PROLOGUE

Historical Naturalism

I REMEMBER, as a college student, being asked by a friend the not unusual question, what did I intend to do? I can still recall the mood in which I realized I could not answer. Such a question had never seriously occurred to me. "Why," I replied, "I really do not know. But I think I do know clearly some of the things that must be done." This incident might be taken as a symbol of many things. It might be taken as the text of a discourse on the passing, for many of my generation, of the desire for romantic self-expression, and its replacement by the impersonality of participation in necessary work. It might be made the occasion for pointing out the compulsion in human affairs of the problems that are set before men and must be solved, whether they will or no. It is God who proposes, and though man disposes, he disposes with the tools God puts in his hands. This is true even if we prefer to view God somewhat narrowly as the forces of production. The incident might easily be pushed to a pragmatic insistence on the necessity of working in a concrete situation with the materials that are available, and to an end appropriate to that situation. Given a personal reference, it might well serve to illuminate the manifest shortcomings and blind spots of both the pragmatic temper and the person. Or it could be made to point to the determining character of subject-matter, forcing its facts, its structure, and its implications upon the mind in utter disregard of the preferences of the imagination.

All of these things that reply suggests. Surely they may be united

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in a single mind, as they are obviously entangled in the same network of idea. And as such they would reflect the several teachings to which that mind had been exposed, at the hands of those who all unwitting played the part of instruments of God in its education. My teachers are no longer among the living. It would therefore be unfair to charge them with a more particular responsibility than they must assume through the mere fact of having been my teachers. What I have learned from them is presumably not what they intended to teach. Doubtless John Dewey did not set out to impress me with the overwhelming importance of tradition; nor did Felix Adler try to convince me, against all my natural intellectual sympathies, of the significance and perhaps necessity of that type of faith of which Communism is today the cardinal example. That such was the outcome, amongst many other things, of their teaching, is due, I think, to the fact that, being great teachers, they made me see the world, in spite of myself, perhaps in spite of themselves. The man who most consciously tried to show me what is inescapably there, F. J. E. Woodbridge, I can not speak of as a teacher. I can only attempt to illustrate his teaching. In the face of what he showed me, I forget the showing, although I realize that without him to show, I should not have seen. That I may not see just what he saw is of no consequence. To him is due the fact that I can see at all.

I must renounce, however, the pleasant task of pursuing further the education that is owed to teachers. Instead, I wish to return to that early symbolic reply. "To know what must be done"—there is a whole philosophy and a method implicit in the phrase. Many of the things that when I first used it I thought I knew clearly, I have since come to doubt; and much that I see now was then undreamed of. And yet I should like to think that what I have learned and unlearned I have come upon because of adherence to that philosophy and that method. For to know what our world presents, and to know that it presents not only the possibility of thought and action, but also a possibility of thought and action in very definite and limited channels which yet demands to be realized, still seems a fundamental wisdom. Our world may not achieve its natural end, but if it does, it will be only because men have studied the ends implicit in it, and have discovered the means to bring them to pass. If this sounds a little like Aristotle, and Marx, and Dewey, it is because it is intended to comprehend them all, and because they all saw the world. They all realized—at least that is what they have told me—that we must begin with what we find, and that we must find what is there in our world, not what we might wish were there. And what we are, what we can do, what must be done, and how we can do it, are all things that are there to be found. What is not already there is whether we shall do what must be done. That depends upon the finding, upon whether we know.

We must begin with what we find. And what we find, unless our eyes are closed, is an entire culture in course of fundamental change. In that culture are many revolutionaries working for revolutions they hope will come. It would be surprising did we not find such men. But more significant than the revolution that is to come is the revolution that is now taking place, and that has for some time been in progress. For that revolution is a fact, and it must be accepted as a fact. It is not something to be fought for or against, it is something to be respected and understood. It is not a revolution that men have worked for or now intend; it is a revolution that men have brought about in working for other things—the discovery of truth, the control of nature, the making of what men want, the achievement of power through the possession of money. That in pursuing these ends men have created a new heaven and a new earth is perhaps surprising; that the creation should have destroyed the old heaven and the old earth should occasion no wonder. Yet what is least surprising has caused the most surprise, and the incidental destruction has been harder to bear than the incidental creation. Men have been more concerned to defend what they have destroyed than to understand what they have created. Yet the destruction is irrevocable, while the creation is an opportunity. It is an opportunity for further creation. To God it is given to pronounce the results of his labors good, and to rest upon the seventh day, but not to man. Man is doomed to unremitting toil, and it is not human to create such good as will not demand further creation.

