

## FROM MODERN PHYSICS TO RELIGION

I.—Professor Eddington's *Metaphysics, Philosophy and Theology*

BY VICTOR S. YARROS

PROFESSOR A. S. EDDINGTON, the distinguished British astronomer, physicist and educator, has published an extraordinary book entitled *The Nature of the Physical World*. It is, in reality, a revised series of university lectures, and has some of the defects of semi-popular lectures. These defects, however, will not trouble the general lay reader, or even the studious and cultivated reader. The book is brilliant, unconventional as to form, exceptionally well written and in more than one place delightfully humorous and witty. Critics have said that the book is literature as well as rigorous science, and they may be right. It fascinates, intrigues and diverts even while it instructs and elucidates the most difficult problems in modern physics and modern philosophy.

It is hardly necessary to say that it is up to date in every respect. It is Einsteinian and Planckian, and more. As an exposition and interpretation of the new physics, it leaves nothing to be desired. But in that part of its task it is not in any sense original.

The original, daring and surprising elements of the book are to be found in the pages—and there are many of them—in which the metaphysical, philosophical and religious aspects of modern exact science are discussed by the author. For he does not stay within the safe limits of science. He is interested in the deeper and more important problems that challenge the mind of man. He ventures boldly beyond science; he even admits and defends mysticism; he has room for and need of theology, religion and God. He upholds the validity of claims which other savants decline to recognize, or treat with scorn and supercilious contempt.

It is the extra-scientific parts of the book that I propose to notice and comment upon in this paper. The reader who is conversant

with the teachings of Whitehead, Russell, Jeans and other British scientists will find much in Professor Eddington's book that will suggest fruitful comparisons and pregnant questions.

Perhaps the best way to call attention to the issues raised by Professor Eddington is that of direct quotation. Here is what he says about "the nature of the conviction from which religion arises":

"The conviction which we postulate is that certain states of awareness in consciousness have at least equal significance with those which are called sensations. Amid [the former] must be found the basis from which a spiritual religion arises. The conviction is scarcely a matter to be argued about; it is dependent on the forcefulness of the feeling of awareness. . . . The idea of a universal Mind or Logos would be, I think, a fairly plausible inference from the present state of scientific inquiry; at least, it is in harmony with it."

"We have to build the spiritual world out of symbols taken from our own personality, as we build the scientific world out of the metrical symbols of the mathematician . . . . We must be able to approach the World-Spirit in the midst of our cares and duties in that simpler relation of spirit to spirit in which all true religion finds expression."

"We cannot pretend to offer proofs. *Proof* is an idol before whom the pure mathematician tortures himself. In physics we are generally content to sacrifice before the lesser shrine of *Plausibility*."

In addition to the foregoing significant quotations, we may note that Professor Eddington believes that the stuff of the universe is mental, not material, nor neutral, and that modern physics, in his view, has wiped out the old distinction between natural and supernatural phenomena. Since the world is full of marvels, mysteries, unknown and perhaps unknowable things; since we do not know what the atom is, what it does, and why it does it, it is no longer an objection to any affirmation to say that it *implies* the "supernatural," or an argument *pro* any statement that it *avoids* the assumption of supernatural phenomena.

Finally, we may quote verbatim Professor Eddington's own very useful summary of the cardinal points of his metaphysico-philosophical reflections.

"1. The symbolic nature of the entities of physics is generally recognized, and the scheme of physics is now formulated in such a way as to make it almost self-evident that it is a partial aspect of something else.

"2. Strict causality is abandoned in the material world. Our ideas of the controlling laws are in process of reconstruction, and it is not possible to predict what kind of form they will ultimately take; but all the indications are that strict causality has dropped out permanently. This relieves the former necessity of supposing that mind is subject to deterministic law, or, alternatively, that it can suspend deterministic law in the physical world.

"3. Recognizing that the physical world is entirely abstract and without actuality, apart from its linkage to consciousness, we restore consciousness to the fundamental position instead of representing it as an inessential complication found in the midst of inorganic nature at a late stage of evolutionary history.

"4. The sanction for correlating a real physical world to certain feelings of which we are conscious does not seem to differ in any essential respect from the sanction for correlating a spiritual domain to another side of our personality."

We are now in a position to analyze and comment upon the author's remarkable admissions or concessions to theological and metaphysical orthodoxy.

Physical entities are undoubtedly mere symbols. Naive realism is dead. But is it logical to contend that behind the phenomena we deal with symbolically and abstractedly there is something mental, something higher than the physical? The world, to us, is what our sensations, perceptions, inferences and reasoning processes make it; but are we justified in assuming that what we do not sense and perceive is nobler or higher than that which we think we understand? The table which we use, or the typewriter, is not really and exactly what it appears to be, but the aspects we do not perceive are not necessarily nobler than those we do perceive. What is the Universe? We do not know, but we have formed certain notions of it, and these are inevitable, given the human mind and the human body. What is behind and beyond the things we see, hear, smell, touch and reason about, no human mind can possibly know. Our notions and conceptions are pragmatic; they cannot be anything else. That which we cannot conceive remains a mystery. Neither science nor common sense has anything to tell us about the wider or higher entities referred to by Professor Eddington. The Agnostic declines to speculate concerning those other entities.

