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Ernest William Barnes

Excerpt

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Lecture i

INTRODUCTION

§ 1. *Jewish cosmology.*

The Christian Church at an early period of its existence took over from the Jews beliefs as to the creation and early history of the world and as to the origin of man. Such beliefs, as every educated person knows full well, can no longer be accepted. The beliefs, however, formed a background to Catholic theology and were consequently associated with the Christian idea of God. That idea rests primarily on the teaching of Jesus of Nazareth; and it is not erroneous to say that He regarded it as an intuition which man's richest and deepest spiritual experience would confirm. But human thought naturally and rightly refuses to rest content with such an intuition. The God to whom man's spiritual experience leads him must be also the God revealed in Nature. Hence the picture of earth's beginnings framed by Jewish speculation was used to supplement and confirm the belief as to God's character to which Jesus Christ gave the weight of His authoritative understanding. Until quite modern times the synthesis thus made was deemed satisfactory. In fact many traditional types of argument were so framed as to leave the impression that the Christian conception of God was derived from Jewish cosmology; and that it would not be true unless the Biblical accounts of the Creation and the Fall were, in substance, historical facts. It was an axiom of Catholic orthodoxy that the Creation took place in time: and, though opinions varied as to its exact date B.C., the belief was general that the Universe came into existence less than 10,000 years ago. Further, the earth was assumed to be the centre of this Universe. Sun, moon, planets and stars were all subordinate to it. On the earth and on the earth alone existed man, specially created 'in the image of God'. Furthermore, all the manifold defects of human nature which lead to individual corruption and social disorder were deemed to be the result of a Fall, an act of disobedience on the part of the 'first man' Adam, by reason of which all his descendants inherited a moral taint. Christ had insisted alike on the inherent value of the individual human soul and on the goodness of God. For traditional theology man's inherent value was preserved by the fact that he was created with unique attributes to rule the earth, which itself was of supreme significance in the cosmos: God's

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goodness was preserved by attributing all the evil, alike of nature and of human society, to the fact of Adam's Fall.

§ 2. *The different picture created by modern science.*

Within the last four centuries the old Jewish cosmology has vanished. Science has created an entirely different picture of the nature and duration of the Universe. The single act—or week—of 'Creation' is replaced by a process of unimaginable extent whose beginnings elude us, though soberly argumentative speculation carries them back for at least tens of thousands of millions of years. The earth, far from being the centre of the Universe, is a minor planet of a solar system whose central luminary is one of, at least, some 50,000 millions of suns. Even this vast aggregate of suns does not exhaust the visible Universe: it is, in fact, but one of many 'island universes' of comparable magnitude. For the age of the earth astronomers and physicists compute periods which exceed a thousand million years. During the latter part of that time life has been developing upon it. Biological evolution upon this planet has continued for many hundreds of millions of years; and finally by such evolution man has emerged from an ape-like stock. Sub-human types were probably in existence upon the earth a million years ago: and traces of rudimentary human civilisation have been found which can hardly be less than 150,000 years old. Pre-history may be said to have begun in Europe, Egypt and the Euphrates valley 20,000 years ago: and written history goes back for something like 6000 or 8000 years.

§ 3. *Repercussions of scientific progress: free-will: invariable sequence.*

While the coordinated discoveries of modern times have thus emphasised the idea of development, and while they have led to an amazing extension of knowledge, I must warn my readers that they have not enabled us to solve the great problems of philosophy. There has now been built up a coherent plan of the evolution of the Universe, a plan which concludes with that development of terrestrial life which has led to man. The scheme, though vague in many details, is magnificent, and we need not fear that its main outlines are wrongly drawn. But little has been discovered which helps us to an understanding of such fundamental enquiries of philosophy as relate, say, to the nature of time, or to the existence of evil, or to human free-will. In fact, new difficulties confront us.

