Thus animals, or at least the more highly evolved of them, evidently feel more acutely than plants, and plants than minerals—which is what common sense always assumes. Higher organization not only brings an increase in the capacity to enjoy values, it usually also makes superior value-generators. Plants, from stately trees to delicate flowering herbs, commonly yield us more enjoyment than do rocks and bare wastes of sand; while animals, with their graceful forms, varied activities, bright colors, and songs if they be birds, reward our attention even more richly than plants. (Although some might take exception to this statement, I think it may safely be maintained that, weight for weight, animal life yields the contemplative observer more value than vegetable life; just as, when compared on the same basis, plants reward us more richly than lifeless things. I do not forget that a vast expanse of sea or sky may be more inspiring than some little animal or plant.)

Since value increases with organization, we shall be least guilty of destroying it if, to fill our vital needs, we use the least highly organized material available to us. For example, in constructing our houses, we often have the choice of wood or inorganic materials, such as stone, clay, or metals. We may roof buildings with wooden shingles or with tiles of baked clay.

Not only will tiles, if properly baked, outlast shingles many times over --outlast, indeed, the civilization which made them -- but when we use them we avoid the destruction of trees, which generate much value for everyone responsive to natural beauty and are doubtless also, but to an unknown degree, value-enjoyers as well. Similarly, we may clothe ourselves with skins torn from slaughtered animals or with fabrics woven of cotton or other vegetable or synthetic fibers. The animals killed for their skin are deprived of the enjoyment of life, and moral disvalue is generated in the cruel and ugly act of slaughter; whereas cotton fibers are lifeless vegetable cells which will soon decay if not utilized by us. Many similar choices will occur to everyone who surveys the great variety of materials available to modern man for almost every purpose. By selecting in each case the least organized material, and especially by preferring lifeless substances to living creatures when we begin to prepare the things that we need to support our lives, we avoid much destruction of value, and at the same time we give fullest scope to that capacity to create which is one of the highest attributes of man. The morally-based preference for the least highly organized materials available for our economic uses might be called the "principle of maximum elaboration."

Although to realize all the value that one can bring into his own life may at first sight seem a narrowly selfish endeavor, hardly to be distinguished from egoistic hedonism, a little reflection will show that this is not true. To experience a value without awareness of its source is to fail to realize the total value which the situation offers. Thus, to enjoy a benefit which someone has thoughtfully provided for us without being grateful for it is to overlook a great value, the love and good will of our benefactor, which is worth even more than the gift or service prompted by it. Since we cannot be adequately aware of this love or good will without being filled with gratitude, one who intelligently strives to maximize value is necessarily grateful. Similarly, when one enjoys the beauty or the sublimity of the Cosmos without thinking of ~~its~~ their origin, the aeonian striving which created them, he misses much of the value that the contemplation of nature's grandeur may engender. For this, it is necessary to cultivate religious appreciation, reverence, and similar sentiments; only in the measure that we are stirred by these feelings do we realize the maximum of value that such situations offer.

Adequate awareness of values should alone be sufficient to support the highest morality. We are, I believe, so constituted that we must do everything in our power to preserve and promote values and to avoid disvalues, when we have full awareness of them in all their aspects. Those who destroy values or foster disvalues can have at most a partial appreciation of their magni-

tude and all their delicate shades. No one can ever have, at one time, an adequate conception of all the value which any life, including his own, may realize; yet even a rough estimate of this sum of value would make life too sacred ever to be destroyed without the strongest necessity. The appreciation of all that personal possessions mean to those who have made them with their own hands, or worked hard to acquire them, or even lovingly cared for them, would deter us from theft. Indeed, one with a true appreciation of values could never wantonly destroy a wayside flower. And who could ever start a war if he were aware of even the millionth part of the value thereby destroyed, of the disvalue thereby generated? Since growing awareness of values heightens and broadens one's moral concepts, the world process, which is directed toward the increasing realization of value, is also directed toward the development of ever more moral beings.

We have seen that to absorb all the value which any situation offers one must be aware of its antecedents and wider connections, and especially of the age-long creative effort which produced this situation. But one who takes this broad view has necessarily overcome the narrowly personal outlook of savages and children. Such a man reflects: It was not to give pleasure to me that the Universe has been striving for countless millions of years. I was neither planned nor contemplated when this striving began, aeons ago. Being has been trying to realize the value latent in it at the beginning; its effort has been to maximize value throughout its vast extent, not to bring enjoyment only here and there, in one part of creation more than in another. When

I keep this in mind and labor to increase value absolutely, I have the whole force of the world process behind me; when I forget this and scheme to increase my own enjoyment even at the price of diminishing the total sum of value, I set myself against the world process and court disaster.

We should be heartened by the realization that our quenchless thirst for a fuller, richer life is not a freakish desire that somehow sprang up in us without antecedents, but a natural development of a cosmic movement, which has roots in the very ground of Being. Since this thirst is an expression of a cosmic movement, we can expect the Cosmos to support and advance us when we co-operate intelligently with it for the fulfillment of our highest aspirations. But in order to co-operate with, and have the support of, a cosmic process or movement, we must pay attention to its character. Cosmic movements are universal in scope; they do not apply to one part of the Universe more than to another, and they show no favoritism. Gravitation, for example, does not pull one body downward and push another upward; it pulls every body downward with a force exactly proportionate to its mass. Fruitful co-operation with the cosmic striving for ever fuller and deeper experience must take the form of doing all that we can to increase value and happiness everywhere, not just in ourselves and our closest friends. Only by working for the absolute maximum of value can we hope for the full support of the world process. Since each of us individually can realize only a minute portion of possible values, co-operation with the world process necessarily takes the form of helping other beings to achieve values.

And such altruistic effort is itself one of the most enduring and satisfying values that we can experience.

With great labor and patience, one might develop, somewhat on the lines roughly sketched in the foregoing paragraphs, a complete ethical system, of which the avowed objective is the attainment of the absolute maximum of value. The author of such a system would face the task of elaborating a comprehensive doctrine of values of all kinds, not merely of moral values as in the admirable Ethics of Hartmann; for although moral effort and the moral virtues are themselves sources of values of a high order, their chief importance lies in preparing and safeguarding the foundations of the far richer, more varied array of values of all classes that life affords. Such an ethic would be firmly established on human nature, which spontaneously seeks values, and would, moreover, be in full accord with our interpretation of the world process.

Although it is possible to develop an ethic of values, this does not appear to me the simplest and most direct approach to the subject. To provide adequate guidance for our daily activities, we should need to work back from the values to the process which generates them, and we can avoid this unnecessary complication by turning at once to the process itself. Too much concentration on values might distract us from the immense labor ~~which~~ that confronts us in creating the conditions in which values flourish more abundantly, and disvalues are less rife, than in our present troubled world. Value is the efflorescence of the world process,

but it is borne only on sound and healthy plants. Just as the gardener whose objective is to produce beautiful flowers devotes most of his attention to the roots, stems, and leaves of his plants, confident that if they flourish he will have no lack of bright and fragrant blossoms; so we, who recognize that the fulfillment of our lives, and of the Universe whose organs we are, depends on the realization of value, must none the less, in our present imperfect condition, give ~~far~~ more thought to preparing the conditions in which values arise than to their enjoyment.

The wisdom of concentrating our attention on the conditions which generate values, rather than on the values themselves, becomes evident when we consider one of the chief values, happiness. Felicity occupies a peculiar position in the realm of value, for it is not a primary value, like the sight of a beautiful object or the joy of learning something that one has long wished to know, nor yet is it simply the summation of the values that we experience in a lifetime or some shorter interval. No one, I believe, could be happy whose life was devoid of every specific value, such as agreeable companionship, the comforts of home, the excitement of adventure, etc. Yet a plethora of values does not necessarily yield happiness; indeed, unhappy people often try to woo felicity by the intense pursuit of all the values which art, literature, travel, and the like can bring them, but in vain. Happiness, as is notorious, most persistently evades those who most fervently chase it; and the reason seems to be that these hunters of happiness are ignorant of the fact that it depends, not on the number of delights ~~which~~ that a life affords, but on the manner in which its elements are combined. They seek the greatest sum of values that

they can attain, whereas organic unity is what they need.[9] A life whose resources are poor and few, yet which is well articulated, will be happier than one rich in values but lacking in unity. For the solid foundation of happiness is harmony in all that concerns us: concord with the people around us, unity in our objectives, the adjustment of our occupations to our capacities, and, not least, that harmony between all the organs and functions of our body which we call health. These delicate adjustments must be the chief concern of anyone who strives to create happiness, for himself or others. He must proceed in confidence that felicity, that elusive fragrance, will spring up when its fundamental conditions are fulfilled; just as the gardener is confident that, if he carefully prepares the soil and cultivates his plants, they will yield fragrant blossoms. If he tries to produce the flowers without giving adequate attention to the soil and the plants, he will surely fail.

That ethical doctrine will be most firmly established, and most beneficial, which keeps closest to the process which has brought all goodness and value into the world --harmonization.[1] Ethics is not directly concerned with all phases of this vast movement, and it is important to single out that particular phase which is its province. In forming our Solar System and preparing the earth to support life, harmonization acted without the help of moral agents --they were still far in the future. In bringing forth life and raising it to higher forms through the intricacies of organic evolution, it still worked without intelligent support. Even today it builds our bodies, and lays the foundations of our

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[1] In another work, which I hope eventually to publish, I have developed an ethical doctrine from the standpoint of harmonization. Accordingly, in this chapter I have devoted more space to an alternative ethic of values.

minds, without our direct intervention; although indirectly we can strongly influence these processes for better or for worse. Although harmonization forms us in body and mind, it does not automatically regulate our relations with those about us; it does this far less for us than for animals equipped with innate patterns of behavior, which often admirably adjust their lives to those of their companions. This difficult task of bringing concord into our relations with the creatures around us is the peculiar province of morality. It is an essential phase of harmonization which cannot proceed without our willing co-operation.

If harmonization were a person and could speak, it might say to each of us: "Through immense ages of unremitting effort, I composed with darting atoms the pattern of the human body. I formed you in your mother's womb and built you up through the long years of your childhood. I have given you a body which can do a far greater variety of things than those of other animals, a mind more capacious and far-seeing than that of any other creature on this planet. Now I beg you to place this splendid equipment at my service. Your most imperative task is to cultivate harmony with the living things of every kind which surround you, to overcome the conflicts that arose and were accentuated while animal life was evolving, by methods over which I lacked full control. And before you can dedicate to this great task the powers that I have given you, you must become harmonious in yourself, subduing the disruptive passions imposed on your ancestors by the struggle for existence, clarifying your thoughts, unifying your aims.

"If you and others like you refuse this help which I request,

I can do no more for you. All of your kind will surely sink downward to or below the level from which you arose, doubtless dragging along much of the living world in your descent; but I cannot be responsible for the consequences, for I have accomplished all that I can without your co-operation. But if you will dedicate to my service the superlative endowments that I have given you at such great cost, I shall lift you to heights of which you can scarcely dream. And I shall always be with you, laboring in the inmost depths of your body and mind, supplying the driving force which your intelligence must guide. Without me, you can accomplish nothing at all; without you, I can accomplish nothing more in the regions where you dominate the realm of life. Since I am within you, the process that constitutes your life, you cannot ignore me. You must work either with or against me; the choice is yours."

The source of morality, the driving force in all moral endeavor, is in each one of us, and is no other than the process that formed our bodies and preserves their health, that organized our minds and gives clarity to their thoughts. This process is expansive, and seeks to establish, in our relations with the beings that surround us, the same kind of harmony that it has produced among the parts of our body when it is in perfect health, among the thoughts in our minds when they achieve that coherence which is our assurance of their truth. It is no accident that the zeal to improve ourselves and our world frequently becomes greatest in youth, just as bodily growth wanes and mental growth passes its feverish peak; as though the movement which built up body and

mind were carried by its own great momentum into a larger sphere. If we lacked this impulsion from the depth of our being, no art or science could make us moral. All that ethics can do is to increase our awareness of this moral force within us, and to guide it in profitable directions. Since even those who yearn most intensely to become virtuous and do good lack innate knowledge of appropriate methods, without guidance by the garnered wisdom of the centuries, they often go astray.

The seed of morality is implanted before birth in every man; if it were lacking, the deficiency could never be supplied. If the soil in which this seed is planted is a well-endowed human being, naturally gentle and temperate, with passions that are mild and easily restrained; if the prevailing climate is a loving and well-governed home in an orderly community; if it is watered by good precepts and basks in the sunshine of excellent examples -- if these conditions are fulfilled, the moral germ will form an upright and generous man or woman as easily and naturally as the seed of a flowering plant, sown in the proper soil and ambient, grows into a plant with beautiful flowers. But often the moral germ is implanted in the stony soil of an unfortunate personality, in which violent passions overrule a weak intellect or seize control of a strong one, or in which the capacity for sympathy and love is slight. Often, too, the seed of morality, although set in the fertile soil of a human being who is naturally well endowed, is deprived of the quickening rain of good instruction, or its tender sprout is twisted and bent by the gales of a vicious environment. In these unfortunate circumstances, the moral seed must be of exceptional vitality, if it succeeds in producing a

noble growth without much painstaking care by those who may take an interest in it.

Often the moral energy within us is like a fire smoldering under a heap of damp leaves --the sodden leaves of greed and unruly passions --which we need only to spread more thinly in order to permit it to burst into flame. Since the source of morality is within us, to understand ourselves thoroughly should be enough to make us moral. The best and most natural method of generating zeal for righteous endeavor might be to explore the depths of our own being and know ourselves as we are. We should, then, seize upon any good impulse that we might surprise in ourselves and try to trace it to its inmost spring, thereby learning how it is related to the process which made us, how congruent it is with our true selves. The systematic meditation on every noble and generous impulse which rises from the hidden depths of our being might be harmful if we practiced it for self-glorification; but a little reflection on how inadequately we carry out our good resolutions, ~~and~~ how we fail to make our lives a perfect expression of the movement that formed us, should check this dangerous tendency. With this precaution, the effort to trace to their inmost source our moral motives, such as our eagerness to improve ourselves and our desire to help others, is a salutary exercise. And just as we should reflect on our good impulses, in order to glimpse the beneficence within us; so we should from time to time reflect on our violent passions and evil deeds, to become convinced how foreign to us they are.

As, welling up from our inmost depths, our moral force grows

stronger, we protest against the evil practices current in our society. Of rebels there are two kinds: those who rebel against the tyrants who injure them, and those who rebel against the tyranny of habits and customs which cause them to injure other beings. The first rebel because they refuse to be oppressed; the second, because they refuse to be oppressors. The rebels of the first class, about whom Camus wrote The Rebel, are the most renowned in history. Every nation has its famous rebel of this type: Israel, Moses; Athens, Harmodius and Aristogeiton; Rome, Junius Brutus; Switzerland, Wilhelm Tell; England, John Hampden; United States, Patrick Henry; Venezuela, Simón Bolívar; and so forth. ¶ Although they win immense public applause, rebels of this sort are not the most magnanimous; even the most abject slave will turn against the master who goads him beyond endurance. Rebellion of the second type requires a greater heart, a more exacting conscience, and just as much courage, if of another sort; for this reason, examples are harder to find. An outstanding one is Neminatha, who long ago rebelled against the cruel custom of sacrificing animals at an Indian wedding feast, remained a bachelor, attained enlightenment, and is remembered by the Jains as a tirthankara or great teacher. A more recent example is John Woolman, who, along with other Quakers, rebelled against using sugar and other commodities produced by the labor of Negro slaves, and who made long journeys afoot because the postboys of the stagecoaches were mistreated. To refuse to be dominated by a tyrant reveals a proud and spirited nature; to refuse to oppress other beings, a generous and compassionate nature.

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Among the outstanding examples of great moral energy were the prophets and founders of religions. It is sometimes claimed that the great prophets of all the major religions taught essentially the same message, but this is true only with large reservations. What they had in common was minds exceptionally responsive to the creative movement ~~which~~ that formed them; all were in close contact with harmonization, which in many men works more effectively in the subconscious depths than in the conscious mind. Their higher sensitivity to the moral principle in the Universe gave them great spiritual insight and moral energy. Not only did they long intensely to find a purer, more righteous life for themselves, but they were irresistibly impelled to enlighten their fellow men, to save them from the hideous consequences of their own ignorance and headstrong folly. To this mission they devoted themselves unreservedly, some, like the generously impetuous Christ, offering themselves a sacrifice for the people's sake; others, like the calm and restrained Buddha, devoting many years to the patient promulgation of their doctrines.

Since the moral and spiritual truths which the prophets proclaimed arose out of their own experience, or at least could be confirmed by this experience, there is much similarity in their doctrines in this sphere; although some had wider sympathies and taught a more comprehensive ethic than others. But for their theological and metaphysical views they depended on tradition, rather than on direct insight or careful philosophical construction. Their critical faculty was, in general, ~~far~~ inferior to their moral sensitivity and zeal. Brought up in different traditions,

they adopted, with more or less modification, the prevailing concepts. Even Buddha, apparently the most subtle and sceptical of the founders of religions, was not adequately critical; for he accepted the already firmly established Indian doctrine of transmigration, although it is hardly compatible with his denial of the substantiality of the soul. Hence the theological and metaphysical teachings of the prophets clash on many essential points; and their lack of agreement makes us doubt that they could have been derived from some transcendental source of truth, inaccessible to the rest of us. The prophets, then, are valuable as exemplars of what harmonization can accomplish in minds sensitively attuned to it, of moral zeal, of devotion to their fellow men. As expositors of the origin, nature, and destiny of the Cosmos, they are rather less than more trustworthy than philosophers who approached this task after long and rigorous intellectual training.

Some of the greatest of the moral teachers, philosophic no less than religious, have stressed the necessity of moderation in all things, not excluding the pursuit of spiritual enlightenment. Today, however, the accent has shifted to creativeness and the need of encouraging it. No thoughtful person will deny its importance, to oneself and to society at large. But even more important than creativeness is moderation. The Universe was permeated by creativity long before man appeared on the earth; had this been lacking, we should not be here. In fact, the creative energy is excessively active; and this immoderate activity, by producing many more creatures than the earth can support, is the principal cause of strife, evil, and suffering. Man's pecu-

liar contribution to the world process is, then, not creativeness --which preceded him --but moderation, an outgrowth of his foresight and intelligence. As intelligent direction becomes available and closely adjusts means to ends, the intensity of effort may be diminished with no reduction of accomplishments. Our only hope for making a better world is by tempering creativeness with moderation. To be moral is to be moderate.

CHAPTER XI.

FROM SPACE TO SPIRIT

Most philosophers who have given attention to cosmological problems have preferred to derive the Universe and all it contains from a single source or substance. The monistic doctrines thence arising may be materialism, when the unique source of all that exists is held to be matter; idealism or mentalism, when it is consciousness or mind; neutral or transcendent monism, when it is neither of these, but some recondite substance whence both are derived. Examples of materialism are the old atomic philosophy of Democritus and Epicurus and the modern versions of the same that were popular in the nineteenth century. Examples of mentalism are the Vedanta of Sankara, the philosophy of Berkeley, and the Absolutist doctrines, such as those of Hegel, Bradley, and Royce, that also flourished in the last century. Examples of neutral or transcendent monism are the philosophy of Spinoza and our present doctrine. The single substance whence all things are derived is often called "God" or "Brahman" whether, as in the Vedanta, it is regarded as pure consciousness or, as in Spinozism, it is the hidden ground whose attributes are mind, matter, and an infinity of others that are nameless to us.

Those who say that matter is the ground of all that we know run into grave difficulties when they try to explain how it produces the knower, mind. The most obvious properties of matter are mass and extension; its most obvious activity is motion. The great stumbling block of materialism has always been the impossibility of explaining how the movement of particles or larger

masses produces consciousness or thought. How naïve Lucretius's notion that the sentient soul is composed of the finest atoms, with an admixture of heat, air, and a nameless fourth element, appears to us today! Mentalism faces just the opposite difficulty, that of deriving sticks, stones, and other massive objects from imponderable thought. This does not greatly trouble the idealist philosophers, who remind us that we know nothing except ideas in our minds, and among these ideas are the weight, solidity, extension, etc., that we ascribe to bodies that appear to surround us, but have no real existence apart from minds that think them. How subtle and difficult to refute these idealists are, is evident to all readers of Bishop Berkeley's delightful Dialogues of Hylas and Philonous.

Although the mentalist may dazzle us with his dialectical pyrotechnics, common sense remains unconvinced, and will never concede that an idea can become as solid as a stone, such as the one ~~old~~ Dr. Johnson kicked in his contemptuous refutation of Berkeley's doctrine. To common sense, mind is mind and body is body, and one can never become the other. Hence common sense has always preferred dualism, famous examples of which are the old Indian Samkhya, Platonism, the official Catholic philosophy of St. Thomas Aquinas, and the Cartesian philosophy. Until the materialist can demonstrate, more convincingly than he has yet done, how matter can produce thought, or until the mentalist can tell us how mind --God's, or one's own -- produces the illusion of matter, the cautious philosopher will agree with common sense that neither of these monisms has proved its case.

Yet, despite its obvious difficulties, monism, in one form

or another, has for many minds, especially those of a philosophic temper, an irresistible attraction. The reasons for this preference are in part intellectual and in part affective; and the latter appear to carry most weight for all except the most rigorous thinkers. For many people, to believe that anything is one or unique enhances its value. They feel that one God is better than several or many gods; a world derived from a single substance superior to one composed of a plurality of substances. Some people are immensely comforted by the thought that mankind is one, in the sense that all men have a common origin, more or less the same natural endowments, can interbreed, have a common destiny, and the like. They wish to see men everywhere with the same language, the same culture, the same government and institutions, and in every respect as similar as possible.

For my part, I cannot understand how oneness in itself enhances the value of anything, why it is intrinsically superior to plurality. Just as an organization may be more efficiently administered by several men, who bring diverse abilities and experience to their common endeavor, rather than by a single executive; so the world might be governed better by a conclave of gods, each with his special endowments, than by a divine Monarch. Just as, for many purposes, an alloy is superior to a pure metal; so a world composed of two or more ultimate substances might be better than a world derived from a single primitive substance. Likewise, a world-wide community of rational beings of diverse origins would in many ways be more admirable than a community composed of one sort of being; concord among animals of different species, genera,

or even orders, when it can be attained, is a higher accomplishment than concord among creatures of the same kind. In general, the more diverse the entities that achieve a certain degree of harmony and the farther apart their sources, the more admirable this harmony is, the more value it generates. For value, as we learned in Chapter V, springs from unity in diversity, not from undifferentiated oneness.

The solid reasons for preferring monism to dualism or pluralism are, as I see it, wholly of the intellectual order. When we attempt to explain the Universe, an unresolved dualism presents even greater difficulties than monism. We cannot understand how two or more substances, not derived from a common source, interact and form the coherent system that we believe this Universe to be. Monism is the simpler hypothesis, and for that reason preferable. It is not because a monistic world is of itself more valuable or admirable, but because it is more understandable, that we favor it. Yet to put monism on a firm foundation is, as the whole history of philosophy attests, an undertaking beset with tremendous difficulties.

Monistic philosophers of all shades of opinion have usually based their position on the unity of substance, by which they meant that which remains self-identical beneath all its changing appearances, as water is the same whether it is in the form of hard transparent ice, fluffy white snow, a cool colorless liquid, a hot colorless liquid, a cloud of white steam, or a larger volume of transparent gas. So, these monists argued, the single substance of the Universe is the same whether it takes the form of incan-

descent stars, the rocky crust of the earth, perishable living organisms, or the ever-shifting sensations and thoughts of some of these organisms. Aside from the circumstance that, in philosophic circles, substance has never quite recovered from the ridicule which Bishop Berkeley unfairly heaped upon it, the difficulty is, as we have seen, to show how the same substance can be both mind and matter, or, in other words, to derive either one of these constituents of the world from the other which is held to be basic.

So long as I tried this approach to the problem, I could never, without losing my intellectual self-respect, get beyond dualism. Finally, I asked What, if anything, do mind and matter have in common? If they are derived from a single source, if they interact as most of us believe they do --although some philosophers have denied this --they certainly must have something in common, but what can it be?

An early answer to this question was that like knows like, that the water in the soul knows the water in the surrounding world, the fire is cognizant of the fire, the earth in the soul recognizes earthy substances outside it, and so forth. This naïve guess of Empedocles was already dismissed by Anaxagoras, who, as Aristotle reports, argued that, since everything is a possible object of thought, mind, in order to know all things, must be none of these things, but free from all admixture. If warmth were a permanent quality of the mind, it could not know cold; if the mind were green, it could not know red; and so forth. Hence it can have no nature of its own, other than that of

having a certain capacity.[1]

Mind, in a manner that we cannot explain, becomes cognizant of things, including the states of its own body, in consequence of the excitation of the sense organs and the nerves which lead to the brain, where it interacts with the body. Its outstanding capacity is, as we have seen (p.), that of arranging the impressions so provided in patterns of ever increasing complexity, coherence, and amplitude --the process that we have called harmonization. But harmonization is likewise the dominant process in the Universe at large. Here we have found a fundamental similarity between mind and the external world of matter, a feature which they share in common. We at once ask whether harmonization in the mind is not merely a mode of operation impressed upon it, or suggested to it, by the external world which it contemplates, rather than its own proper endowment. The mind knows stones, yet stoniness is certainly alien to its nature. Might it not be the same with harmonization?

But the mind does not, even in its simplest acts of perception, mirror or copy the object that it perceives. My impression of a pen, a table, or a flower is, as we have seen (p.), a symbol, not a replica. Even less can the process which constitutes the mind be a mere reflection of a process in the external world. Whatever order nature may have in itself, it does not enter our consciousness with this order. In the first place, sensation breaks an object into fragments in the very act of presenting it to the knower. I examine an orange. Its visible properties, such as its color and shape, are transmitted by means of light waves that stream into my eyes. Its aroma is wafted by the air

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[1]Aristotle, De Anima, Book III, Chapter 4, 429a

to my nose. Its tactile properties, including its softness and smoothness, are revealed by my finger-tips. To learn its taste, I must apply yet another organ, my tongue. Somewhere within me, this analytic process of sensation must be reversed by a synthetic process, in order that I may know the orange as a single object with a certain color, shape, texture, fragrance, flavor, and the like. Although I believe that my final concept of the orange as a unitary object symbolizes somewhat adequately the orange itself, the fruit was never conveyed to my mind as an unbroken whole.

As I pass through the world, its contents crowd upon my attention at random: a tree, a road, a voice, a house, a river, a cloud, a gust of wind, a man, and so in endless sequence as long as I remain awake. To discover order beneath this hodge-podge of experience has been the work of many inquiring minds over many generations. Even with the benefit of this accumulated knowledge, it takes each individual years to recognize some sort of orderliness in the world; while inquiring minds are constantly busy trying to find an underlying order where only disorder greets them. If nature has an order, it does not reveal this to the careless gaze. Yet we can no more say that the mind creates the order in nature, than that external nature creates the order in the mind. After we have discovered, beneath the bewildering play of events, an underlying regularity in nature —its laws— we expect to find it there always. If the order that we ascribe to nature were illusory, this expectation would be continually disappointed, and that coherence of experience which is our criterion of truth could never be achieved.

Thus we are forced to recognize an orderly process in the

mind and an orderly process in the external world, although neither of these processes can be derived directly from the other. The harmonization that pervades each normal mind is not the fruit of its contact with that in the Universe at large, but rather the prerequisite of its recognition that harmonization pervades the Universe. Yet it is difficult to believe that the process in the mind arose independently of the similar process in the external world, of which matter is the most prominent content. It is much more likely that the harmonization in the mind and that in the material world are parts or phases of the same process, which has been continuously at work building up an orderly, coherent Universe from its diffuse primary constituents. Hence, as the first solid achievement in our attempt to develop a monistic view, we are led to recognize a continuity of process throughout the Universe, including its material and mental aspects.

Naturally, we wish to pass beyond the bare recognition that the same process pervades the Universe from its prime foundations to its highest developments in the living world, and even in the realm of mind, and to account for this continuity. The continuity of process certainly points to continuity of substance; yet when we try to trace this second continuity, we leave the solid observational evidence on which the concept of harmonization rests, to enter a hazardous region of speculation. Hence we can do no more than suggest the series of transformations which has brought mind into the world, to give, as Plato said in the Timaeus, the most likely story.

A Universe which contains value must have unity in diversity;

for, as we learned, this is the condition of value. Matter is the source of diversity, for its several kinds of particles may be put together in countless different patterns; just as the relatively few letters of the alphabet are combined in a vast number of words, with which in turn an immense number of different sentences, paragraphs, and books may be written. But matter cannot be the ground of unity, because it does not form a continuum. Its great masses, including the stars and planets, are separated by immense spaces in which it is very thinly diffused; and even in the bodies ~~which~~ that we call solid, the particles are not in contact with each other. These separated masses and particles could not influence each other across an absolute void. Hence matter alone could never form a universe or coherent system, each part of which is somehow related to every other. A little reflection suffices to convince us that matter cannot be the ground or primary substance of this Universe, and that materialism is not a tenable hypothesis.

The only continuum that we know is space. It is one and indivisible; and although we commonly speak of parts of space, the expression is inexact, and we had better say "regions." The very walls which enclose a room or a box are themselves in space, and no more interrupt its continuity than the boundary between two countries or provinces breaks the continuity of the earth or that of the air above it. Even where it is devoid of ponderable matter, space cannot be empty; if it were, gravitational, magnetic, and electric attraction, or any similar action at a distance, would be inconceivable. When the physicist tries to explain gravitation, and the earth's circular path around the sun,

by the curvature of space, he expresses his conviction that it is not empty; for to speak of curved lines of force in an absolute void is nonsense.

Since none of the familiar components of the world, such as the bodies it contains, seem able to account for its unity, many philosophers have believed that the ground of all that is must be something recondite and mysterious, inaccessible to our senses. Space conforms to this description. Nothing seems more commonplace, open, and innocent of hidden complexities than space, in which we live and move and have our being. Yet it is only the negative aspect of space which is evident to the naïve person, who can tell you what space is not and does not do rather than what it is and does. Space is not solid and does not oppose motion, hence it is commonly believed to be nothing, a mere void where things can be placed. All the more positive properties of space quite escape our direct observation and must be inferred from the behavior of the things it contains, such as the mutual attraction of bodies and the propagation of light.

Yet even that property of space which a moment ago we called negative is, on a profounder view, positive enough. To provide a place for something, to act as a receptacle of solid bodies, to permit their movement --familiarity blinds us to the great mystery which confronts us here. Most cosmogonies have assumed that the Creator of the world found space awaiting him and could proceed at once to construction, as a squatter in the wilderness can build his cabin without buying his land. That there was a place to receive a Universe, or even a speck of dust, clamors for explanation, if anything does. Yet our minds, which all our lives

have thought of all things as being in space, cannot conceive its absence, hence cannot even conjecture how it began. All things are ultimately mysterious, but space is far more enigmatic than anything that it contains. What we commonly call mere emptiness and nothing has the most marvellous properties, and appears to be the inexhaustible storehouse whence everything arose. A doctrine which takes space to be the single source of all that exists is properly called "transcendent monism," for the intimate nature of space transcends our understanding.

If space is not itself the Cosmic Ground, it is certainly closer to Primal Being than anything else that we know. Matter could not have preceded space, for it cannot exist except in space; but space may well have preceded matter, if the two are not coeval. The ultimate particles of matter might have been formed by the gathering together or condensation of space at certain points; but this conception presents difficulties; for we can clearly conceive of condensation only as the drawing together of particles, as in the formation of water from steam, so that we must begin with what we try to account for. Just as space itself is mysterious, so its relation to matter is mysterious, and perhaps ultimately inexplicable.

Yet the indispensable part played by matter in Being's striving to realize the values latent in it is clear. Space, which is unity, could not bring forth values without the help of multiplicity, which is provided by the discrete particles of matter. In engendering a swarm of particles, space compromised, but did not destroy, its unity. By virtue of its continuity, it could proceed to build up these particles into the harmonious patterns

that are the source of all the values that the external world provides for us. The One produced the many, and the many then strove to regain unity. It is this secondarily acquired oneness, which integrates multiplicity without annuling it, that is the foundation of value.

We have already followed the process whereby the particles of matter are built up into patterns of increasing complexity, coherence, and amplitude, until at length organic bodies emerge. Here we are concerned only with the transition from matter to mind; but, as in that from space to matter which has just occupied our attention, I can do no more than hazard a suggestion. It was earlier pointed out (p.) that if at least some gleams of sentience are associated with the simpler forms of matter, the world process becomes more understandable; for consciousness is a prerequisite of value, and the earlier in the process that consciousness arose, the sooner this process began to achieve results that might stimulate its further advance. But we may recognize the possibility that lifeless matter is in some degree sentient, without departing so far from experience as to claim that those complex manifestations of consciousness which we associate with the word "mind" occur in any lifeless object.

But because minds are associated with material bodies, and especially with the exceedingly complex configurations of matter which are found in the brains of the higher animals, it does not follow that mind is itself material, or a property of matter. The unity of consciousness, on which psychologists like James and McDougall have so strongly insisted, seems to be incompatible

with the atomic structure of matter, and it points strongly to the continuity of space as its ground. Matter appears to have arisen by the transformation of space; and one of its most important functions is the further enrichment of space, by ~~means of~~ building static patterns and stirring up rhythmic vibrations in it. One of the most notable of the latter is light, which originates in matter yet is supported by space; the freer from obstructing matter that space is, the farther from its source ~~does~~ light travels, the longer ~~does~~ it endures. Indeed, in space that is perfectly empty, in the ordinary sense of freedom from ponderable matter, light should be eternal. Gravitational, magnetic, and electromagnetic fields are also produced in space by matter; and although the material bodies which they surround have a discontinuous structure, the fields are themselves continuous.

Consciousness appears to be among the things which matter begets in space. Stirred up by material configurations of great complexity, mind rests upon the simplicity of space, and may well be preserved by it. Just as the particles of sentient matter, the swarming children of space, act upon each other by means of space; so do minds, the offspring of matter, depend on matter to communicate with each other. Each phase in the developing Universe depends on the more continuous preceding phase to maintain liaison between its parts. Minds, each continuous in itself, are isolated from other minds and can convey information from one to another only by means of their bodies, as by speech, gestures, facial expression, and words which the hand writes and the eye sees. The difficulty ~~which~~ that minds have in communicating directly with each other is to me one of the strongest arguments against

mentalism; for if, as this doctrine claims, consciousness is the ground of all things, it should be the continuous phase of the Universe, and minds should be able to influence each other directly. If mentalism were true, we should expect material bodies of all sorts to act upon each other only by means of mind, which is just the reverse of what we actually find.

At times, however, thought appears to leap directly from mind to mind, without the intermediation of material bodies. This power of telepathic communication is poorly developed in most, and probably all, minds. How many people have ever received by this means as much accurate, convincing information as a telegram of a dozen words can convey? But as minds grow in strength and adequacy, they should become increasingly continuous, both in space and in time. Individual minds should be less isolated from each other, and able to communicate directly, without relying on material bodies to convey their messages. At the same time, their memory should become more accurate and enduring, so that the past is bound more firmly to the present.

In the foregoing paragraphs, I have briefly sketched my conception of the substantial continuity of the Universe, in which space engenders sentient matter and matter at last produces mind, which, like light, rests directly on space. Such a sequence would explain the continuity of harmonization throughout the material and mental realms. But we have, as I forewarned, been proceeding far more precariously than when we dealt with harmonization itself. Harmonization is a process which causes changes that are evident to everyone, in addition, no doubt, to many that escape our

notice. The sequence of changes reveals quite clearly the direction of the process, although not its intrinsic nature. But when we turn from a process to the media in which it occurs, we deal with far more recondite matters, in which speculation must compensate for the absence of positive information.

Another far-reaching continuity is that of creatures, or the composite bodies which the Universe contains. The more we explore the Universe, upward to the vast masses that are scattered through space, downward to the smallest organic and inorganic bodies, the more we are impressed with the truth of the old saying that nature makes no jumps, that there is an almost imperceptible gradation from form to form. Among the bodies which float in space beyond the earth, there seems to be an unbroken series from particles of dust, through those the size of pebbles, houses, mountains, islands, and the moon to far greater cold masses like Jupiter and the even larger dark members of binary systems. From these non-luminous bodies, which mostly revolve as planets and planetoids around the stars, or else as moons around the planets, complete knowledge of the contents of space would doubtless reveal an evenly graded series leading to the luminous stars. Among these, astronomers find every gradation from immense dull red stars of low temperature and exceedingly low density to small, white-hot stars so compact that a cubic inch of their substance would weigh well over a ton, if brought to the earth's surface.

Among the atoms, we can trace an unbroken series from the simple hydrogen atom, consisting of a single proton and a single electron, to the complex atom of Uranium, which contains 92

protons, 92 electrons, and 146 neutrons. Beyond this point, atomic structures become so large that they are unstable and are not found in nature; although a few heavier kinds, such as Plutonium, have been created in the laboratory. Of compounds there is a bewildering array stretching from simple molecules like that of common salt, in which one atom of sodium is united with one atom of chlorine, to protein molecules containing thousands of atoms of half a dozen kinds. The most notable gap in the whole series of composite bodies known to us is that between lifeless matter and living organisms. But as, on ~~the~~ one hand, chemists succeed in building up molecules of ever greater complexity, and as, on the other hand, investigation of the simplest organisms, such as viruses, reveals that they are essentially extremely large, self-reproducing molecules that can be crystallized, this gap between the lifeless and the living slowly narrows and may some day be closed.

When we classify the immense variety of living things, we find long series of slightly differing forms, such as the species of a single genus or the genera of a family, separated by often wide lacunae between the major divisions of the animal and vegetable kingdoms, as that between reptiles and birds, or between the gymnosperms and the angiosperms among plants. These gaps in the serried ranks of living things are in part filled by forms known only as fossils. But fossilization is a random process, which has given us a far from complete representation of the organisms ~~which~~ that once inhabited the earth but are no more. There is little doubt that if it had been more efficient, and had furnished us with all the "missing links," we should have

complete series of intergrading forms, stretching from the one-celled animalcules to such highly evolved organisms as the social insects, the hoofed vertebrates, the songbirds, and man. Creation advances with slow and uniform steps, not by wild leaps.

These continuities that the Universe exhibits, in its processes and in the forms which they produce, are not only fascinating to contemplate but they influence our valuations, or attitudes toward ourselves and our world, in subtle ways that may be either salutary or harmful. Hence the proper reading of these continuities, and the drawing of the correct inferences from them, is of the utmost importance to those who strive to give life significance, coherence, and stability by seeing it in relation to the whole of which they are parts.

As a rule, we tend to reduce our valuation of the whole continuous series to the level of that member of the series which we hold in lowest esteem; and far less often do we raise it to the level of the member that we most highly esteem. Thus, in countries with sharply delimited social classes, men often disdain one of plebian ancestry, no matter how honorable his character nor how admirable his accomplishments. In general terms, imagine two entities or systems, A and B. We believe B to be of a higher order than A and likewise of distinct origin, or at least to contain an important constituent that cannot be traced to A. Now let us suppose that someone demonstrates, beyond reasonable doubt, that B is derived from A and contains nothing which cannot be traced to this source. The primary effect of this demonstration

will be in most cases, I believe, to reduce our estimate of B in accordance with our lower esteem for A. But this is an unjust, irrational procedure. We have just as much reason to elevate our appraisal of A, in view of what it has produced, as to lower our valuation of B, in view of the supposed inferiority of its source. At least, we should, in all fairness, revise our estimates of both A and B in the light of our discovery of their close affinity, and not ~~merely~~ just change our opinion of one of them.

The widespread tendency to reduce our estimate of the member of the series that we consider highest, instead of following the fairer and more rational course of revaluating the whole series that has been demonstrated to be continuous, has contributed much to modern man's despondency about himself. Not long ago, our ancestors believed that man, created by a special act of God, was placed above all the animals, which, of distinct origin, were made to please and serve him. Then the evolutionists proved, beyond reasonable doubt, that man is an offshoot of the Primate branch of the mammalian division of the vertebrate stock, hence he is an animal among animals, a brother or at least a cousin of all the rest. Since the animals were held in low esteem, man's self-respect began to fall; ~~and~~ there was a widespread tendency to excuse his shortcomings as the inevitable consequence of his animal nature. At the same time, paradoxically enough, there has been much resistance, especially among professional biologists, to the attempt to narrow the gulf between man and the other animals, by recognizing that the latter are not devoid of esthetic appreciation, parental love, the feeling of obligation, and other psychic attributes that we admire. Man was lowered in

his own estimation by the demonstration of his affinity to the whole animal kingdom, but the other animals were not correspondingly raised.

In association with the materialistic monism which became popular in the last century, this pernicious tendency to scale down our estimate of man to correspond to a low estimate of his source had the most unfortunate results. In Chapter XIII of The Riddle of the Universe, the evolutionist Ernst Haeckel wrote: "Our own 'human nature' which exalted itself into an image of God in its anthropistic illusion, sinks to the level of a placental mammal, which has no more value for the universe at large than the ant, the fly of a summer's day, the microscopic infusorium, or the smallest bacillus. Humanity is but a transitory phase of the evolution of an eternal substance, a particular phenomenal form of matter and energy, the true proportions of which we soon perceive when we set it on the background of infinite space and eternal time."

This is an example of the sort of reductive monism which is largely responsible for the hopeless outlook of modern man, and it results from a pathetically one-sided view. The later or higher products of any coherent, developing system, such as our Universe, are certainly in some sense of value to that system, the ends toward which it has been striving, the actualization of its potentialities, the flowering of its latent tendencies. If we overlook this truth we may, with Haeckel, revere the Universe for its supposed infinity and eternity, for the "iron laws" by which it operates; but it has no claim upon our love and loyalty. But infinity and eternity are vacuous unless they produce con-

crete values in space and time. To go into ecstacy over the infinity and eternity and the vast reserves of power of the Universe is a species of megalolatry, which is the crudest and most barbaric form of worship. A single spark of love, a gleam of joy, a touch of beauty makes the Universe more worthy of our loyalty and devotion than infinite extension, duration, or power.

When, instead of this sterile process of reduction, we reappraise every system in the light of its demonstrated continuities, our attitude changes; we find reasons for hope rather than for despair. Why should I depreciate myself or my fellow men because of our affinity to the other animals? Even those who believed man to be of divine origin and little lower than the angels admitted that men often commit acts more horrible and despicable, more bestial in the worst sense of the word, than beasts ever do. Therefore, the acknowledgement of our position in the animal kingdom can hardly change my estimate of the depths to which man can fall. And if the best and noblest of men, the spiritual heroes of humanity, do not shrink in stature when I recognize that they belong to the same biological species as the most degraded criminals, but they shine the more brightly for this contrast; my knowledge that they belong to the same vertebrate stock as birds, reptiles, amphibians, and fishes will certainly not diminish my reverence for them. On the other hand, to survey the immense range of accomplishments of the animal kingdom as a whole, and of our own vertebrate stock in particular, gives me an exhilarating sense of our own boundless potentialities, of what men may in time achieve, if only they make wise use of

their opportunities.

Just as our descent from more primitive forms of life should not dismay us, so we should not be discouraged by the probability that our minds are created by our bodies composed of sentient matter. On the contrary, in the measure that we hold spirit to be superior to matter, we should be uplifted by the view that it is generated by matter. At any moment of time, we are what we are, no matter how we came to be what we are. What most interests us is the direction in which we are moving, what we can hope to be in the future. If mind is in any sense higher than matter, yet a more recent development for which matter is responsible, it is evident that we live in a Universe which is moving forward and upward, in which each stage in the developmental sequence leads to a higher stage, in which the less creates the greater. No man can foretell to what sublime heights such a process will reach. But, on the other hand, those philosophies and religions which teach that mind, the higher, somehow gave birth to matter, the lower, or that, as the Gnostics held, souls were seduced by the lushness of matter to desert their pure celestial abode and enter into it, view the world as following a descending rather than an ascending course. Often these doctrines hold forth hope that this descent may be reversed and mind or spirit can by vast effort regain its original blissful freedom; but this is only the rectification of an unfortunate blunder, not the true creative advance that we believe the world process to be.

Whatever the final decision about mind's relationship to matter, mind must ever be grateful to it for manifold advantages.

~~Although~~ Whether matter is the mother of mind is a debatable question, but there can be no doubt that matter is its nurse, responsible for its growth. Without experience in the realm of matter, consciousness would be poor in content. Matter, the generative principle in the Universe, is more fertile than mind, producing endless novelties as it flows restlessly from form to form. By the study of its processes and the contemplation of its forms, mind is immeasurably enriched. The puzzles which the material world presents have taught it to think. Matter provides all the beauty that appeals to eyes and ears. Not only could there be no sensuous beauty in the absence of the material world, it is even doubtful whether there could be moral beauty; for morality is concerned chiefly with the predicaments of conscious beings in a world where competition for the means of preserving and fulfilling themselves brings them into sharp conflict, thereby providing opportunity for the exercise of moderation, generosity, fortitude, compassion, and other moral qualities. As a mind matures, it depends less on the increments which the senses bring to it and lives more constantly in the rich treasury of experience that the years have garnered. Possibly it may at last reach a stage in which it needs nothing more from matter; but there is hardly room to doubt that, without the sustenance which the material world provides in its nonage, it could not grow.

Deepening awareness of the continuities which the Universe presents gradually transforms our habits of thought, until we view in fresh perspective the problems which our troubled contemporary world presses upon our attention. Problems which once seemed peculiar to humanity are now seen to be essentially cosmic

problems, perhaps become more urgent and complex, brought to a sharper focus, in us. Among these problems are those that we noticed in Chapter VIII, including those of finding the proper mean between permanence and growth, between isolation and crowding, between individuality and universality. As we form the habit of surveying these vexing questions in their whole sweep, we view them more calmly and dispassionately, thereby increasing the probability of solving them.

CHAPTER XII

THE PRESERVATION OF VALUE

Scientific cosmology attempts to trace the origin, development, and ultimate fate of the Universe in terms of the transformations of matter and energy in time and space. The Universe as described by science is a meaningless flux, lacking full reality because it lacks value. Yet scientists, in their professional capacity, wisely refrain from complicating their problems by the inclusion of value, which is undetectable by their instruments. This leaves to philosophical cosmology the important task of describing the Universe in terms of the origin, nature, and ultimate fate of value. In this most important undertaking, philosophy should not attempt a completely independent description. On the contrary, it should accept the scientific account, in so far as it seems sound, and supplement it by adding what it obviously lacks.

In Chapter V, we learned how value arises. We must now consider how it is preserved. If the Universe is unable to preserve any of the value that it generates, if evolution is finally cancelled by dissolution, the world process must be regarded as a failure. If, after aeons of striving, there is no more value than there was at the beginning, then it will be as though no development had ever occurred and no value had ever arisen; and no metaphysical subtleties, such as calling values "eternal essences," can brush away this hard fact.

This problem of the preservation of value is of the utmost importance for a number of reasons. It is intimately concerned

with the permanence of our achievements and the duration of our consciousness. Moreover, it is closely bound up with the perennial metaphysical question of the nature of time. If, after an immense interval, the Universe returns to its primitive state, preserving not a single one of the structures or the values that it has created with such great labor, then time will have contributed nothing permanent to Being. After dissolution is complete, the state of the Universe will be the same as though all those aeons had not passed. In this case, it is evident that time has flowed barrenly: it is simply, as Aristotle pointed out, a measure of movement and change; a method of relating one process to another, as when we state the span of a life in terms of the earth's revolutions around the sun; and, finally, merely a creation of the mind that is aware of change, as Kant contended. If, on the other hand, some constructive processes are irreversible, creating what will endure for ever, time permanently enriches Being, hence it is more than just a measure of motion. In this case, we must regard it as the resistant, substantial stuff that Bergson declared it to be. Because its flow makes a lasting contribution to Being, it deserves to be considered as a basic constituent of the Universe, ~~no less important than~~ like matter and energy. Until we have solved the problem of the preservation of value, we can reach no final conclusion as to the status of time.

By the abstract term "value" we mean, as was stated in Chapter V (p.), the whole complex of factors which culminate in experiences that enhance existence. The subject of value, thus broadly viewed, includes value-generators, value-enjoyers,

and the experiences which result from their interaction. By "a value" or "the value," we mean a particular experience of the sort that we here consider; and by "values" in the plural, two or more of such experiences.

Even if no particular value were ever preserved, by memory or otherwise, so long as value-generators and value-enjoyers continue to exist without alteration and to come into contact, there may be a constant succession of similar if not identical values. Some value-producers, such as the grand physical features of the earth, its snowy peaks that uplift the gaze, its wide plains that invite the spirit to expand, its sublime expanses of ultramarine water, endure for long ages. Others, like the rainbow and the white clouds that drowse in the azure sky, are constantly vanishing but constantly renewed. Yet, if those who predict the eventual explosion of the sun are right, all these value-producers will at last be destroyed.

By their beauty, interest, and the wonder that they excite, the myriad kinds of living things provide countless values for mankind, and possibly also for each other. Although individually perishable, their power of reproduction ensures a constant succession of them. When a species becomes extinct, as, through man's carelessness and greed, has in recent centuries happened to a number of splendid animals, a source of values is irretrievably lost. Although, in past ages, the extinction of innumerable species was compensated by the evolution of others that equalled or possibly exceeded them in beauty and interest, the conditions that humanity is rapidly creating throughout the world are upsetting this balance; and unless there is a sudden and unexpected change

in men's attitudes and practices, extinction will henceforth proceed faster than new species arise, with a consequent diminution of value.

The loss of value resulting from the extinction of forms of life is to a very slight extent offset by fossilization. The colorless remains, often mere flattened outlines, of the plants and animals that flourished aeons ago, suggest the glories of past geologic ages and fill the imaginative mind with wonder. When, however, the extinct creatures which the paleontologist reconstructs are huge predatory saurians, which wrought immense destruction among contemporary organisms yet evidently had themselves a psychic life of an extremely low order, we are horrified and oppressed by the realization that organic evolution can miscarry and lead life on a downward no less than on an upward course. Thus fossilization preserves disvalue no less than value. But fossils, although they endure many millions of years, are not eternal and will eventually be destroyed along with the crust of the planet that bears them.

Artistic and literary creations form a special class of value-generators. A graceful waterfall in a remote wilderness untrodden by man, a brilliant gem buried in the earth, are potential value-producers which perhaps have not yet been sources of actual values. But in painting a picture or writing a poem, the painter and poet are trying to preserve and transmit to others values that they have experienced. In the measure that they are successful, they reproduce in other minds the values that inspired them to paint the picture or write the verses. Thus the term "value-bearer" is more appropriate to a work of art, which in a sense

carries and preserves values already experienced by the artist, than it is to some natural object which is capable of producing value in a receptive mind but may not come to the attention of such a mind. Literary and artistic creations convey value from one land to another at a great distance, or from one generation of men to remote posterity. Yet they are far from eternal. The renowned paintings of Polygnotus and most of the glorious statues of Pheidias have been lost, as have innumerable literary treasures of ancient times. Even books, that are preserved and multiplied by copying, lose some of their splendor as the language in which they were written ceases to live, and they must be laboriously read in a dead tongue or else are known only in translation. Art and letters prolong the life of values but cannot preserve them for ever.

Value-enjoyers, like living value-generators, perish as individuals but are replaced by more or less similar descendants. The values which each of them experiences are preserved in his memory, but usually with a loss of freshness and intensity, and sometimes with a radical change of character; so that, as judgment matures, we may recall with disgust the experience that once delighted us, or remember gratefully one that was painful, as we have already noticed (p.). But some day, probably millions of years hence, life will vanish from this planet, in consequence of the cooling of the sun, or perhaps of its explosion, after a long period of rising temperature. Value-enjoyers and living value-generators, along with most or all of the lifeless value-generators, will cease to exist. Doubtless every planet that can support life,

no matter what distant star it attends, goes through a similar cycle, in which living creatures slowly emerge from lifeless matter, flourish for a long age and possibly produce intelligent forms, only to decline and become extinct at the end. We have not yet discovered a method whereby Being can permanently preserve any of the value it so laboriously achieves.

For the permanent preservation of value, only two methods have been contemplated by serious thinkers: preservation in a cosmic mind, such as the Intelligence of Plotinus or more usually in the mind of God himself, and preservation in the immortal minds or spirits of men or other created beings. According to classical theism, God knows from the beginning everything that will happen in the world. Metaphysicians and theologians have generally spoken in terms of knowledge rather than of value; but since God's knowledge is usually held to be exhaustive, I suppose that it must include the full realization of the values, and also of the disvalues, that every creature will ever experience. That God should know disvalue or evil has been a source of embarrassment to pious metaphysicians, who sometimes try to avoid the difficulty by asserting that what we call evil he sees as good --a subtlety whose discussion would lead us too far afield. ¶ It seems evident, however, that God keeps his values eternally. But since nothing can be added to a deity who is changeless perfection, the values which God preserves are not those engendered by the world process. Only creatures can preserve the particular values which they generate; if they fail to do so,

the world process does not achieve anything enduring. Indeed, if an omniscient God has realized in advance all the values that creatures can ever enjoy, it is difficult to justify the vast struggle and suffering that the world process involves. Their accomplishments are but transient replicas of what exists eternally in God's mind; and it would appear that, from the beginning, he so adequately realizes what Being can bring forth that further effort is superfluous.

The relatively modern doctrine of panentheism avoids some of the difficulties of classical theism, although not without encountering some of its own. This doctrine, which was favored by Whitehead and has been brilliantly advocated by Professor Charles Hartshorne, differs from classical theism in holding a dipolar rather than a monopolar view of God. He is not only eternal but temporal, not only the supremely active being but likewise the supremely passive or receptive being; not only does he enjoy beatitude, but he likewise suffers greatly. He does not know in advance everything that will happen in the world; he could not know; for, according to panentheism, creatures enjoy some degree of freedom, and their acts are not strictly predetermined. Thus panentheism avoids that great theological mystery, which has called forth oceans of wasted subtlety, how our will can be free, when God knows beforehand everything we shall do.

Although the panentheistic God does not know in advance what will happen in the world, he remembers everything that occurs. The ceaseless passage of transient events leaves a permanent deposit in God's mind; he is the great rememberer, and, in this sense, the savior, of the world. The divine mind stores up the

evil no less than the good, the disvalues no less than the values, that the hurrying years bring forth. But it does not record events passively; on the contrary, it weaves them into the most harmonious pattern that they are capable of composing. Evil, although remembered as such, is also transmuted by God's feeling about it; so that, in Whitehead's words, it "becomes a stepping-stone in the all-embracing ideals of God."[1] Since God is aware of the pain and evil in the world, he suffers along with it; he is our fellow-sufferer.

This God evidently remembers everything that happens to each one of us, not only the external facts of our lives but likewise our most intimate thoughts and every value and disvalue that we have ever felt. But the concrete reality of any experience of value depends on the whole constitution of the mind that enjoys it. Values have little significance apart from these minds; just as organs have no significance when separated from their bodies, as Aristotle remarked long ago. If God is to carry out in any adequate fashion his function of preserving values, it seems necessary that he preserve the whole content of the mind that experiences them. Indeed, it would seem that he must remember our thoughts and feelings far more accurately than we do. If he retains our personal experiences apart from their context, he will have merely an immense clutter of loose fragments, lacking organic unity and signifying little.

But if God preserves the whole of each individual's personality, how would he do this? We cannot suppose that he has anything corresponding to an organic brain; for there is no evidence that any material structure in the Universe is everlasting, as, ex hypothesi, God's memory is. He must, then, preserve these things in a purely spiritual realm. God either retains a duplicate of my mind, not as it is at this present moment but as it has been, is, and shall be from my first to my last sensation

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[1] Quoted by Charles Hartshorne in "The Immortality of the Past: a Critique of a Prevalent Misinterpretation." Review of Metaphysics, Vol. 7:98-112. 1953.

and thought, or he preserves my mind itself. On the principle of economy, it is more probable that he does the latter. Why should he make a duplicate, when he can retain the original? Since all things are in this God, who contains the Universe, he might preserve my thoughts just where he finds them; so that my imperfect recollections of my own experiences is a fragment of God's perfect memory of the same. Accordingly, our minds must already be in God, and must remain there everlastingly.

Thus it appears that panentheism provides the ground for personal immortality. But, as Hartshorne and Reese point out, my mind, so received in God's mind, will lack further experiences and growth after my body's dissolution.[1] Many doctrines of immortality have supposed that a single lifetime is inadequate to prepare a mind or soul for union with God or for a purely spiritual existence. Either it must have further experience in organic bodies, as in all those religions and philosophies which teach reincarnation, or else it must continue its progress in a disembodied existence, somewhat as Dante imaginatively portrayed in the Divine Comedy. The possibility of finally achieving the spiritual perfection for which, in this mortal life, we vainly strive, or at least of continuing indefinitely to advance toward that supernal goal, is, for the truly devout and religious person, the chief reason for desiring immortal life. But in panentheism God remembers us, with a memory so perfect that in effect our minds are preserved in his, just as we are, with the whole series of faults and imperfections that have disfigured the course of our lives, and without permitting us to continue to improve ourselves after our body's decay. Panentheism provides for the spirit

[1] Charles Hartshorne & William L. Reese, Philosophers Speak of God (University of Chicago Press, 1953) p. 284-285.

much the same sort of complete fossilization that burial in a peat bog sometimes gives a body, or that enclosure in amber ensures to an insect. It would preserve Plato's dialogues, Da Vinci's paintings, Shelley's poems, but not the living, developing minds of Plato, Da Vinci, and Shelley.

Panentheism, as developed by Professor Hartshorne, is an impressive metaphysical construction, comparable to the brilliant achievement of Plotinus, and in many ways more satisfactory. No factual evidence is presented for the existence of the God who contains the world and remembers, with approving or disapproving judgment, all that occurs in it. The theories of science must be received or rejected according to the empirical evidence that can be adduced to support them; but the acceptance of metaphysical constructions depends on their ideal satisfactoriness. That all the disvalue generated by the world process should be preserved along with the value, even if disapprovingly, is no small objection. Aristotle's God, who knows nothing of the world, seems more divine than the panentheistic God, whose mind, already encumbered with the memory of a vast amount of ugliness and evil, is further burdened by large daily increments of the same character.

It is sometimes said that the chief problems of metaphysics are God, freedom, and immortality. On a more profound view, the main problems of metaphysics are the origin of values and disvalues, of good and evil, and the preservation of the former. God has been postulated to account for the origin of the good; while freedom has by many been seized as the explanation of

evil; and immortality is intimately connected with the preservation of value. As more convincing answers to these problems become available, the questions of God and free will should be less warmly debated.

The second of the two methods whereby some of the value generated on this planet might survive its destruction, or its refrigeration to the point where it could no longer support life, is by the survival of the minds or spirits of some or all of its sentient inhabitants, that is, by personal immortality. It seems that value could be more satisfactorily preserved by individual minds than by a cosmic mind. To obtain the maximum value that any situation offers, one must give it undivided attention. Value is intensified by mental concentration; distraction is its great enemy. And what is true of a direct experience of value is likewise true of its revival in memory; the more completely a recollection fills the mind to the exclusion of other things, the more it recovers its original freshness and intensity. Unless a cosmic mind were aware of a great many things at once, it could never know all that happens in the world. With so many thoughts swarming simultaneously through it, no single event could receive sufficient attention to savor all the value that it potentially contains.

To this argument theologians will immediately raise the objection that God's mind is different from ours. He can give more adequate attention to an infinite number of things at one time than we can give to any single thing. This is to jump to a great conclusion before a preliminary question has been settled. We still lack evidence, convincing to the majority of critical think-

ers, that mind can anywhere occur apart from an animal body. We are certain that there are minds which can think of one, or at most two or three, things at once; but we are not sure that they can exist separated from an organism. We have absolutely no evidence for the existence, in or apart from a body, of a mind that can think of a myriad things at once. Therefore, when we postulate individual disembodied minds, we stay closer to experience than when we postulate a cosmic mind.

The survival of individual minds, with the memories they contain, is more probable than the existence of either the God of classical theism or the God of panentheism, and it is likewise a more adequate method of preserving value. Our memories, especially of those events in our own lives which we cherish because of the great significance they had for us, are often richer in content than appears to cursory introspection. Much of the time they are pushed into the subliminal regions by the ~~swarming~~ impressions that swarm in from the world around us and by our preoccupation with present and future events. An appropriate stimulus, at times so slight as a chord of music, a perfume, even a word, will occasionally revive some of them with almost overpowering intensity. At times we awake puzzling over a problem, perhaps one that has lost all relevance to our present lives, of which we have not thought for many years. It is doubtful whether we ever completely forget anything that had meaning for us. What we commonly forget are school lessons that we learned mechanically, without interest and understanding, and the repetitions of frequent occurrences.

Even if we should remember no detail of our past life, yet we retained the mental habits, attitudes, and ideals which grew

out of it, much value, in the broad sense which includes value-generators and value-enjoyers, would be preserved, although specific values would be lost. If we have wisely used our opportunities for self-improvement, our past experiences provide the foundation for further fruitful growth; and one who began a new existence with the mental framework erected by a life well spent, would be spiritually far in advance of a newborn infant, even if he remembered no single incident of his past life. We should not be distressed by the loss of the past as recoverable detail, if it is taken up into the present and future and, becoming a constitutive part thereof, serves to enrich it. What seems most worth preserving is the highest product of each individual's effort to improve himself, rather than all his experiences in their original form, among which there may be many that he would like to wash away in Lethe's water.

It is not, as some suppose, because we hold ourselves apart from the rest of the Universe and resent our kinship to it, that we desire to escape complete dissolution, in body and mind, according to the "law of nature." It is precisely because we are parts of the Universe, and feel within us its striving to attain some enduring good, that the prospect of our complete annihilation dismays us, and we hope that our central selves will survive our organism's dissolution. Everything that creates tries to create that which endures. To produce imperishable beings, which cherish ~~all~~ their most valuable experiences and rise to ever greater heights of awareness and appreciation, is the natural goal of Being's striving for self-realization. If, because of the character of biological processes, it cannot create thinking animals who live

for ever, it will seek some other means to accomplish this end. Just as its incessant striving, through inconceivable aeons, at last overcame all the tremendous difficulties involved in the creation of intelligent organisms; so it is probable that it will continue its unremitting effort until it has produced intelligent, responsive beings that are exempt from the tragic limitations of organic life. Nothing is more natural than to desire to escape nature's dissolution.

An old argument for immortality is based on Aristotle's notion that nature does nothing in vain. Immortal life --so the argument runs -- is a natural appetite in man; since nature, which has implanted this appetite in us, does nothing superfluously, this appetite must be capable of fulfillment; therefore, man is immortal.

Weak as this argument may appear to the modern scientific mind, I believe that it contains a large grain of truth. Our thirst for everlasting life is an aspect of the universal striving for the fullest realization of the value latent in Primal Being. When a spirit is extinguished, it loses all its values, as likewise the possibility of experiencing further values. Moreover, as, with the passage of time, a mind grows, its sensitivity to value increases. Continuity itself greatly enhances existence. A succession of transient minds could hardly realize such high values as one enduring mind whose span of life equalled the sum of the spans of the transient minds, assuming that all were at the beginning of equal quality. Accordingly, we must regard the appetite for immortal life as an expression of the universal

striving to realize value. The Universe, which in one aspect we call "nature," tends to attain those ends toward which it strives, even in the absence of intelligent direction; because its resources are vast, it has unlimited time, and it never relaxes its effort. Hence the fact that the thirst for everlasting life is present in us, in the form of a natural appetite, makes it probable that immortality will be achieved, if not by ourselves, then by those who follow us.

Our distant ancestors, of course, did not base their belief in spiritual survival on broad considerations like the foregoing. It was suggested to them by dreams, in which the soul seemed to travel afar and engage in the most varied exploits while the sleeping body remained in one spot, and in which those who had died returned and spoke to the living. The notion, suggested by shadows and reflections in still water, that each person had a double, and the whole animistic complexion of their thought, strengthened our forefathers' belief that the soul outlives its body. Doubtless primitive men too hastily assumed that every human, and indeed every animal and even plants, contained a soul that would survive its body; but they did not invent this belief for the solace it afforded them. In their view, the disembodied soul was a helpless wraith, depending for its sustenance on the offerings provided by living descendants, leading a vapid existence devoid of the solid satisfactions of embodied life. It remained for the Oriental and Greek mysteries and the newer religions to paint such delectable pictures of the after-life, not only of kings

but of common people who conformed to the ritual and lived righteously, that men yearned for release from the flesh with all its ills.

Even if it could be proved --as it cannot be proved -- that a spirit has never yet existed apart from an animal body, it would be silly to conclude that it can never so exist. We live in a developing Universe, in which time brings forth that which is wholly novel. In the ascending course, it appears that embodied intelligence must precede disembodied intelligence. To be able to survive the body's decay may be, not the original condition of animal or even of human minds, but a state they must achieve in the course of creative advance, and largely through their own efforts. Until a spirit attains a certain grade of excellence, life apart from a body might be a condition that is far from desirable and even positively miserable --as Homer believed it to be when, in the eleventh book of the Odyssey, he put into the mouth of Achilles' wraith the well-known complaint, that he would rather live on earth as the slave of a poor landless peasant than rule as king over the spirits of the dead.

Certainly, a mind whose interests did not extend beyond the body and its sensations would find disembodied existence distressingly empty; and a mind torn by conflicting desires and contrary passions might fly asunder, when no longer held together by the solid organism to which it was attached. Disembodied existence seems to be possible, and satisfactory, only for a mind which has acquired coherence and delights in things more universal and lasting than its own body. For man, such a mind is not

a primitive endowment but an achievement. Why should the human spirit be exempt from the general law that, in an evolving Universe, all things, arising from small beginnings, slowly acquire strength and perfection?

Immortality implies the final release of a mind or spirit from the perishable organic body in connection with which it began to develop. If we cannot now point to any spirit which has attained full release, we can indicate definite advances along the road ~~which~~ that leads in this direction --successive stages in the rise of mind from complete dependence on the present state of its body as a whole to mastery over its body and even a degree of independence from it. Doubtless there was a period, not long ago as geologists measure time, when every animal's thoughts were so closely controlled by the actual situation of its body that none had ever planned its life even a little in advance, as by saying to itself "Tomorrow I shall do thus and so." Yet now many men not only plan what they will do on the morrow, but they set distant objectives, then persevere for years until these goals are reached. Doubtless there was a time when no creature had ever formed a general concept, such as "animal," or "life," or "truth." Now most men have some concepts of this sort, and some create vast conceptual systems. There was likewise a time when no mind rose above harsh realities on the wings of fancy, yet now we frequently escape in this manner from a drab present.

From the apparently rudimentary consciousness of inorganic matter to the apparently acute consciousness of many animals, represents one step in the development of mind or spirit.

From bondage to the present situation and the concrete fact to the capacity to plan for the future, to think abstractly, and to indulge in flights of fancy, represents another great advance. A third forward step of equal magnitude may bring emancipation from the body and free spiritual life --if, indeed, the spiritually most advanced fraction of mankind has not already attained this. Hence no man who has faith in the continuance of creative advance will abandon hope that immortality may be achieved, not only by his remote descendants, but by himself. In a matter of such tremendous importance to each of us individually, to accept any dogmatic negation is utter folly. We should rest content with nothing short of demonstrative evidence --evidence which cannot be forthcoming until the question is put to the proof by our body's dissolution.

One who regards himself as an organ of the Universe does not desire immortality for purely selfish reasons; he does not wish the Universe to lose an organ that it has taken so long to create. Hence he will strive unremittingly to cultivate that breadth of interest and sympathy, that perfect harmony in thought and desire and feeling, which may be the necessary preparation for disembodied existence, and without which such existence would appear to be far from satisfying. In short, he will live as though he bore within himself an immortal spirit, worthy of his most vigilant care. Such burning desire for immortality, such constant effort to deserve it, may well be, as Unamuno suggested, the indispensable prerequisite for its attainment. If we must perish utterly, let it at least be said that to extinguish such a spirit was an injustice. And whatever may be the final truth

about the survival of individual consciousness, I am convinced that one who all his life strives unremittingly to prepare his spirit for everlasting existence will be least likely to waste his mortal span and miss the highest good within his reach.

Double Space

To live in hope of attaining a better state after death sweetens and ennobles life, but to make the attainment of heaven the single objective of life too often sours and debases it. One who assigns all value to heaven, and none to this earth, neglects the splendid and interesting things which the earth offers for his contemplation, and fails to cultivate the beautiful relationships which are possible here, thereby developing a cramped and impoverished spirit, as is often evident in the lives of saints and ascetics. Moreover, when every act is performed with a view to a heavenly reward, charity or beneficence becomes a species of lucrative commerce; and moral nobility, of the sort exemplified by the ancient philosophies, is impossible to attain. These evils are avoided if we make the assumption that, if a blessed immortal life is available to us, the surest way to attain it is to make the best use of this present existence, utilizing all its opportunities for intellectual and spiritual growth, cultivating a noble character for its own sake, whether or not our spirits will endure for ever. Hence I believe that, even if a benevolent Creator of unlimited wisdom and power had prepared a heaven for men, he would give them the hope, but not the certainty, of its reality.

It was the custom of the Stoic philosopher Epictetus to reconcile his pupils to death, by reminding them that each component of themselves would return to the storehouse whence it came,

the water in their bodies to the water that circulates through the Universe, the earthy matter to the earth, the fire in the individual's soul to the fire that is the World Soul, and so forth. But to what will the love that is in our hearts return? Is there an elemental love, diffused through the Universe, whence the love in us is derived and to which it will return? We lack evidence of this. There appear to be certain values which can be realized neither by the Universe as a whole nor by the smallest parts thereof, but only by means of highly organized beings intermediate between these extremes. Only such beings, it appears, are capable of knowing, loving, and appreciating, which alone, as far as we can tell, give high value to the Universe. With the total dissolution of these beings, these endowments would not be returned, like borrowed articles, to a general fund, but wholly destroyed; and this would be an absolute loss to the Universe.

Suppose the Universe to contain a single being capable of knowing and appreciating it, and beside this one sentient being nothing but insentient substance. Then all the value and meaning of the Universe depend on the existence of this single responsive being. If he were destroyed, the Universe would lose all its significance and value. It would still exist, but at the lowest level, not with the full existence for which it strives. To destroy this single sentient, appreciative being would be, in a more than figurative sense, to destroy the Universe.

Now suppose that, instead of one intelligent, appreciative being, there are many such beings. The annihilation of one of

them does not now appear to be so serious, because countless others remain to give significance to the Universe. Yet viewed more profoundly, the loss is the same, whether the responsive being is unique or one among myriads: a Universe is destroyed whenever one who knows and appreciates it is destroyed. This is the importance to the Universe of preserving its organs of appreciation.

The problem of immortality is the crux of religion, by which I mean dedication to something greater and more enduring than one's mundane life and interests, greater than family and country and even all mankind. There can be religion without God, as, for example, Jainism and Buddhism. There can be religion without immortality, as Stoicism (which taught that spirits survive for only a limited time) and primitive Buddhism (if one interprets Nirvana as total extinction). But without immortality religion is essentially tragic, with immortality it is triumphant. For some day life will be extinguished on this planet, either burnt up by an explosion of the sun or congealed by the cooling thereof. If there is no spiritual survival, all the creative effort, all the striving for the fuller realization of value, which for ages has taken place on this planet, will be cancelled. It will be just as though the earth had never provided a home for life; and although the earth is only an infinitesimal part of the Universe, as an expression point which gives significance to vast expanses of space and immense quantities of matter, it has, as was earlier pointed out (p.), an importance all out of proportion to its size. Even if we accept the desolating view that everything will eventually be lost, we can still be loyal

to the process which created us, and by supporting harmonization with all our strength, bring the world a little nearer to its ideal God, thus having a religion --a tragic religion.

If, on the other hand, our religion is triumphant, and we attain pure spiritual life, we should not depart this earth as from a foul place of suffering, as some men have regarded it. Rather, we should leave it as a youth goes forth from the home where he has passed a happy and fruitful childhood, although one not devoid of tribulations, and carry grateful recollections of it as long as memory endures. Thus this planet may live on in the spiritual realm, long after it has been converted into incandescent gas by a stellar explosion. It is not being disloyal, but rather loyal, to the earth that begot and nurtured us, to hope that at least some of her children may survive to keep her memory for ever green.

CHAPTER XIII

OUR GROUNDS FOR HOPE

Some thinkers, of whom Bergson is a good example, have argued for indeterminacy, because it gives them a more hopeful view of the future. They believe that the absence of strict causality increases the possibilities of creation. An indeterminate Universe should be able to accomplish grander things than one in which every effect is strictly determined by antecedent conditions. Although I once inclined toward this view, continued reflection has convinced me of its error. All advances in the level of creation depend on changes in structure, on building elements which have long been present into patterns of increasing complexity, coherence, and amplitude. Even in a strictly determinate world, the possibilities of the recombination of elements are practically unlimited. Perhaps the relaxation of causality would somewhat augment these possibilities, but the increase would be comparable to adding a few miles to the distance which separates us from the sun. And with the breakdown of causality, all gains would be more precariously held.

Part of the opposition to the determinist view appears to be based on the belief that, in a Universe governed by strict causality, everything that can ever happen is, at least in theory, predictable; whereas on the indeterminist view the future is not wholly predictable. An indeterminate Universe seems to offer more pleasant surprises than a determinate one, so that indeterminacy permits us to view the future with more

hopeful expectancy.

I do not believe that predictability, even by a mind completely informed of the present constitution of the Universe and cognizant of all the laws that govern its processes, is the final criterion of determinacy. When, in the course of creative advance, a wholly new constellation of factors is achieved, the next step forward, resulting from these factors, might be unpredictable even by the completely informed Intelligence; although Cicero in ancient times, and Laplace more recently, held that such a mind could foresee everything that will ever happen in the world, throughout all future time. In my opinion, exhaustive knowledge of the whole course of past events, including every dart and spin of every particle, might not enable an infinitely capacious Intelligence to forecast the next step in creative advance. An utterly novel combination of factors might beget a fresh outcome that would surprise Omniscience itself. Thus, when the first living organism appeared in the Universe, its behavior might have been unpredictable even by a mind that fully understood the non-living world that hitherto existed. When intelligent beings arose and began to think ahead before they acted, the Universe took another step forward into the unfathomed future. There was absolute novelty, despite determinacy.

All that determinism requires is that when the causal factors in a given situation are, in every least detail, identical with those on some former occasion, the result will, in every respect, be the same as on that earlier occasion. Although in very complex situations, such as those involving ourselves, exact repetitions of past situations seem to be rare, in simpler situations, such as those involving only a few particles, they must be frequent. ~~But~~ If a particular constellation of factors has never before arisen, the outcome is not bound to resemble anything that has hitherto occurred;

and it might well be unpredictable even by an Intelligence such as Cicero and Laplace imagined. The determinist view requires of Being that it be constant, not capricious and wavering. When, in its advance to higher levels, it develops a new mode of procedure, it thenceforth sticks firmly to it. But determinism does not commit Being to follow any particular procedure in a situation of a kind that has never before arisen. When Bergson combatted determinism because he believed it incompatible with creative evolution, he waged an unnecessary war.

Thus, whether with thinkers like Chrysippus, Spinoza, Leibniz, and Spencer we are determinists, or whether with Bergson and many other moderns we are indeterminists, we may agree that the possibilities for creative advance are practically unlimited. No man can predict, or even imagine, what glorious or dreadful developments the passing aeons will see. Even in the, on a cosmic scale, extremely limited sphere of life on this planet, the things that have already been achieved bewilder us by their vast variety, their magnificence, their terror, their improbability. Consider how life has adapted itself to the tremendous pressure in the black depths of the salty ocean, to the fresh waters poor in essential solutes, to deserts where years may pass without a shower, to alpine heights with their thin atmosphere and intense insolation and great daily fluctuations of temperature, to arctic regions where the sun disappears for months. Consider how animals have developed the means to swim in the water, to run over the land, to burrow through the ground, to leap through the trees, to fly in the air, to glide on motionless wings. Reflect how birds no larger than one's thumb migrate over vast

expanses of land and water, finding their way to their ancestral nesting or wintering grounds by means that still baffle inquiring scientists. Remember, too, all that men have achieved in the last ten thousand years, in producing what they need and controlling their environment, in creating things of utility and beauty, in understanding the world in which they live.

Yet men sometimes complain that they dwell in a hostile Universe, which fails to provide the sympathy and support for which they yearn. They forget that cosmic forces have prepared the favorable environment in which they multiply exceedingly, and that everything they have accomplished has been done with materials that the Universe has supplied to them, by means of fundamental processes far more ancient than themselves. It seems that we need only to desire something intensely enough, work hard enough for it with the intelligent co-operation of our fellows, and persevere long enough, in order to attain it --even if we desire something that sounds so preposterous as visiting the moon!

Why, then, in a Universe with such vast potentialities, which does not withhold its resources from us who are its organs but co-operates freely whenever we approach it intelligently and unitedly, is mankind in such a sorry plight? Why are we still so far distant from the goals envisioned by far-seeing thinkers many centuries ago? Why do we live in such misery and fear, always on the brink of impending disaster?

The first difficulty that appears to us is the time-factor. We need only to survey the living world to which we belong to

be convinced that, with sufficient time, anything, within wide limits, can be accomplished, be it something so improbable as fishes living on the land, air-breathing animals inhabiting the water, or birds hatching their eggs on the snow and ice in the dark Antarctic winter. If such things can be achieved, why cannot men, like termites, adapt themselves perfectly to a social life, yet one ~~which~~ that permits the full development of capacities such as social insects lack, and which are of the first importance in a Universe which strives to realize the value latent in it? The answer is that to the Universe as a whole, and even to the living world on this planet, immense stretches of time are available; and developments like those just mentioned have probably required millions of years. To man, who measures his life span in decades rather than in millenia, this seems far too long to wait for any desired result. We can hardly work up enthusiasm for any outcome, how glorious soever, which requires a million years of human effort. Indeed, a goal even a thousand years distant --a day and a night on the geologic time-scale --appears hopelessly remote to us. We commonly permit recognized social and political evils to grow so acute that we can endure them no longer, hurriedly enact drastic reforms, then despair that we cannot accomplish in a few years changes which require careful preparation for at least a generation or two. So impatient are we, the products of a thousand million years of slow development!

If the rate of progess which has hitherto prevailed in the living world is too slow for us, we have the means to accelerate it --our intelligence, itself the outcome of a long development.

Until intelligence arose, the Universe felt its way blindly toward unforeseen goals, largely by a process of trial and error. With intelligence, we can advance with open eyes toward foreseen goals, choosing our means with reference to our ends. With this immense advantage, we should be able greatly to accelerate our progress. Still, it would be wrong to expect solid results to come quickly; the work of an hour generally lasts but a day. Even if we could increase ~~a hundred~~ten fold the rate of change that has hitherto prevailed in the living world, we could not effect vast improvements in a single generation; and the changes that we should see would be largely cultural rather than genetically based.

Because human improvement, of the sort that counts, is so slow, few men would have the courage and patience to work for it, if their devoted efforts yielded returns only in the world around them. What saves the situation is the fact that, while working for large and impersonal benefits, we grow in spiritual stature. One who engages in some great and generous labor, whose full effect may not be realized for generations, enlarges and ennobles his spirit as no petty, self-centered pursuits can. If, when we look around us, the progress we behold is discouragingly slow, when we look within we detect ~~a~~ growth that is gratifyingly rapid; and this heartens us to persist in our far-seeing endeavors. This explains why a large proportion of the men who have contributed most to the moral and spiritual elevation of humanity have been among those who deemed nothing more important than the enlightenment and emancipation of the individual mind, and especially their own.

Double space

Humanity's advance is slow, because it bears the immense weight of three burdens: the burden of bad genes; the burden of disruptive attitudes and emotions; and the burden of wrong ideas, unwholesome customs, and inadequate institutions, which together we may call the burden of bad culture. Let us consider them in order.

First, as to the burden of bad genes, which are the bearers of unfortunate hereditary characters. Scattered among men are many excellent genes; and if we could somehow bring a full complement of them together in a single fertilized egg, it would, given the proper prenatal and postnatal environments, grow to be a man or a woman whom we might revere as a god or a goddess. But, along with the good genes, humanity bears many defective ones, which cause deformities and organic weaknesses, susceptibility to disease, stupidity and even imbecility, ~~along~~ with many other undesirable qualities of body and mind. Because the good ones and the bad ones are mixed helter-skelter through the population and frequently associated together in the same individual, to eliminate them is not easy. Moreover, they are constantly springing up as mutations, slowly in natural conditions, more rapidly under the influence of radioactive elements. The only possible ways of reducing the number of bad genes are selective breeding and the ruthless elimination of those whose chromosomes contain them. Since the second method, which occurs widely in the living world, is incompatible with our moral codes and devastating to our finer sentiments, only the first is practicable in a civilized society. This first method implies selective mating, or choosing one's nuptial partner with some regard for the quality of the progeny

that husband and wife will jointly beget.

The second burden consists of the violent emotions and disruptive attitudes that have been imposed on animals, human and otherwise, by the struggle to survive in a crowded, competitive world. They include anger, hatred, malice, jealousy, avarice, greed, lust, suspicion, vanity, hollow pride, and the like --the whole swarm of evil passions which, for well over two thousand years, all the major religions and moral philosophies have been combatting with every device at their command. Since these affections have a genetic foundation, we might include them with the first burden. But no man can change the genes which he received from his ancestors, and their effect on his physical and even mental development and functioning are largely beyond human control. Yet we can control and, to a considerable extent, subjugate our evil emotions, hence it seems proper to place them in a separate class. The spiritual disciplines, the salutary reflections, by means of which our disruptive attitudes and violent passions may be overcome or transmuted into more wholesome affections, have been worked out in great detail by religious teachers, and perhaps even more completely by philosophers; but their counsels are neglected in the superficial education that most children receive today.

The third burden is made up of everything that is unfortunate in our cultural heritage. It includes all those mistaken beliefs about ourselves and our world that we receive from our religions, our philosophies, the books we read, and the people who surround us. To this must be added all those disruptive attitudes, such as feelings of social, racial, and national superiority,

and the contempt for people of other groups which accompanies them, that we imbibe from our parents, teachers, and neighbors. Here, too, belong pride of purse, and the false valuations that elevate material possessions above spiritual growth, which permeate a community like a deadly miasm. All the unnatural, harmful habits that youths learn from their elders are included in this burden. To this already heavy load must be added all ~~of~~ those economic and political arrangements that foster aggressiveness and make society a pathetic compromise between ruthless competition and mutual help. Not the least of these cultural evils is the wrong conception of culture itself, the notion that its progress is to be gauged by the increase of mechanical contrivances of all sorts, or by the amount of energy from diverse sources which is made available for industrial and domestic uses, transportation, and the like. These things are not ends but means -- means which may be grievously misapplied. The true measure of a culture is the spiritual and moral tone of its people, their appreciation of the higher values, their sense of responsibility for the welfare of their neighbors and the natural world that supports them. By this criterion, it seems probable that certain cultures that flourished long ago, such as the Buddhist kingdoms of northern India in the first millenium A. D., of which we have fascinating but fragmentary glimpses in the accounts of Chinese travellers, were well in advance of most, if not all, contemporary nations.

This hodge-podge of bad culture is the most appalling burden of all, a huge dead weight that crushes and distorts us and re-

tards the flowering of the human spirit. One of the chief tasks which philosophers undertook in ancient times was the clearing away of this oppressive rubbish from the minds of their contemporaries. The work of purification is made more difficult by the entanglement of the good and the bad in almost every aspect of culture: wise customs mixed with foolish ones, truths in mistaken doctrines, excellent precepts in outworn myths, sound economic practices in pernicious systems. Moreover, we cannot simply discard our whole social heritage, because of the evils it contains, and begin to reconstruct from the bedrock of our genetical inheritance. Chaos would result from such a procedure. Our only course is to examine everything, hold fast to what is excellent, improve what is mediocre, reject what is vicious. And in this rectification, our guiding principle must be that nothing is to be retained merely because of its venerable antiquity and our reverence for its source, be that source Plato or Aristotle, Buddha or Christ. A belief is valid, not because of its origin, but because it accords with the whole mass of our present knowledge. A custom or social arrangement is sacred, not because our ancestors followed it, but because it promises to raise our descendants to levels that we vainly strive to reach. If we reverence antiquity, we should recall that the most ancient and venerable thing in the world is harmonization, the movement that carries it upward to higher levels of achievement; and our loyalty to this should make us sweep away all more recent developments that oppose its advance.

Double space

Our progress is retarded not only by the oppressive burdens that we bear, but by certain grave deficiencies. In the first place, we have too little love and good-will. Love is the affection which most adequately expresses the process that made us, for it draws all creatures together in concord. We should expect a being formed by harmonization to emanate love as a rose diffuses fragrance. Unfortunately, this attribute of our original nature has been overlaid by contrary passions indispensable for survival in a world of struggle. We hate because we love. If there were nothing that we loved and wished to preserve, we should not hate; for anger and hatred are directed against whatever threatens or attacks what we cherish. Since love is an expression of our inmost nature, it spontaneously increases in the measure that the contrary affections are removed. Often it needs only a little encouragement to awake and transform our attitude toward all that surrounds us.

The counterpart of our dearth of love is our deficiency in lovability. Although wise teachers have exhorted men to love each other, they have too often overlooked the fact that harsh, selfish, grasping, uncouth men are hardly lovable. If our neighbors took greater pains to deserve our love, it would be easier to give it to them. The increase in good-will in a community depends just as much on making an effort to be lovable as on trying hard to love. Indeed, to become lovable should be our primary effort, for love springs spontaneously whenever it finds an appropriate object; there is a vast fund of love latent in many of us, eagerly awaiting that upon which it may be bestowed

without disillusion and rebuff. Among the qualities which win love are cheerfulness, courtesy, generosity, sympathy, kindness, and, above all, love itself. Nothing excites love so strongly as the discovery of its presence in another, even if it is widely diffused rather than directed especially to oneself. Thus men's deficiency in love is one of the factors responsible for their lack of lovability; and their deficiency in lovability causes dearth of love. These two defects must evidently be remedied simultaneously; ~~and~~ every increase in one of these qualities should automatically bring an increase in the other.

The third great deficiency among men is in ideals, without which one is scarcely human. The other animals inherit beautifully integrated patterns of behavior, which govern their relations with their mates, their offspring, other individuals of their species, and even animals of different species. Men who know only domestic animals, whose innate patterns of behavior have deteriorated during many generations of coercion, and perhaps also captive animals, are ignorant of these admirable systems of instinctive behavior, and imagine that they are superior to the animals simply because they are human. Actually, men require a tremendous amount of education merely to compensate for the loss of an innate pattern of behavior, such as their remote, pre-human ancestors undoubtedly possessed, and then a good deal more education and reflection to raise them above the level of the instinct-guided animals. What chiefly gives us dignity and supports our claim to primacy among the living things on this planet is our ideals, those standards of personal conduct and achievement and service to something greater than ourselves ~~which~~ that we hold steadily before

us and dauntlessly pursue, despite the weakness and inadequacy which commonly prevent their full attainment. Indeed, to be unattainable is the mark of a true ideal; ~~and~~ one who believes that he has reached his goal should hasten to set it higher, lest he stagnate at a level that is unworthy of him.

Suppose that we can cast off our heaviest burdens and overcome our gravest deficiencies, making ourselves more adequate organs of the Universe, what are our grounds for hope that it will achieve some enduring good, not in distant regions of space, but here on this planet, the only part that we know ~~otherwise than as a point of light?~~ well.

The Universe provides ground for hope that our highest aspirations are not unattainable for the following reasons:

1. Because of the intensity and persistence of its striving to raise creation to higher levels and realize the values that Being potentially contains.

2. Because its dominant and pervasive process, harmonization, is essentially a moral process and the source of our own morality.

3. Because the creative process has demonstrated its ability to overcome the difficulties in which it becomes involved, even turning them to its advantage and making them the means for further advance (p.).

4. Because of the magnificence and value of what has already been accomplished.

5. Because of the absence of any being or power which opposes its advance. (Its difficulties are internal, arising from the magnitude and complexity of its task; they do not come from

the opposition of a powerful principle of evil, as Iranian dualism and its successors in Western thought have supposed.)

6. Because now at last it has, on this planet at least, the support of intelligent beings which it has created, and who are eager to promote its advance just in the measure that they understand themselves and the process ~~which~~ that made them.

Thus we do not need faith in some external power which will intervene in the world and lift us to our heart's desire; all that we require is faith that the process which formed us will finally perfect us, if we co-operate intelligently with it.

Yet, despite all our reasons for preserving courage and confidence, there will arise intervals of doubt, when we can hardly avoid feeling dreadfully alone in a vast and indifferent Universe. When we survey humanity against its cosmic and even its zoological background, it appears as an isolated development, separated from all other classes of beings by its unique spiritual and practical achievements, unsupported by anything beyond itself. And one whose ideals and aspirations rise somewhat above those of his contemporaries may feel even more terribly isolated, for where he expects understanding and encouragement, he finds little.

But, if we pause to reflect, we see that it is inevitable that the most advanced parts, the highest organs, in a developing system appear to stand alone. Their loneliness and their advanced position are two aspects of the same fact. So, I imagine, the topmost sprout of a tall tree, which rises above all its neighbors of the forest, exposed to the wind's violence and the sun's untempered rays, would, if conscious of itself, feel lonely and abandoned. Yet the whole vital power of the tree, from its

spreading roots through its soaring trunk, is working to gather water and nutrients and force them upward to its topmost shoot; and without this constant care, it would wither in an hour. Similarly, the whole impetus of the creative process is behind its highest organs, sustaining and advancing them; and without this massive support, they would soon fall back to a more primitive level, or wholly vanish. Lonely and fearful, the forefront of creation pushes into the unknown, too often unmindful of the vast power behind it.