But what of the assertion that the stuff of the world is mental?

If that be granted, does it not follow that the stuff of the world is also noble and spiritual? By no means, for we have to define the term "mental" as well as the term stuff. Let us pause to consider Professor Eddington's own definitions of these terms. They are, to say the least, singular and paradoxical.

He writes:

"To put the conclusion crudely, the stuff of the world is mind-stuff. . . . The mind-stuff of the world is, of course, something more general than our individual conscious minds; but we may think of its nature as not altogether foreign to the feelings in our consciousness. . . . The mind-stuff is not spread in space and time. . . ., but we must presume that in some other way or aspect it can be differentiated into parts. Only here and there does it rise to the level of consciousness, but from such islands proceeds all knowledge. . . . We are acquainted with an external world because its fibres run into our consciousness; it is only our own ends of the fibres that we actually know; from these ends we more or less successfully reconstruct the rest, as a paleontologist reconstructs an extinct monster from its footprint. The mind-stuff is the aggregation of relations and relata which form the building material for the physical world. . . .

"Consciousness is not sharply defined, but fades into subconsciousness; and beyond that we must postulate something indefinite but yet continuous with our mental nature. This I take to be the world-stuff. We liken it to our conscious feelings because, now that we are convinced of the formal and symbolic character of the entities of physics, there is nothing else to liken it to."

Bertrand Russell's view, that the stuff of the world is "neutral," our author rejects, because, he says, that view implies that we have *two* avenues of approach to an understanding of the nature of the world, whereas we have only *one*, namely, *through our direct knowledge of mind*.

The reasoning in the last quotation seems extraordinary. In the first place, we are told that the terms mind-stuff do not mean what they mean in ordinary discussions. Mind is not mind, and stuff is not stuff as we know these things, or have conceived them in the past. What we are to understand by mind-stuff is "the aggregation of relations and relata which form the building material of the physical world." This stuff we must liken to conscious feelings because we cannot, now that we have discarded crude materialism,

liken it to anything else. But what necessity is there for likening that stuff to anything at all? What end is served by calling it mind-stuff? Does the comparison help us to understand that part of the stuff which is beyond the fibres we know? The answer is in the negative, unless we adopt the simple and naive beliefs of the orthodox theologians. What we are entitled to say is this—that a certain process which seems physical up to a certain point becomes mental at that point, in our own use of the terms physical and mental. Where and how the translation occurs, we do not know. The differences we feel and know in the stages of the process need names, however, and we coin them; but let us not forget that the names *are our own creation* and remain just names. Professor Eddington says that we “more or less successfully reconstruct the rest” of the chain or process, the part beyond the fibres we know; but he stops here, tantalizingly enough, and does not tell us *what we have reconstructed* and what the creation of our reason and imagination looks like.

He does say, indeed, that it is not illogical or unreasonable to assume a Great Universal Mind, behind the mind we ourselves possess and the mind-stuff of the universe. This is a new version of the old and fallacious Paley argument, but the version is scarcely an improvement on the old notion. If it is not unreasonable to infer a Great Mind, a Knower and Creator, a God, is it unreasonable to infer that the Universal Mind is lodged in a brain resembling the human and that the brain is part of a body resembling the human body? If so, we are back in the camp of the fundamentalists, the believers in a personal God amenable to prayer and persuasion. What a lame and impotent conclusion that would be!

The scheme of physics is indeed part of something else, but why pretend that we *know* anything about the whole of which physical entities are a part?

Strict causality is abandoned by modern science, says Professor Eddington truly, but does it follow that the mind of man is not subject to deterministic law? Is *all* causality to be dropped, and is chaos to replace the conception of the reign of law? Certainly not. The universe, after all, is *not* chaotic. We cannot trace all consequences to causes, but that does not prove that the consequences have not causes which we are ignorant of in our present state of development. Because certain phenomena are as yet obscure and in-

comprehensible, are we justified in asserting that they are fortuitous and causeless?

The recognition that the physical world is abstract, continues Professor Eddington in his summary, restores consciousness to its former fundamental position. Why? Fundamental to humanity, perhaps, but not fundamental in the cosmic scheme. We cannot assume that our consciousness is as important to nature as it is to ourselves. And of what significance is the fact that consciousness is again fundamental, if it stops exactly where it did when it was regarded as "an inessential complication of inorganic nature?" Where we *put* consciousness is a matter of no moment. The question is, what do we do with our theory of consciousness?

And here we come to the crux of the discussion. Because of the rehabilitation of consciousness, and because of our new orientation in physics, Professor Eddington claims, a new sanction has emerged for religion and mysticism. We correlate, he points out, a certain "real" world to certain feelings of which we are conscious; why, then, may we not correlate a certain *spiritual* domain to *another* side of our personality? We may and, as scientific thinkers, should, according to Professor Eddington. The sanction is of the same kind in both cases, he contends, and the process of forming the conception of a world of which our feelings give us only fleeting glimpses is also the same.

The author illustrates his point by showing that mere physical phenomena lead us to such concepts as Beauty, Harmony, Unity. Mere physics thus engenders admiration, wonder, exaltation, reverence. Why should not other experiences and feelings in us lead to concepts of the religious type? he asks. Well, the answer is that they do not necessarily or always engender such concepts, and, where they do, the concepts are barren and might as well not exist. There are no Agnostics so far as Beauty is concerned, but there are Agnostics in religion and theology. Professor Eddington fails to account for widespread Agnosticism, although he does insist that those who claim they have vivid religious feelings and experiences should suit action to profession and show that religion is to them a living and potent reality, not a mere empty form of lip-service.

There is absolutely no objection to correlating a spiritual domain to a given side of our personality, provided we know what we

mean by a spiritual domain. Professor Eddington does not stop to characterize or delimit the spiritual domain. He assumes that morals and esthetics belong to that domain, but neither morals nor esthetics are dependent upon theology.

Repeatedly Dr. Eddington mentions God, but he refrains from telling us what he means by that term. He fails also to attribute any rôle to his God. As Bertrand Russell says, Professor Eddington seems to believe that his God had something to do with the world in a remote past but abdicated long ago and has forgotten his creation. Such a conception of God is neither philosophical nor practical or sensible. How can we correlate it with our feelings and experiences, pray?

Mr. Russell suspects that Professor Eddington is not wholly candid with his readers, but holds something back. This is extremely improbable. He is misty and nebulous, to be sure, but only because his ideas "beyond physics" are vague and rudimentary. He feels that there is *something* beyond physics, as does Santayana, but what that something is, no one is able to conceive. Why not confess ignorance and stop there?

It is impossible to escape the conclusion of a certain rational idealism—namely, that we know nothing of the actual physical world, and that our senses and perceptions may be grossly unfaithful to reality. But we have no appeal from our senses and perceptions. We have no other data or materials wherewith to build conceptions and theories. We can only admit that the world *may* be different from our image and idea of it; we can only bear in mind that real, actual, ideal are our own terms coined to make distinctions which we find necessary.

The claim of some thinkers that modern physics is furnishing unexpected support to religious orthodoxy and undermining Agnosticism is arresting enough, but, when we examine it closely, we find that it is baseless. Modern physics tends rather to strengthen Agnosticism and to extend it.

Professor Eddington himself virtually admits this. For instance, in discussing the electron and its antics, he says that we may describe these things as "something unknown doing we don't know what," and he maliciously and shockingly compares his own formula with

The slithy toves  
did gyre and gimble in the wabe,

and similar delightful nonsense.

Well, if all this be true, what meaning is there in the statement that the stuff of the world is mental, or that physics as now taught has abolished the distinction between the natural and the supernatural, the real and the mystical? If we know *nothing*, what basis is there for God and a so-called spiritual domain?

Dr. Eddington is at times the victim of his own wit, cleverness and breadth. He is a foe of dogma in science or elsewhere, but he mistakes the open mind, the genuinely scientific attitude, with a mushy, thoughtless, demoralizing sentimentality. Science should be modest, tentative, as he insists, but it is absurd to pretend that science has no better foundation or sounder sanctions than, say, orthodox theology. We have the right to demand that theology shall be at least as scientific as are the more exact physical branches of knowledge.

## II.—NEO-NATURALISM AND NEO-RELIGION

*Religion*, by Edward Scribner Ames. Holt and Co.

Here is a book which rationalists and Agnostics should welcome as sincerely and fervently as will those who cling to a certain degree of what may be called orthodoxy in their religious philosophy. Prof. Ames may not be—indeed, is not—strikingly original in the views he presents in this volume, but he is very persuasive, plausible, lucid and candid. His essential teachings differ little from those of Whitehead, Eddington and Millikan, but he is more intelligible than any one of the erudite metaphysicians and physicists who have lately attempted to return to religion, God and mysticism *via* physics and mathematics. He has made a strong case, from his own point of view, for the fundamentals of religion, and he will have to be reckoned with,—that is, discussed and elaborately answered.

In the present brief notice only a few points can be considered, but they will be the points which test at once the merits and the weaknesses of Dr. Ames' position.

To Dr. