

A FOOTNOTE TO PHILOSOPHY AT MID-CENTURY^o

THE twentieth century has run slightly more than half its course. At mid-century, as at century's end, it is natural to pause for a backward and a forward glance. For we often best understand our present situation, with its impending tasks and future prospects, by looking back over the road by which we reached the place where we now stand. I have called this talk a *footnote* not only because it is a reflective aside, a comment made on the main text in passing, but also because it disregards the full range of the larger problem in favor of concentrating on a single interesting feature of the history of philosophy in the last fifty years. I would not be understood to suggest that this feature is itself of minor significance. We shall see that it tempts us to project the rather bold hypothesis that the first quarter of this century witnessed the culmination of the long effort of modern philosophy to achieve a stable understanding of scientific knowledge. But the price of concentration is omission, and very little is said about ideas, such, for example, as Whitehead's, which may be more prophetic of the philosophical future than those about which I have more to say.

In philosophy the past fifty years may stand alone in one respect. Perhaps there has never been a like interval of time in which so many men, so learned in many things, so sophisticated intellectually, so alert to alternatives, so wary of prejudice and precipitate judgment, so diligent and skillful in argument, have engaged in so many kinds of philosophi-

^o A public lecture delivered at the Rice Institute on October 21, 1951.

cal inquiry. In numbers involved, in variety of interests, in range of accurate information, the philosophical activity of our century commands respect. Scholars have fruitfully cultivated all the traditional fields of philosophy: logic, epistemology, ethics, aesthetics, metaphysics, the history of philosophy. There have also been specialists in a host of philosophies-of, such as the philosophy of history, of religion, of education, of science, of language.

Not only quantitatively but also qualitatively, the general level of technical performance has been high. To record the names of all able philosophers of Europe, Britain, and the Americas who have earned a sound reputation among their colleagues would make a very long list. The true touchstone of an epoch, however, is not so much the general level of performance as the peaks of attainment. To borrow a figure of which my colleague, Mr. Tsanoff, is fond—mountain ranges, however high, have eminences which stand out above the rest. They are what catch the eye and give form and identity to the entire range. The weather, if not the climate, of opinion makes up amidst these high peaks. From them the winds of doctrine blow that sweep foothill and plain below. Our century has great peaks as well as high plateaus. A small number of philosophical minds of infectious originality have influenced the thinking of all their contemporaries. In this respect also it has been a significant time.

Let us make a list of the most prominent figures. It will include William James, Henri Bergson, Benedetto Croce, John Dewey, Bertrand Russell, Alfred North Whitehead.¹ These, incidentally, are names familiar to everybody. Almost any educated person could have named them as readily as a professional in philosophy. Shall we add others to the list? Perhaps, Edmund Husserl, whose phenomenological

movement was probably the most original and powerful in German philosophy of this century? Ought we to include Bernard Bosanquet, a skillful advocate of idealism during the early years of the century?

The exact list does not matter. But the more we think about it, the more conspicuously does a certain peculiar feature stand out. Consider: James, born in 1842, was fifty-eight in 1900. If he belongs to this century, it is only because he did much of his philosophical writing in the decade before his death in 1910. Bergson and Dewey were already in early middle age at the turn of the century, both having been born in 1859, the year in which Darwin published *The Origin of Species*. Whitehead was only two years younger. Croce had reached his middle thirties by 1900, and the youngest, Russell, was already twenty-eight. Every preeminent philosopher of the twentieth century had completed his formal education before the end of the nineteenth. Every one of them had fully established his philosophical importance by 1929 at the latest. No philosopher of comparable magnitude has appeared in the last twenty-five years, though original work of a high order has not been lacking in many special fields.

While there is no reason to expect men of genius to appear in even-paced succession, like soldiers in a file, the absence of figures of first rank makes the second quarter-century seem rather unproductive as compared with the fertile first quarter. This may, of course, be an illusion resulting from a trick of historical perspective. The mountain peak ordinarily comes into view and exhibits its rugged identity only at a distance. We may not appreciate the importance of some current philosopher simply because we stand too close to him. Moreover, as we grow older we tend to admire *past* originality more than *present* inno-

vation. Such doubts as these serve as useful warnings against dogmatism; yet they do not suffice to show that the disproportion between the two quarters of our century is wholly illusory. When Dewey's *Experience and Nature* appeared in 1925 (second edition 1929), nobody had any doubt that here was a definitive statement of a major philosophical alternative. The same may be said even more emphatically of *Process and Reality* (1929), which immediately secured for Whitehead, already admired and famous, a permanent place among the great philosophers, perhaps of all time. Able and even distinguished work has been done in more recent years, but nothing with such breadth and such penetration that it seems to cast light into the darkest corners of our philosophical ignorance.

One has the feeling that a good many people to-day would regard this turn of events with approval. They would welcome it as evidence of growing intellectual maturity. It would suggest to them that the scientific revolution had at last completed itself in the way expected by Auguste Comte, so that old-style philosophy is suffering, as it were, from technological unemployment. Comte held, you will recall, that human thinking progresses through three stages: the theological, the metaphysical, the scientific. A vigorous movement of the last two or three decades has done all in its power to empty philosophy of what it considers "metaphysical" questions and restrict it to the analysis of language, the instrument of expression and communication. But one does not need to go so far in order to appreciate the effect that the increased range and precision of scientific knowledge has had on philosophical ambition. Throughout this century, philosophy has tended to grow more specialized and to rely upon increasingly technical methods. Its solutions have not come wholesale, if they ever did, but

have had to be paid for bit by bit in hard, small coin. Intensive preoccupation with minute questions reflects an aversion to the apparently ineffectual methods of ordinary disputation, but it also affirms the unmanageable range of modern knowledge. One man can hardly survey, let alone master, the facts and ideas which are relevant to any broad philosophical construction. The sciences have held before our eyes a more and more significant model of warranted knowledge; they confront us with a high standard of critical caution and intellectual integrity, which in some ways is even more impressive than the vast amount of information which they provide. Philosophers have had good reason to grow more diffident and to confine attention to limited problems which seem capable of definite solution. Thus does minute analysis tend to replace large construction.

We must also acknowledge that a period which saw the depression, the incredibly deliberate attempt of the Nazis in Germany to destroy the moral sinews of European civilization, the Second World War, the subsequent cold war, and now the Korean war—such a period is not exactly conducive to reflective thinking. We have suffered less than many others; but recurrent crises have compelled us repeatedly to mobilize most of our mental as well as our material resources. Even if the individual philosopher succeeds in preserving his detachment in the midst of excitements, perpetual anxiety effectually deprives him of a responsive general audience.

Whatever value we may attach to these various considerations, they do not, I think, tell the whole story. They are one and all peripheral to the central philosophical effort. This has its own compelling rhythm, and the first quarter of the twentieth century seems to mark one of its culminating moments. The long, persistent attack upon some of the

most pressing problems of modern philosophy reached conclusions that are, at least temporarily, satisfactory, so satisfactory that further effort has not produced further insights of comparable generality with respect to the same problems.

It is not well to be dogmatic about matters of this kind, but what seems to me to have happened is this. Modern science reached the full vigor of its maturity in this century, and modern philosophy, which always has been the philosophy of the new science and the scientific revolution, matured with it. The advance of science made its criteria, methods, and objectives increasingly plain, so that a philosophical understanding of science became possible without borrowing insights from other modes of belief and other forms of intellectual activity. The first quarter-century brought this understanding to a point that has left little for the second quarter to do but consolidate the gains.

Many persons would take issue with this interpretation. We do not claim for it such certainty as the evaluation of a complex historical epoch clearly cannot possess. Impressive considerations, nevertheless, make the idea attractive. While this is not an appropriate occasion to fill in the technical details, further explanation is in order.

The first step is to widen the historical perspective, so that we no longer treat the years of our century as if they stood miraculously dissociated from the past. This does not require us to jump rashly from the frying pan of doubtful interpretations of matters of common knowledge into the roaring fires of historical speculation. What is needed is a stabilizing context. Modern philosophy, we remarked above, is preeminently the philosophy of the scientific revolution. We must now attempt to obtain an understanding of what that means; otherwise, there is little prospect of getting our century into a clear light, since science unques-

tionably has stood at the very center of its philosophic interest. Most of its important achievements have been associated with innovations in pure logic and in epistemology, the branch of philosophy which critically inquires into the sources and structures of valid knowledge, particularly as embodied in the sciences. In this respect our period is the legitimate heir of its past. Hence, to glance briefly at the scientific revolution itself, the main source of the philosophic tensions of the whole modern age, will more than repay the time it takes.

An effort of imagination is necessary. So accustomed are we to the ideas and surroundings which have resulted from scientific investigation, that we are likely to accept our world as simple, obvious, natural, and inevitable. If anybody should ask us point-blank about it, perhaps we would hedge a little and concede some of the difficulties which this development had to overcome. Our real opinion, nevertheless, is likely to show itself in an air of condescension toward men of former centuries, as if we could not comprehend how anybody could have been so dull and resistant to the truth as to think otherwise than we now do. Although the revolution in opinions which science has brought about has come as slowly and painfully as the accompanying social changes, it now takes effort to appreciate the magnitude of the changes that have taken place in men's ideas.

In this connection, let me read, with irrelevant omissions, a vivid passage from a recent book on *The Origins of Modern Science* by Herbert Butterfield, a Cambridge historian.

. . . when we of the year 1949 take our perspective of the scientific revolution—we are in a position to see its implications at the present day much more clearly than the men who

flourished fifty or even twenty years before us. And . . . it is not we who are under an optical illusion—reading the present back into the past—for the things that have been revealed in the 1940s merely bring out more vividly the vast importance of the turn which the world took three hundred years ago, in the days of the scientific revolution. We can see why our predecessors were less conscious of the significance of the seventeenth century—why they talked so much more of the Renaissance or the eighteenth-century Enlightenment, for example . . . Our Graeco-Roman roots and our Christian heritage were so profound—so central to all our thinking—that it has required centuries of pulls and pressures, and almost a conflict of civilizations in our very midst, to make it clear that the center had shifted. . . . The very strength of our conviction that ours was a Graeco-Roman civilization—the very way in which we allowed the art-historians and the philologists to make us think that this thing which we call “the modern world” was the product of the Renaissance—the inelasticity of our historical concepts, in fact—helped to conceal the radical nature of the changes that had taken place and the colossal possibilities that lay in the seeds sown by the seventeenth century. The seventeenth century, indeed, did not merely bring a new factor into history, in the way we often assume—one that must just be added, so to speak, to the other permanent factors. The new factor immediately began to elbow at the other ones, pushing them out of their places—and, indeed, began immediately to seek control of the rest, as the apostles of the new movement had declared their intention of doing from the very start. The result was the emergence of a kind of Western civilization which when transmitted to Japan operates on tradition there as it operates on tradition here—dissolving it and having eyes for nothing save a future of brave new worlds. It was a civilization that could cut itself away from the Graeco-Roman heritage in general, away from Christianity itself—only too confident in its power to exist independent of anything of the kind. We know now that what was emerging towards the end of the seventeenth century was a civilization exhilaratingly new perhaps, but strange as Nineveh and Babylon. That is why, since the rise of Christianity, there is no landmark in history that is worthy to be compared with this.²

Before making use of this passage for my own purposes, let me pause to remark that Butterfield is writing as a historian whose business is to record and interpret historic

changes, not to approve or condemn them. Moreover, his views do not necessarily coincide with my own in every respect.

The revolutionary men of the seventeenth century, those whom Butterfield called the "apostles" of the movement, understood intuitively what was afoot. Both those whose fame is mainly scientific and those whose fame is mainly philosophic sensed that one type of mind was being destroyed by a new type which was coming into being to take its place. That is the meaning both of Francis Bacon's famous doctrine of the idols of the mind and of Descartes' method of systematic doubt. Both men perceived that *new* truth was needed and a new method to discover it. Both understood that nothing worth while could be done unless the preconceptions which cluttered the mind were first uprooted—the old, habitual ways of thinking about things, the rigid customs of conservative thought. As long as old ideas prevail, they thought, everything will be forced into the same old molds and nobody will learn anything new and true about nature.

The revolutionary men of the seventeenth century were intuitively certain also that the new minds would make a new world. Bacon sought a new knowledge that could be put to use in the service of men's every-day needs; he was certain that genuine knowledge was power and would improve the ordinary lot of mankind. Even the vastly more intellectual Descartes valued the new learning hardly less for its utility than for its truth. A new world was somehow coming into being, and these men were assisting enthusiastically at its birth, although, I dare say, they had not the faintest suspicion that it would be as "strange as Nineveh and Babylon." They could hardly have failed to think of the new science, as most of us continue to do, in just the

way that Butterfield rejects. They must have considered science to be a new factor—albeit a dominant one—alongside the rest, and may have had an inadequate appreciation of the full extent to which a new way of investigating nature would transform all habits of thought and many types of behavior, as well as the material circumstances of men's lives. For all his assiduously cultivated doubt, Descartes expected to recover, and in the end thought he had recovered, many of the theological essentials of medieval thought.

Although the apostles of the new learning had a correct premonition of the future, it does not follow that they could themselves give a correct account of the revolutionary new factor in civilization. It is one thing to be hopefully aware of the general direction of a vigorous trend in human affairs, and quite another thing to understand its nature correctly, its real mode of operation, and its full implications for the civilization which fosters it. In fact, exactly to the extent that the new science was really new and unprecedented, there was no genuine possibility of understanding it at all. I recall hearing Mr. Alex Keiller, who directed the restoration of the great prehistoric sanctuary at Avebury, in England, say that archeologists took comparatively little interest in Stonehenge, because it is unique. And something similar may be said of the scientific movement at the beginning. In so far as it was really new, it was unique, and its interpreters had nothing to go on. They simply did not possess the stock of ideas and the variety of experience which were required for elucidating its nature.

That is not the worst of it. Science itself hardly existed as yet. It had to be hewn chip by chip out of the unknown by men who lived—methodologically speaking—from hand to mouth. They had to attack particular problems by any methods they could beg, borrow, or steal—or rather, *invent*.

Only gradually, as particular successes coalesced into mutually supporting patterns did this new factor in civilization take on an easily recognizable shape for philosophical analysis. Meanwhile, men did what they always do under such circumstances: having no alternative, they interpreted the new with the aid of whatever analogies lay at hand. Bacon and Locke generalized the inductive appeal to the facts of experience; Descartes generalized the new analytical techniques of a rapidly developing mathematics. Descartes saw science as what we would to-day call a deductive system: that is, a series of conclusive proofs derived ultimately from axiomatic principles. Locke considered knowledge to consist in the recognition of the relations holding among ideas which reflect experienced realities. The advancement of science itself was needed to show how far both views missed the mark.

If, as Butterfield observes, the twentieth century historian occupies a favored position with respect to the scientific revolution, the twentieth century philosopher occupies a no less favored position with respect to the mature scientific establishment, which is the now familiar result of that revolution. Thus, if the men of the present century have found comparatively stable solutions to some of the persistent questions of modern philosophy, this happy achievement need occasion no great surprise. Moreover, as long as science continues to work steadily at its problems in the same general way without undergoing some unforeseeable mutation, there is no reason to expect these solutions to lose their relevance. They are obscure in some respects and are undoubtedly capable of further refinement. For example, much remains to be done in the detailed adjustment of philosophic ideas to the particular concepts and methods current in various branches of science. This has been per-

haps the most fruitful task of specialists in what we have begun in the last twenty-five years to call the philosophy of science, although the term reflects rather a new interest than new problems or basically new solutions. The study of logical or epistemological problems associated with specific aspects of physical theory, for example, goes back at least as far as Mach in the last century and Poincaré in the early years of the present century. And the revolution in physics in the last fifty years supplied a new and compelling motive for intensifying the philosophic study of particular scientific concepts. It did so for the exceedingly good reason that it was itself associated with certain epistemological problems at the foundations of classical physics. The revolution in physics brought modern science to a fuller maturity partly because it explicitly recognized these problems. Thus it was not inappropriate to devote a volume to Einstein in the *Library of Living Philosophers*, a distinguished series edited at Northwestern University by Paul Arthur Schilpp.

To say that in the first quarter of this century philosophers reached a substantial solution to one of the persistent problems of modern philosophy does not mean that they must henceforth cherish an eternal truth with dogmatic tenacity. To suggest, however, that they have reached a solution of any kind—tentative and conditioned by vagaries of current scientific practice though it may be—is likely to be greeted with suspicion, if not with downright disbelief. Thus it is important to explain the alleged solution.

This is not easy to do, because the issues are frequently subtle. An account simple enough to be intelligible runs the risk of making things seem too easy. But let us recall what was said a moment ago about the effort of sympathetic imagination that is needed if we are to see through the eyes of our predecessors. Once we have accustomed ourselves to

seeing things in a certain way, particularly if we think there are obvious empirical grounds for doing so, we wonder how really intelligent men could have failed to get the point. And we still wonder with one half of our minds, even when we know with the other half that the nineteenth century had to produce two or three achievements of the first rank in mathematics, logic, and empirical science, before the best minds at the beginning of our century could have seen what they have taught the rest of us to take for granted by **now**.

What we have been made to see with new eyes is, in a word, man's remarkable powers of free, intellectual invention and his dependence on those powers for his ability to discover the *independent* order of nature. Without this creative, original activity by which the mind runs ahead of experience with ideas of structures more exact than any it finds, the inquisitive man would have no powerful methods for obtaining reliable knowledge of the objective, mutual relevance of events. Events run their course, stolidly indifferent to the inventions of the intellect. Without the inventions, however, knowledge, particularly the delicately articulated systems of exact science, would not be possible. Anyone familiar with the history of ideas will recall that Kant said something like this almost one hundred and seventy-five years ago. Kant dressed his ideas up in quaint eighteenth century styles, which sometimes obscured the figure underneath. Men of our century had to re-think the problems, but they had the equipment with which to do so. They approached the task both with new methods of abstract analysis and with a more concrete, historical conception of man.

Consider the latter. Under the impact of Darwinian ideas, it became difficult to think of man except as an animal try-

ing, just like every other animal, to get along. He had serious handicaps, having lost the decent animal habit of growing clothes on his back. He had also lost the efficient simian ability to climb about in the comparative safety of treetops. He did not even have strong claws or good teeth. He had to live by his wits, or he would not live at all. Here lay his unique opportunity. When his ancestors swapped fur for brain, it was the best trade an animal ever made. He had come into possession of the bodily organ that would enable him to overrun the earth. Animal intelligence was raised to a higher power. For humans have an abnormally long span of anticipation, and this implies exceptional power to control the turn of events in their own interest. Every animal with distance receptors—eye, ear, nose—has time to take action to prevent calamity or to capture prey. He learns to anticipate the future in terms of the present witness of his senses. The fox flees the hounds' voice and confuses his trail; the lion circles into the wind to stalk his prey; the mother woodcock feigns a broken wing to draw an intruder away from the nest. Man, however, does not, like lion or wolf, merely follow where his game leads; he makes his prey stay put and becomes the master of domesticated herds. He does not merely gather nuts, seeds, and fruits in season; planting at the proper time, he grows them and becomes a tender of fields. He learns to control fire, to make tools and utensils, and finally to exchange goods in peaceful trade. Most important of all, however, he does not merely excel every other animal in reading natural signs, but he learns to control the production of *signs* themselves. He cultivates the ability to communicate by means of articulate noises and comes into possession of language, which fixes and stabilizes the significant aspects of shifting experience and confers upon each generation the long learning of the tribe. Finally, writing catches

the wind of the voice and immortalizes memory in stone.

Such is man, the animal that has created science for his uses. In a way no other animal can follow, he has learned to read nature's signs more exactly with the aid of artful signs of his own contriving. He has learned also to experiment, that is, to control the conditions under which events unfold their natural consequences, so that he can both anticipate and control the outcome of given situations. Viewed in an evolutionary perspective, science is concerned not with the past or the static, but with the future, to which alone action is relevant. Ideas are thus not conceived as copying anything, as if reality were obliging enough to sit for its portrait. Ideas are projections of the mind into the future of a fluent reality. They are phases of action, purposeful designs, farsighted forms of the animal cunning by which we manage to survive in a hard world. Ideas copy nothing fixed and abiding. They anticipate a doubtful future and provide a bridge by which action may more freely pass from one situation to another. They are said to be true when we have good warrant for trusting ourselves to their guidance.

Everyone will have recognized the foregoing remarks as an impressionistic portrait of the kind of view which John Dewey has advocated throughout this century with impressive skill and enthusiasm. It does not much matter if in some respects the likeness is not exact. The important thing for our purpose is the insistence that ideas do not copy *past* experience, as the earlier empiricists imagined, but are invented devices, instruments of action, which the organism has forged in the effort to thrive. Ideas have a history, a time when they first came into use or were remodelled. They are not, according to this account, fixed functions of pure reason, as if we were miraculously in possession of a

somewhat faded transcript of God's design for creation. We do not have ideas because we are rational; on the contrary, we have reason only in so far as our ideas are kept in intelligent adjustment to the demands of action. Science is just the art of keeping our ideas intelligently close to actual experience. Dewey calls this art "inquiry"; it has its special skills and techniques like any other high craft.

Since cooperation and communication are essential to human success, the evolutionary way of looking at things brings language into prominence. But language must serve two rather different purposes in a scientific age. It must provide both a flexible means of communication and a necessary tool of intellectual analysis. The latter aspect of language is that which formal logic has always singled out for special attention, formal logic being the study of valid argument and correct inference in general. The mention of this subject brings us at once to a different set of nineteenth century ideas and a different and even more remarkable movement of twentieth century thought.

It brings us, in a word, to the *Principia Mathematica* of Bertrand Russell and A. N. Whitehead, the three volumes of which appeared from 1910 to 1913. Though the outcome of a considerable movement reaching back to the middle of the previous century, and inconceivable but for several earlier mathematical and logical achievements, this work at once served notice that logic had at last caught up with the modern age. The immediate result was a remarkable burst of logical investigation all over the world. The ideas of *Principia Mathematica* are much too technical for even cursory explanation. But let us not forget what we are supposed to be talking about: the inventive freedom of the human intellect. What this work gave to the world was a whole new, incomparably more versatile formal logic, a new

technique of analyzing our ideas or meanings, and a new logical language, spare and lean, but athletic and precise, invented for the sole purpose of facilitating the analytic function of language.

These developments brought recognition throughout the world that logical rigor was not confined to the traditional syllogism or to the established branches of mathematics but could be achieved in an indefinite number of ways. Logic suddenly acquired a plural, and it was fashionable for a time to speak of various logics. Make any assumptions and lay down any rules or stipulations you choose, then you will not go astray logically as long as you stick to the assumptions with which you start. Given this wonderful freedom of stipulation, the deduction of indefinitely many logically tight systems become a theoretical possibility. Plainly, our ideas are not, strictly speaking, copies of anything, either in experience or in the nature of our reason; they are inventions and free constructions.

The two philosophic trends which we have been broadly tracing meet here and go on together in rather remarkable mutual support. For there is an aspect of free invention in the logical texture of our systematic knowledge. The ability to infer from a present situation to future possibilities depends upon an organization of experience in terms of some logical structure. But the choice of a particular abstract system to use in interpreting experience reflects the tastes and purposes of the investigator. He is likely to have a strong preference for simplicity, convenience, and symmetry in his theories. These values are practical and aesthetic rather than cognitive. The scientific investigator desires to get ahead with his work and quite sensibly chooses the methods, including the logical methods, which seem to promise solution of his problems with the greatest economy of effort.

The successful solution, of course, is not a matter of choice; it depends entirely upon empirical confirmation of the abstract scheme by means of which the scientist tries to describe the facts. And there is only one way, in general, to obtain adequate confirmation. First we have to figure out what logically must happen if the theory holds under certain specific conditions, and we then must provide those conditions and see what actually does happen. If things happen as expected, the theory is so far confirmed; if things happen in some other way, then some correction must be made somewhere. Sometimes the theory must be abandoned and another one put in its place, as when non-Euclidean geometry replaced Euclidean geometry in certain branches of physics during this century.

The center of this procedure is exact prediction, and that is a strictly logical procedure, a deduction from assumed premises. Apart from logic and the rigid necessities of consistent thinking, prediction becomes sheer guesswork, and we cannot really judge whether experience confirms our theories or not. The growing mastery of analytical techniques (formal logic and pure mathematics) supplies an increasing repertory of terms in which to undertake the description of nature. Analytic reasoning gives us that purchase on necessity without which we cannot accurately detect objective events and relations. Thus it has come to be generally recognized that a logical model is what counts, not a pictorial model or a mechanical one. The logical model counts precisely because it is logical, is an abstract system of necessary relationships, which enables us to determine exactly what else would be so if the assumptions of the given system were so. Whether the model correctly represents the structure of actual events is a question for properly contrived experience to answer. But without exact terms and rigorous

methods of inference, experience gives us no precise instruction. Experience does not automatically supply correct terms for its own interpretation. These are conceptual schemes, the products of free logical activity.

Confirmation of this has been a commonplace of physicists' practice for years. Some specialize in abstract ideas relevant to physical facts and are called theoretical physicists. Others are experimental physicists who explore the facts with the help of abstract ideas. It may be added that for thirty-five or forty years Russell has maintained, in theory though not invariably in practice, that philosophy should confine itself to logical analysis, and thus stand to science or empirical knowledge in general as theoretical physics stands to experimental physics. A not dissimilar view has also been more recently advocated by the influential movement known as logical positivism or logical empiricism. The most extraordinary fruit of this movement during the past two decades is the intensive study of meanings and the problem of communication, which goes by the name of semantics. Rudolf Carnap's study of pure semantics, *The Logical Syntax of Language*, is the outstanding work in this field.

The pragmatic and analytic movements developed independently and even antagonistically; nevertheless, they have, as we saw, converged to a meeting at one point at least. The way in which they complement each other is now generally understood, and the main contentions of these two approaches to the problem of knowledge are taken for granted by almost everybody today, whatever other differences may divide them. C. I. Lewis was one of the first to appreciate this situation fully. His two books, *Mind and the World-Order* (1929) and *The Analysis of Knowledge and Valuation* (1947), are, to my mind, the most informative studies that have been made of it.

Because of the broad and basic agreement that now exists with respect to the general nature of scientific knowledge, I suggest that the philosophers, particularly of the first quarter of this century, did their work with telling effect. Discussion tends more and more to confine itself to technical matters of interest to specialists only. Meanwhile, the swirling center of philosophical doubt has moved onward from the problems of knowledge to the problems of practice.

Let us recall Butterfield's picture of modern science. It had two sides: science made a new mind and a new world to go with it; science also dissolved an ancient tradition. It did not merely add a new factor for civilization to assimilate. It invaded all our thinking, elbowing the old allegiances aside and claiming hegemony over the whole mind. This is an extreme view, but, if Butterfield is right, science has dissolved both the Classic and the Christian heritage of the Western World. A science that claims the whole mind tacitly projects a complete philosophy, which provides the frame of reference for the intelligent direction of life. It may be doubted that this philosophy has yet received an adequate presentation, though this was preeminently the task which Whitehead set himself as a philosopher. Nobody in recent years has worked as heroically as he did to prepare a vision of the world that would allow a man to dwell in it with his entire self in our century, and be at home intellectually, aesthetically, and practically. His best pupils, such men as Charles Hartshorne and Paul Weiss, have continued to work in this spirit. But the main body of philosophers have not dared to follow his majestic example.

Instead, some have sought stability by returning to a venerable pre-scientific tradition, and neo-Thomism has played a vigorous role in the most recent history of thought. Others have anchored their thinking to the indefeasible

reality of the personal life of each individual and have brought Kierkegaard, a nineteenth century Danish religious philosopher, back to life in translations and scholarly studies. But not all who attempt this find their way to Kierkegaard's devout conclusions; they may move toward Heidegger's existentialism or toward that of Sartre. Still others, apparently the majority in this country and England in the last few years, attack ethical problems with the equipment and ideas that proved servicable in epistemology.

The outcome remains to be seen. The task immediatly before us, however, seems plain. It is to re-think with our twentieth-century minds the perennial questions of human existence. We must work toward the goal that Whitehead set himself, a new synthesis, a total articulation of insights. This will enable us to be faithful and resolute in action because we are emotionally and intellectually at peace with ourselves.

Anything less than this may deliver us over to a conflict of mere ideologies, which are only a thin veneer on the struggle for power.

JAMES STREET FULTON

NOTES

1. In preparing this list, I have derived great help from discussion with my colleague, Professor Radoslav A. Tsanoff. While I believe the list includes no name which he would find unacceptable, he should not be held responsible for the list as here given.
2. Herbert Butterfield, *The Origins of Modern Science, 1300-1800* (New York, The Macmillan Company, 1951), pp. 147-149. This passage is quoted with the kind permission of the publishers.