If Einstein's speculations have made it probable that space is finite and have thereby freed human thinking from one scandal, they have

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also forced us to conclude that space and time together form a single continuum into which all events must be placed. It is obvious that such a conclusion is highly satisfactory to those who hold that we are mere automata. They can now contend that time, like space, lies before us to be explored, and that consciousness meets but does not cause events. Yet it belongs to our constant and invariable experience that we have some measure of free-will, that our mental states cause and are not mere concomitants of events in the material world. In short, the darkness which clouds all enquiries into human freedom is no less dense than of old. The Heisenberg uncertainty-relations, immensely important though they must be, have brought controversy rather than light.

Again, it cannot be said that the so-called 'laws of Nature' have become easier to understand. For the theist all such laws are the expressions of God's will; and they are regular because God is self-consistent and His action not capricious. But the man of science, who, as such, makes no metaphysical assumptions, rightly thinks of such laws as mere sequences: as to their cause he does not speculate. Our laws of nature are descriptions of behaviour. But the progress of science has not given us a clearer insight into their range or character. It is not outside the bounds of possibility that some laws are disguised truisms, results of our own modes of measurement, and that others express statistical averages resulting from the free behaviour of individual monads, or units, possessing some freedom of choice. Moreover, we do not know whether it will ultimately be possible to bring the whole of Nature under the reign of law. It appears, for instance, that biological mutations are the raw material of evolution: yet in the present state of our knowledge such mutations are merely inexplicable facts.

There are, of course, some among us who cannot satisfy themselves that God exists, as they contemplate that progressive development of life which has led to man, because they do not see in it purpose and plan. Such desire rather to be shewn signs of the free creative activity of God. Yet it will not help them to be told that such activity is most typically expressed in the production of mutations, inasmuch as in such biological changes there is, so far as we can see, no ethical quality whatever. In fact, our present knowledge of changes in the germ-plasm seems to shew that evil and good alike are present at the very basis of the evolutionary process. I personally hold that God must be good in that He has made man to seek goodness; but recent additions to our knowledge of evolution do not make it any easier to solve the problem of evil.

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I have thought it well thus to allude to enquiries, which in later lectures we shall consider in detail, in order that on the one hand I may indicate the repercussions of scientific progress in the domains of philosophy and religion and in order that, on the other hand, I may not at the beginning of my course excite false hopes. We must set our religious intuitions and aspirations against the background created by the new knowledge. We must, whenever possible, test religious dogmas by the methods of scientific enquiry and refashion them in the light of scientific progress. But also we must, in the end, allow that our minds are finite and that, even after the unparalleled intellectual advance which culminated in the first quarter of the twentieth century, we cannot solve all the puzzles of the Universe.

§ 4. *The constant progress of science constitutes a series of ever closer approximations to the truth.*

We must be content with partial knowledge, ready to admit that, in regard to many matters of the highest importance, we must balance opposing theories and reach probability rather than certainty. An element of agnosticism, a willingness to say 'I don't know', is necessary in the attitude of every honest thinker. But we have no right to use scepticism as a support of superstition. To decry the value of human reason in order that one may continue to hold beliefs that will not stand the test of rational enquiry is discreditable. Similarly we have no right to take refuge in the obscurantism which, because our knowledge of Nature is progressive, alleges that 'the scientific theories of one generation are repudiated by the next'. The man of science builds upon the labours of his predecessors. He seldom, if ever, entirely rejects their conclusions when these are the result of scientific method; that is to say, when they result from careful observation and experiment. He usually finds that such conclusions are, as it were, first approximations to the truth. They become, in the development of his research, rough outlines of theories to which he gives more accurate form. Sometimes he can make a higher synthesis, as when the laws of conservation of mass and conservation of energy are combined into a single law in consequence of the discovery that energy has inertia and therefore weight. But to fancy that the main development of any great branch of modern scientific theory may ultimately be proved to be valueless is absurd. Whatever, for example, may be the machinery of evolution, the facts that man has evolved from lower forms of terrestrial life and they in turn from primitive organisms will not be overthrown. Einstein's success in

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bringing gravitation within the scope of the general relativity-principle has shewn that Newton's empirical law of gravitation is not absolutely exact; but no competent student imagines that the Newtonian scheme of planetary motions is not an exceedingly accurate approximation to the truth.

§ 5. *Theology cannot be based solely on human spiritual experience: it must take account of the God of Nature revealed by science.*

By reason of the knowledge laboriously built up from the application of scientific method to various branches of enquiry, we have now a picture of the nature and past history of the Universe on which, so far as it is clear and not blurred, we can place considerable reliance. We have already said that it differs fundamentally from that associated with traditional Christian theology. Now any scheme of theology must, to be adequate, take account of the way in which God has fashioned and controls the Universe and must therefore be permeated by the new knowledge. Moreover, no adequate theology can be limited to human spiritual experience. Man is the outcome of Nature's processes. He is a product of the general scheme of the Universe. No one of his faculties is entirely independent of his ancestry and environment. Without exaggeration we can assert that man's spiritual experience is as unreal as a dream unless the God to Whom it leads him is also the God Whose nature is shewn in the Universe as a whole.

The right starting-point for theology, as Inge* has well said, "is to examine the conception of the world as known to science". I propose in these lectures to make such an examination as my ignorance will permit. To this end I shall try to set out in some detail the general results which have been reached in those branches of science to which we owe the modern picture. Often enough it is not possible to relate them directly to theology. But my object is not a narrow apologetic. I would rather say: "Such is our world. Such is its past development. Such is man's place within it. Is it reasonable or necessary to believe that the Christian God Whose character is goodness and truth is alike its Creator and Ruler?" I believe, as will become apparent, that the scientific conception of the world leads us to postulate the guidance of a single controlling Intelligence. The philosophic view termed Naturalism suffices when we merely *describe* phenomena. To *explain* them we need to assume the existence of a unifying and directing Mind. I maintain further that, though an examination of such facts as are available

* W. R. Inge, *Outspoken Essays, Second Series*. Longmans, 1922, p. 27.

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to us does not lead of necessity to a conviction that the God thus postulated is good, yet this conclusion is more reasonable than any other. We can, I believe, claim that the new conception of the world which science now lays before us does not increase the doubts to which the problem of evil has always given rise.

§ 6. *The philosophical assumption of these lectures is a moderate realism: the physical world exists independently of any human mind.*

These lectures are intended for educated men and women who have no technical knowledge of science or philosophy. They will therefore, so far as possible, be free from the technical terms to be found in scientific and philosophical discussions. The concrete is more easily apprehended by us all than is the abstract. From the concrete results obtained by scientific method we can, I believe, draw conclusions valuable for theology even though we avoid processes which the profane call 'logic-chopping'. To make fine-drawn distinctions, which had no counterpart in the world of sense observation, was a vice of medieval scholasticism. To such distinctions the mind which works upon itself is naturally led. The modern philosopher, however, can use the theories reached by the man of science as material for critical examination. His work is of the greatest value as he lays bare the assumptions which underlie 'obvious' arguments and as he estimates the extent to which the human mind creates that knowledge of the external world which we believe ourselves to possess. Of the rival systems of philosophy which have been built up as a result of such enquiries we must choose one. But in making our choice we must needs join faith to reason. Rival systems would not exist if it were possible to prove that one was true and all the others false. My own philosophical position, which I shall assume throughout these lectures, is that known as moderate realism. I believe that a physical world exists independently of any human mind. I hold, in fact, that we may trust the evidence of our senses when they tell us that there is an external world from which we derive our sensations. If I were the only human being in the Universe, I might reasonably assume that the data thus presented for investigation were themselves engendered in my mind. But I assume that other human beings, other centres of consciousness, exist. I compare notes with these people and find that the data presented by their senses have a general likeness to those which I get myself. As a consequence I believe that the ultimate source of these data is an external world which would still exist should my own consciousness of it cease.

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But the external world thus postulated is not necessarily the world as conceived by humanity. Though it is not constructed by my mind, my supposed knowledge of it is the construction of the general human mind. We can only believe that we have some, not entirely inaccurate, knowledge of the external world as it really is, as it is known to God, if we make the further assumption that our minds are akin to the Divine Mind; or, in other words, that there is some ground of unity between man and God. Belief in the existence of such a fundamental unity is regarded by some of our theologians as the necessary foundation of the Christian doctrine of the Incarnation. Rashdall* (1858–1924) has well said: “If ‘Divine’ and ‘human’ are thought of as mutually exclusive terms, if God is thought of as simply the Maker of man, if man is thought of as merely a machine or an animal having no community of nature with the Universal Spirit who is the cause or source or ‘ground’ of the existence alike of Nature and of other spirits”, then the Christian doctrine of the Incarnation cannot be maintained. With Rashdall I postulate that there is a certain community of nature between God and man, that all human minds are reproductions ‘in limited modes’ of the Divine Mind, that in all true human thinking there is a reproduction of the Divine thought; and, above all, that in the highest ideals which the human conscience recognises there is a revelation of the ideal eternally present in the Divine Mind. Bethune-Baker† maintains the same standpoint even more firmly than Rashdall. In connection with the Incarnation he says that “we know enough of the order of Nature now to discredit the ancient idea that the new can only come about by a break in the continuity of the order of Nature”. “The being of God and the being of Man are indissolubly interrelated. . . . The Creator is not separated from His creatures. . . . God is always being actualised, fulfilled, expressed in Man.”

§7. *The external world a somewhat unexpected synthesis gradually being constructed by the observation and thought of humanity.*

We need continually to emphasise that the external world whose existence we postulate is not the world of any one individual: it results from a synthesis of the appearances which it presents to different observers. The actual synthesis which our physicists make is, in fact, much

* Hastings Rashdall, *Jesus Human and Divine*. Melrose, 1922, p. 17.

† J. F. Bethune-Baker, *The Way of Modernism and other Essays*. Cambridge University Press, 1927, pp. 94 and 99, 100. The full passage from which I have compressed the second quotation is well worth careful study.

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more recondite than would result from the acceptance of a mere aggregate of appearances to unreflective observers. From that which is actually observed our men of science use the faculty of imagination (which must be sharply distinguished from fancy) to construct what would be observed under conditions which humanity cannot reach or in circumstances in which no human being could place himself. In the theory of relativity we have to imagine a man moving relatively to ourselves with velocities so large that they are comparable with the velocity of light: and we then construct the framework of space and time in which he would put events which we perceive. It is only thus that we reach the amazing conclusion that man's instinct that his measures of space and time are independent is mistaken. Similarly in atomic physics we have to imagine what would be the appearance of matter were it to be observed by a human being whose dimensions were smaller than those of a 'filter-passer', which is a micro-organism so small that it can pass through a porcelain filter and much smaller than can be seen under our most powerful microscopes. For such a being the most solid matter of our experience would appear to be, so we believe, electric charges either rotating with tremendous rapidity round oppositely charged nuclei, or existing in regions of space-time indeterminacy as satellites to such nuclei, charges and nuclei alike being so small as to occupy less than a billionth* of the volume which to us the matter appears continuously to fill. These instances shew conclusively that our direct knowledge of the external world is by no means as satisfactory as men who have given no thought to the subject naïvely fancy.

A further illustration will emphasise the same truth. Physiologists give good reasons for thinking that, of all man's faculties, vision is the most important. Now we see things because the retina of the eye is sensitive to light-rays. These rays have different wave-lengths which correspond to the different colours which we perceive. But the total range of wave-lengths to which our eyes are sensitive is but a very small fragment indeed of the range of all such rays as exist. We are unconscious of 'wireless rays' which may be passing around us; yet these belong to the same system as rays of light. Suppose that, instead of our eyes, we had different organs sensitive to another group of rays. The appearance of the external world for us would be entirely changed. Yet it would be, so we postulate, the same world differently perceived. We need always to bear in mind the fact that our minds, and the faculties that minister to them, have been by the process of evolution developed

* We use the English billion of one million millions.

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in special directions. Certain kinds of perception have been practically useful: they have had survival-value, so that animal ancestors of our own who have developed them have survived in the struggle for existence. Scientific progress is a somewhat artificial development of human intelligence by which we transcend the limitations due to our ancestral history. We may, however, fairly claim that, because such progress enlarges our understanding, it should therefore enable us the better to know the nature of the Supreme Activity which, as it seems to me, directs, or is the ground of, the Universe.

Although the external world is very different from what it appears to be before we analyse the sensations which reveal its existence, the realism which I personally accept denies that it is in any true sense created by being known. As Plato taught, knowledge is the discovery of that which was there to be discovered before the discovery was made. This holds good, as it seems to me, alike in the domain of morality and in that of physical science. No doubt there is some kinship between the mind and the ideas which it rightly constructs from experience. But I believe that this kinship results from the fact that the human mind is akin to the guiding Intelligence of the Universe. The extent to which we frame true ideas is a measure of our capacity to 'think the thoughts of God'.

§8. *Rational and irrational faith.*

This philosophical position, as I have said, must be accepted as an act of reasonable faith. In stating my acceptance of it I would protest against any philosophical assumptions that ultimately lead to discord with the results of rational enquiry. Whatever may be said for the Idealism which asserts that whatever is known is thereby given some nature or quality of reality which it did not otherwise possess, I would protest against the misuse of such a standpoint. By religious apologists of a certain type it is sometimes said that all reality is a creation of the mind and that therefore—a strange *non sequitur*—any belief which can find a place in our scheme of reality can be accounted true if it have emotional value. The result of this type of argument is that we may believe what we like provided the belief gives us emotional satisfaction.

Such a misuse of Idealism is disguised scepticism and the whole scheme is the familiar, and odious, combination of scepticism and superstition. Against it we assert that all beliefs must be subjected to rational enquiry, whether they be scientific or religious. Among fit subjects for experimental investigation are, for instance, the disguised

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forms of 'animism' which still survive, and allied beliefs that spiritual presences can be attached to, or made to inhere in, non-living matter. These beliefs will disappear when the possibility of experimental enquiry into the psychology of the religious consciousness becomes understood. Science has freed itself from the sway of irrational fancy: we may hope to free religion from similar contamination by linking it up with science.

§9. *The limitations of scientific knowledge.*

I can easily imagine that complaint will be made, with regard to some of the earlier of these lectures, that certain fundamental questions, especially of geometry, are treated at inordinate length. Such treatment is, however, essential to my scheme for two reasons. In the first place, I desire to shew that in science we are never free from possible errors of perception. The axioms of geometry, though often regarded as among the fundamental certainties of scientific knowledge, are dubious deductions from empirical observation. In mathematical analysis we start with certain postulates or conventions and work out their consequences without necessarily troubling ourselves as to whether the initial postulates or conventions belong to the objective world of our experience. In geometry, however, we seek to describe relations in this objective world; and the assumptions which we perforce make are only true so far as our observations are free from error. The existence of alternative systems of geometry, which may equally serve to describe relations in the world of our experience, is a significant illustration of the difficulty of reaching ultimate truth. In the second place, I have been anxious to make it clear that even in such a science as geometry we do not, to use an expressive phrase of the French, 'touch reality with the finger'. We seek, of course, to discover properties of space: we actually investigate consequences of our belief that ideally rigid bodies can be moved from one position to another without change of size or shape. Once this fact is grasped it will probably be admitted that an investigation of such consequences, however far continued, is unlikely to give us a complete insight into the nature of space. Moreover, the special theory of relativity will make us hesitate even to accept the fundamental belief of which I have just spoken, for in that theory we learn that no physical disturbance can be propagated more quickly than with the velocity of light. If then we move a rigid body by disturbing two points of it, the disturbances will expand in spheres surrounding the two points; and, so long as these spheres expanding with the velocity of light do not over-