The fact of what man has brought about, and must bring about, need not, of course, be understood. Our culture will not cease to change because we fail to understand that change. It is not even certain that understanding would alter the main outlines of its course.

What men have done sets inescapable limits upon what they can do. But men who understood would be different, and within those limits they would act differently. A revolution understood is a revolution with less wastage, a more efficient and a speedier revolution. It is a revolution in which men can make the most of the possibilities resident in what they have created, instead of leaving that realization to chance.

The acceptance of this fundamental fact of revolution in our world implies, for a philosophy resolved to know what must be done, that cultural change must be taken as a basic subject-matter. If we are to hope to understand what we find in our world, and its possibilities of thought and action, we must understand a culture in process of changing into another culture. No philosophy which leaves that fact unintelligible, whatever the illuminating insights it may develop, can be for us an adequate philosophy: it will not tell us what must be done. That this involves relegating many philosophies of today, and many philosophic activities that have awakened wide interest—like a concern with mathematical logic—to a subordinate and subsidiary position, is obvious. It is accepted with full awareness of what it involves. Such concerns are facts in our changing culture; but they are facts to be understood, not instruments of understanding. Understanding must be in terms of the problems set by cultural change itself. How is such change to be understood? What is its general pattern and method? How is our particular changing culture to be grasped? What is the stock of ideas and values and institutions we have inherited, at once the material on which we must work and the tools we must use? What are the new conditions, intellectual and practical, we have created for ourselves, within which lie our opportunities for work? What must be done? Such questions are not so much questions we ask of our world, as questions our world asks of us.

To answer them, it is obvious we must inquire into our world in its temporal dimensions: we must understand our past, the past that made us what we are and still constitutes us, the past that is an essential part of our present world. Our culture that is changing is itself the precipitate of a long series of changes; and these our materials and our tools can only be understood in terms of the past changes that forced men to create them. To know what our ideas meant at their

birth enables us to understand better what they have become; it helps us both to use them and, perchance, to free ourselves from them. And to realize the many episodes of change that have given us our culture aids us to know what must be done in the episode that is robbing us of it; it throws into relief the permanent elements of change.

In some such way it would be easy to show how inquiry into our present world leads us inevitably into our past. But the logic of circumstance is stronger than the logic of subject-matter; and a series of happy accidents, necessitating some acquaintance with the history of ideas, was the personal introduction to the understanding of the past. They were accidents because they forced the development of a philosophy of social change as the lesson of the whole sweep of Western culture, rather than of its present crisis; but they were happy, in that to the present they brought a knowledge which the present demands. It was another happy and prior accident that made possible an approach to the past at once detached and sympathetic, and quite without emotional bias. Fate had provided a father valiant enough to win liberation from tradition, yet wise enough to learn from it, a father able both to teach and to illustrate freedom from the tyranny of attachment and the tyranny of emancipation alike. His example made honest inquiry seem more natural than defense or rebellion.

And so the philosophy of social change was developed because circumstance dictated that what must be achieved was an understanding of a whole series of changes rather than a single one—the series that is both the intellectual record of the making of our civilization, and the basic substance of that civilization itself. It was developed out of the study of the history of ideas. Doubtless this fact both colors and limits the philosophy. Though it hardly tempts one to minimize the importance of economic forces, it does make one realize that ideas as well as economic forces are continuing to have a history, and that it is an entire culture, not merely an economic system, that is in process of change.

Yet what the history of ideas has to teach about cultural change is no less important than what it leaves unsaid. It teaches men to look upon history as the continual readaptation of materials in the light of changing needs and problems—as a human achievement, within the narrow limits set by what is inescapably there, like everything

human, but nonetheless a construction the architects of which are men. The materials they shall employ, the needs and purposes for which they shall build, are beyond their control; but the structures they erect are original, and endure beyond their builders. Sometimes, like Greek thought, they last as impressive ruins, to be looted by those who stumble upon them. Sometimes, like much of the medieval world and more of the world of the eighteenth-century revolutionaries, they last as prisons, from which men struggle long to free themselves, and even in collapse their stones are obstacles. More normally in our Western tradition they have been the familiar homes from which pioneers went out to find new treasure, and to which they built additions as their wealth increased. The edifices of medieval thought have been rebuilt time and again, but their main outlines are still discernible today. We are still in a significant sense Augustinians or Aristotelians.

There is thus a genuine continuity in the materials of which a culture is built, which go on piling themselves up; there is an ever-new grappling with the unforeseen ideas and conditions which have emerged because of what men have done. It is these conflicts between traditional beliefs and novel experience which drive men to construct philosophies, to fit opposing or irrelevant ideas together into some not too chaotic scheme, to adjust warring values so as to give some direction to life without excluding too much. Somehow the novel idea or condition has to be seized and worked into the accustomed pattern of living and thinking; but ideas, like conditions, have a structure and implications of their own, and when the readjustment has been made men find they have created a new pattern.

The history of ideas thus points both to a cumulative continuity in the materials of thought, in the distinctions and concepts to be used, and to a bewildering variety in its problems, in the adjustments to change that must be made. The problems which give rise to philosophies emerge when the strife of ideas and experiences forces men back to basic assumptions in any field. They have varied from age to age, and are to be understood only as expressions of fundamental conflicts within a culture, leading men on to thoroughgoing criticism. Yet the great philosophies, though they start as the battle-cries of warriors or peacemakers in the strife, have been able to raise themselves above the battle to a comprehensive vision of life. And though they speak

in differing languages, they seem, to an attentive ear, to be speaking of the same universal pattern of experience. And this recurrent pattern is due not only to the fact that they once spoke a common tongue, which was Greek; not only to the fact that amidst much that is colloquial and in the latest fashion they have preserved the archaisms that point to a common source; it is due to the fact that Greeks and moderns alike have beheld the same world, and each in his own dialect is expressing the same permanences of man's experience of that world. The enemy and the fight are ever new; but fighting is not, nor are the weapons by which men can conquer.

It is well to attempt to digest this lesson before going on. The problems of one age are irrelevant to those of another. But the fact that problems must be faced does not vary. And the facing of problems illustrates a recurrent pattern. The persistence of tradition, the impingement of fresh experience, intellectual and social, upon that tradition, generating new ideas which conflict with it and yet must be understood in its terms, for there are no others—so long as our culture persists in changing, it must face such cycles. That old and new will find eager partisans to give intellectual expression to the conflict, is inevitable; just as it is inevitable that peacemakers will finally effect a settlement in which will lie the germs of new wars. For the record reveals that it is the peacemakers, those who consciously strive to blend old and new in a novel pattern, who are the creators of that which, added as a permanent deposit, is the starting-point of further change. It is the peacemakers, the adjusters, Thomas, Spinoza, Leibniz, Kant, Hegel, Marx—whose ideas make further history.

This fact has an import both practical and intellectual. It makes clear what in a changing culture must be done, though it does not dictate what we shall do. We may, if we will, bound by sentimental ties to what is old and familiar, regard the new world, so terrifying and alien, with suspicion, distrust, and fear. It is well to be critical as we mark the more than dubious value of much that is taking the place of goods once so sure. We may set our faces like adamant against what is coming, we may seek refuge in another realm, we may give way to disillusionment and despair. Or we may be so intoxicated by the promise of the new that, forgetful of the achievements of the past, we shall throw ourselves wholly into the passionate struggle for

its realization. It is well to prepare ourselves for the fight that is to come, and perhaps it is well to buttress our new faith with a sophisticated and dogmatic defense, and take up the powerful weapons of intolerant zeal and emotional conviction. We may try to throw overboard blindly what need not and cannot perish, and what we shall later have to bring back again, or we may contend that with our new instruments we are for the first time able to achieve all that the old world cared for.

All these things we may do, for all these things men have done again and again. But this is not what must be done. What must be done is to face resolutely both the old world and the new, and to attempt once more the age-old task of adjustment and reconstruction: to accept the materials offered by both past and present, and out of them build still another edifice. Those materials, taken together, dictate both limitations and opportunities. Much that we cherish will of necessity be excluded, and so will much that we hope for. But to incorporate the values of the past that criticism reveals as permanent with the novel values made possible by what we are creating, is the task that must be performed. And those who do not in some fashion work upon it will not be counted among the builders of the world that is to come.

The practical import need not be pursued at this point. Let us rather allow the history of ideas to tell us of the intellectual method by which such reconstruction can be effected. It points to the inescapable persistence of that slowly mounting body of intellectual techniques and values in terms of which novel ideas must be understood and judged. We must understand what is new in terms of the ideas we already have; we have no others. We can learn from experience only if we have already learned from experience. This may be a paradox, but it is also a fact. It indicates that the concepts by which we make experience intelligible, the ultimate intellectual values we seek, the standards by which we verify, are themselves the deposit left by a long experience with the world. It is to the test of this embodied experience that we bring the fresh experience we are seeking to understand. In the testing the tests are themselves tested, and a new deposit is left. What we have learned teaches us how to ask questions, and in the asking we learn how to ask better. Without tradition, without the

past, there could be no experiment, no learning from experience; without experiment, without a never-ending asking questions of the world, there could be no past, nothing but a passing present.

This fruitful and necessary interaction of tradition and experiment, of reason and experience, we have built up rather consciously into an effective intellectual tool. We call it scientific method, and the history of natural science is a cardinal illustration of the technique of cultural change, of the use of the rational lessons of clarified experience to clarify and learn from new experience. Science is at once traditional, cumulative, and rational, and critical, original, and experimental; and its method is a continued criticism of experience by reason and reason by experience. But operating at a deeper level of this same interaction than our natural science is the philosophical tradition out of which it grew and in terms of which it is itself understood and criticised. That tradition has its own carefully built-up standards of testing and criticism, and its own appeal to human experience as the setting of all man's knowledge and values. When scientific tests have left too much unexplained, when they have failed to make intelligible too large an area of experience, it has recalled them to a confrontation of experience again, and from that encounter they have emerged deepened and enlarged. It has reminded them of that universal pattern of what is, those fundamental concepts and distinctions, which, whatever the language of a particular thinker or a particular tradition, seem forced on the mind by a common world and somehow expressed; and from that rational analysis they have emerged clarified and rendered intelligible. This basic criticism of science, like science itself, is a never-ending process, a process in which an intelligible pattern of ideas and fresh contact with the world are made jointly to illuminate our knowledge of that world and its possibilities.

The appeal to experience, like the appeal to reason, on whatever level it is made, is a moment in a process of criticism. This solid fact has implications. It implies that knowledge is extended and enlarged, and its concepts and methods clarified, not through experience alone nor yet through reason, but when experience and ideas are made to confront each other. It implies that the appeal to experience, so often taken to be either the beginning or the ending of inquiry, is in fact no start and no conclusion, but an intermediate stage in a ceaseless

process. It implies that philosophies of experience which start with experience as a subject-matter are in fact starting with certain ideas of experience, and that those which end with experience as a conclusion are in fact ending with a certain experience of ideas. And a whole range of philosophies, including most of those called empirical, stand condemned as inadequate, unenlightened, and blind. We must start with tradition, and we must end with tradition criticised, clarified, and enlarged.

On the level of philosophic criticism, therefore, we are forced back on the classic tradition of European thought, on that basic pattern of ideas which has persisted throughout the long search for intelligibility. The classic tradition means Greek thought, and Greek thought means Aristotle—not an Aristotle to be opposed to Plato, but the Aristotle who expressed in words that confrontation of idea and fact which Plato makes us see dramatically. There, with a clarity from which the accidents of circumstance have dropped away, and with a singular freedom from problems of adjustment and partisan loyalty, we can find the structure of the world and man's experience of it rendered in intelligible language. It is the language to which, after many a long wandering in a far country, present philosophical thought seems to be returning. It is the language in which alone, whatever the dialect, the presence of man as an intelligent and valuing being in a world that is intelligible and valuable, of human life as a natural expression of a nature that sustains and responds to its interests, can be understood. Whatever their starting-point in particular intellectual struggles —and they have been many—whatever the presuppositions that circumstance has forced upon men, those who have been honest enough to follow out the structure of the world in the light of a comprehensive view of human experience have ended by speaking in terms that can be translated into that language. It is a language that can express every human experience, knowing and acting, art and religion—a language in which we can talk equally of man and the world and God.

This is not to say that the long odyssey of modern philosophy, from which we are today returning with many a wound and many a deep scar to the naturalism of Greek thought, has been in vain. Although without what Plato and Aristotle first said, all words would be meaningless, they did not say the final word. Emerging as they did from a single culture, they could not reflect on the conflict of cultures; creating a single science, they could not see one science leading to another. And neither the limitations nor the power of the classic tradition they created can be fully appreciated until it is seen from the perspective of all that we have since experienced and learned. Without the flesh and blood of that living experience, the classic tradition remains a rigid skeleton, sterile and dead. That struggle of two conflicting types of knowledge for man's allegiance, which became the basic intellectual issue in modern thought, in terms of which all other practical issues of adjustment have been expressed, has had many consequences. The conflict of a moral and religious tradition with new scientific concepts and techniques, of knowledge of the ends of action in morals, art, and religion, with knowledge of the structure of nature in natural science, has many sins to answer for. From the coming of Aristotelian science in the twelfth century to compete with the Augustinian tradition of Christianity, until the present-day acceptance of an enlarged and deepened scientific method as the one type of knowledge, it has dug a gulf between man and the world. It has led to philosophies which at their worst denied the reality of human life, and at their best left it irrelevant, supernatural, and unintelligible. But it did at least force men to confront the classic tradition with experience, to see it as functioning in an entire culture in rapid transition. And out of that renewed confrontation has come an Aristotelianism, extended and deepened, more Aristotelian than that of Aristotle himself. No, this critical enterprise of the last hundred years has borne its own fruits.

The classic tradition insisted that the world is by nature intelligible and valuable, and that thinking and valuing are in themselves natural events. Intoxicated, however, with the discovery of the intelligibility and value of the world, it read the universe not only in terms of its own particular schemes of understanding and living, which was natural enough, and easily corrected by further experience; it read it in those purely intellectual and structural terms which are the proper objects of knowledge, and failed to take seriously its own insistence that knowledge is but one among many human activities. So long as knowledge, as with Aristotle, was so framed as to make human life intelligible, this selective emphasis was perhaps no serious danger; but

with the development of a much narrower if more potent intellectual method in the seventeenth century, the exclusion became important: what could not be so known was not real. Beginning with Kant and his successors, the critical appeal to a wider experience of the world in which man lives taught first that intelligibility must be sought, not merely in one but in all the activities of human life, and then that the very search for intelligibility itself has a natural setting. Not only are poetry, self-sacrifice, and religious adoration facts to be understood; nature lends herself to lyrical expression, to moral devotion, and to idealizing worship as well as to understanding, and all these activities of men have definite implications for the character of the nature that sustains them. Even more: ignorance, error, and the achievement of partial interpretations are as insistent facts as truth; and all these salient traits of human thinking are to be understood only when intelligence and beliefs are seen in their biological setting in the behavior of living beings adjusting themselves to their environment and manipulating its materials, and in their social setting functioning in specific ways in a cultural whole. Thus out of this confrontation of knowledge with experience has come not only the means of judging the success of particular schemes of knowing, in the light of the function they were developed to perform; there has come also an appreciation of the role of knowing itself in human culture.

The present return to an enlarged and deepened Aristotelianism—or empirical naturalism, in the jargon of the day—is thus the fruit of a process of criticism which, beginning in the attempt to put mechanical science in its setting in human experience, has ended by pointing to the setting of all science and all knowing, of the classic tradition itself, in the manifold activities of man's group life. And thus through the discovery of the broader biological and social context within which the search for intelligibility finds its place, that tradition has been rendered flexible enough to deal with those problems of changing cultures and shifting schemes of science which were originally outside its scope. In partial independence of this philosophic self-criticism, natural science, whose limitations a century ago made it impossible to bring under the operation of one intellectual method the physical analysis and the non-mechanical pursuits of men, has gradually extended its scope to embrace human life in biology and human activities

in the social sciences, at the same time reconstructing its concepts and method to deal with all the higher activities of mankind. Today we possess at last a science that, insisting on the reality and importance of all man's experiences and enterprises, has the concepts through which it hopes to make them intelligible, and a philosophy that can embrace in one natural world, accessible to thought in all its parts and amenable to the operation of intelligence in all its processes, all the realities to which human experience points: symphonies as well as atoms, personality as well as reflex action, religious consecration as well as the laws of motion.

That thought and intelligence have as yet hardly made the most of their new opportunities, is a fact so obvious as to need no belaboring. That our modern naturalistic philosophies are as yet programs rather than achievements is equally patent. Yet it is also a fact with which we must begin, that they have set the general framework within which hard thinking and patient investigation may proceed. Not only has there passed the characteristic problem of nineteenth-century philosophizing, born of its cultural conflicts: how can man and man's interests and values be given a cosmic significance in the face of a science undermining the traditional theological guarantee of their central place in the universe? This problem's passing has carried with it the solutions as well, the philosophic idealisms which placed them outside a so-called "realm of science," the evolutionary philosophies which found a new substitute religious faith within that realm, and the negative answers of nineteenth-century mechanism and materialism. There has passed also that central "problem of knowledge" which persisted in modern thought so long as two different types of knowing were in conflict. Today it is no longer necessary to defend one type of knowledge against another, nor to justify any of the enterprises of the life of reason. Such enterprises have now achieved an assured and recognized status; they are once more an integral and natural part of the universe. And liberated from these traditional problems, thought can go on to explore the possibilities of human life and culture in the world it finds, to discover what must be done and how to do it, in religion, art, science, and social reconstruction. The difficulties are stupendous; but they are such as intelligence may hope to solve, not the dialectical products of contradictory assumptions, insoluble by definition.

If the world of thought we find offers once more a comprehensive nature with room for everything experience discloses, from electrons to God, and if it presents the instrument of scientific method as the tool for investigating their status, tracing their relations, and criticising their value, what then is to be done? Intellectually, the answer seems clear: we must develop a philosophy of nature adequate to human experience, and a philosophy of scientific method adequate to the task before it. Since we are today in the midst of the most fundamental revolution in physical science since the seventeenth century, there is much present concern with the philosophy of nature. It is presumably too early to attempt to formulate the structure of nature in terms of our radically novel and still shifting physical concepts, as it is certainly premature to try to press them into a new synthesis by a *tour de force*. It is not too early, however, to try to understand the fact that such concepts do shift, and that the structure of nature is successively reformulated, nor is it ever untimely to point to facts that any theory of nature must take into account. It is clear that a theory of nature arrived at by starting from mathematical physics will be highly selective of certain aspects of the nature within which we live. It is well to ask for clarification, therefore, as to what aspects the physicists do select, and why they select them, lest we be persuaded that the nature of which they talk makes unintelligible the nature in which we live. It is well to view the formulations of physicists in the light of the function of physics, lest we assume that physics made the world rather than that the world has given birth to physics and physicists. It is well to realize that the mathematical and logical structure of events which is found conditioning the processes of nature and is perfected in imagination far beyond the limits of any observable process, is still something discriminated and found perfectible in those processes. If we forget these obvious facts, we shall find ourselves in our latest scientific philosophies falling into the traditional errors of metaphysics, identifying nature with the latest formulations of its structural aspects, and facing the insoluble problem of explaining all the rest of the experienced world that is left over.

Until very recently there was a gulf between the philosophies of nature which started from mathematical physics and those which started from the biological and social sciences, between the various

logical realisms and the more empirical naturalisms. Today, however, that gulf is being rapidly bridged, and we seem to be approaching a synthesis between the structural categories of mathematical physics and the functional and temporal categories of biology and anthropology. The physicists, face to face with their new world of fields of radiant energy, have been forced by that world to develop concepts strikingly similar, on the one hand, to those of Aristotle, and on the other, to those of modern philosophies of social experience. The concepts appropriate to the functional relations of physical events within a systematic and organic structure, are no longer radically disparate to the concepts appropriate to the more complex forms of human experience. We seem to be nearing the time when a common set of categories and a common intellectual method will make both intelligible in the same terms, when both atoms and human societies will be seen as illustrations of the common structure of nature. When that time comes, we shall no longer have two philosophies of nature, based on which group of sciences is taken as furnishing the more inclusive categories and methods. We shall have rather one nature, and one scheme of understanding, within which similarities can be illustrated and distinctive differences discriminated. We have already a common emphasis on the ongoing processes of nature, on the emergence of novel ways of behaving, on the genuine creativity of the life of the universe, and on a pluralistic yet organic type of structure adequate to describe the immense variety of natural processes.

Moreover, the very fact of the reformulation of the basic principles of physics today has made it abundantly clear that principles do shift, and that the structure of nature does receive new formulation. The history of our own natural science, to say nothing of that of other systems of thought, as well as any accurate analysis of scientific procedure itself, reveals that science and knowing is a human activity, an active process of interpreting the world we live in, something men do to work out and criticise beliefs. It is highly selective of the facts from which it starts, and of the particular structural aspects of the world it is concerned to seize and express. Any systematic body of beliefs—any science—is the expression and formulation of certain natural relations in a definite language with a grammar of its own. Men can not only change their language when their interest in knowing shifts, as they

did in the seventeenth century; even when it persists the same, that language has to enlarge its vocabulary and extend its grammar to express new facts and new relations, as it has done ever since. In more Aristotelian terms, when it is no longer possible to say what things are in terms of one basic principle, that principle—as Einstein has shown—must be modified or pushed back to a still more fundamental principle to enable us to say what the new things are. The history of our own science is the history of the continual criticism and modification of the basic assumptions in terms of which the structure of nature has been pieced together and expressed. Science today, moreover, involves not only assumptions of expression, of grammar, but assumptions inherent in the human systems of spatial and temporal measuring from which it derives its data, and by which it verifies its conclusions—assumptions peculiarly subject to change. Knowledge, in a word, is not an immediate seeing, is neither the intellectual apprehension or vision of rationalism, nor the sensible vision and perception of empiricism, but is mediate and functional, an active process of criticism directed toward a selected end. Such a conclusion is supported both by psychology and by the technique of scientific procedure, and is illuminated when knowledge is seen in the light of its functioning within its appropriate cultural setting.

Such an analysis of the nature and procedure of scientific inquiry, moreover, does not leave the criticism of values to the poet or the mystic. If science is an activity, a technique for the criticism of beliefs expressing the structure of the experienced world, there is no reason why it cannot work upon beliefs expressing the relations of experienced values. If science employs basic principles as instruments for organizing beliefs into an intelligible system which experience can verify, it can also employ principles for organizing the goods discovered in the world into an equally verifiable system. That scientific, moral, and religious principles of organization are all alike cumulative and traditional, that a culture operates by bringing these achieved principles of verification to bear on fresh experience, is obvious. Experimental criticism of scientific as of all values can only determine whether they result in the kind of good recognized as ultimately good. But though such ultimate values, scientific, aesthetic, religious, or moral, are the premises of experiment rather than its fruit, they can be themselves modified when the

organization they lend to experience leaves too much out of account. To view such principles, scientific or moral, as functional in specific ways is to provide a means of testing their validity, at the same time that they are themselves tests of the experience that comes within their scope. And thus all values are seen as amenable to the intellectual method that has proved so successful in disciplining beliefs about the physical structure of the world.

We must begin, therefore, with what we find—whether it be economic organization, moral standards, scientific beliefs and principles, or metaphysical concepts and distinctions. To this insistence our world is forever forcing us back. And since we find everywhere today both traditional beliefs, institutions, and values, and novel experience, facts, ideas, demands, and needs, we must begin with both. We can disregard either only at our peril—at the peril of an arbitrary, uncritical, and ultimately untenable choice. We cannot appeal to the immediate and uncriticised experience of the moment, in all its changing confusion; but neither can we neglect it. We can only face that experience with the full knowledge of the tests and principles and standards built up in every field through the long history of our culture, and use those tests and principles to organize the fresh experience we are creating. If we are honest, we shall find those tests deepening as they actually function in our world; if we are intelligent, we shall consciously strive to make them more adequate. But if we are wise, we shall employ our most potent instrument of criticism, the scientific technique, to discover the promise of the future and the treasure of the past, and what must be done to adjust them to each other. We must begin with what we find—so that we may find more than that with which we began.

What must be done with our several institutions should by this time be fairly clear. What has been illustrated with metaphysics and scientific method is equally applicable to all. What must be done will be done, whether or not we realize what we are doing. I would willingly illustrate it also from religion, a favorite theme. With religion too we must start with what we find. That is meagre enough, God knows—it is crude, sentimental, literal-minded, worldly, humanistic, practical, and inordinately concerned with means and instrumentalities. Yet perhaps even out of what we have we can develop a faith in a certain method and way. It is well to remember that it is all our institutions,

our science and education, our art, our moral standards, our religion, our social groupings, from the family up, and not merely our political and economic organization, that must be transformed. Whether the transformation is forced upon us by our own unthinking acts, or whether intelligent criticism shall play a part, depends upon us, and our knowledge of our world.

That the economic revolution we are now involved in has been the major determining factor in revolutionizing our entire culture, and that the eventual reorganization of our culture will be largely dependent on the economic organization that is worked out, is so obvious as to need no emphasis. It would be easy to state in general terms what that economic organization must be—so easy that the statement may well be left to others. There are plenty of prophets today who can give us detailed pictures if we will, and the pictures are surely plausible enough. But economic revolutions, after all, are not produced by revolutionaries; they are produced by men working out the possibilities of the productive forces of society within the conditions set by those forces, and so far as the *form* of economic organization is concerned, it matters little whether those men think they are communists or fascists or democrats. It is quite possible that a political revolution will be one incident of our economic revolution; but neither are political revolutions caused by revolutionaries. They are caused by men too stupid or too stubborn to develop what is implicit in technology, and they replace those who will not with those who will. Whoever does it, and however they achieve power, what must be done with our economic machine will be the same; its organization will be dictated by its inherent structure, and will be achieved only by patient and critical inquiry into that structure. Most Americans would prefer that the inquirers should come to power in ways more consonant with our tradition than upheaval and dictatorship; it is surely at present premature to deny that they can. That preference is so large a part of what we find that it may well prove determining. It is clear likewise that both the form and the manner of the eventual economic organization of our society will have to grow out of the material that society offers, not out of the material of another society halfway round the world. Respect for human personality, and devotion to the conditions of its development, self-reliance, a widely distributed initiative, the essence of liberty—these things are

too deeply ingrained in our life to be disregarded.[1] Their conditions have been revolutionized, and what they will become in our new world is still a matter for clarification. That any American form of collectivism and economic planning must contain many elements usually called syndicalistic, is fairly certain. One may consequently vote a Marxian ticket, but unless he be blind he must realize that the programs of present-day Marxian parties have little relevance to what must and will be done, though their presence may influence its doing.

And so the philosophy of cultural change supplies an attitude, a perspective, and an intellectual method, for determining what must be done in each of the many complexly interrelated institutions of our changing culture, from metaphysics to the family, from epistemology to religion. What must be done will be clarified when that attitude and method are brought to bear upon the materials, traditional and revolutionary, of that changing culture itself. There is surely plenty to do; but the tasks can be approached with a genuine satisfaction that intelligence can once more deal, not with the inherited dialectical difficulties of a tradition grown academic, but with the insistent problems set by our own world. And it may be given to us to rise, with the great adjusters of the past, above the strife of our own intellectual adjustment to a comprehensive vision of life, and to express in our own language the universal pattern of human existence. We may start with an ideology born of the class struggle, and yet in this very human flesh we may see God.

[1] For the information of future historians, as well as of agents of the FBI, this passage has been allowed to stand as it was set down in 1934. The author has at no time been tempted to adhere to Marxian principles, or to any social philosophy that would be called "socialism"—unless the welfare state administered by President Eisenhower be so dubbed. Like the vast majority of Americans, he has always been fundamentally syndicalistic in his social thinking, and he is convinced, and has been from his college days, that any form of social control of industry growing out of American conditions, and expressing the American temper and experience, must include a very great degree of economic decentralization or "economic federalism," that is, a widely distributed group initiative and group control.

Never having been a Marxian, the author has never felt that any European experiment in social reorganization claiming allegiance to "Marxian" principles has been a betrayal of his own social faith. In consequence, he has been able to preserve a somewhat greater degree of objectivity toward such experiments than have many American democratic socialists.

NATURE AND HISTORICAL EXPERIENCE

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and in
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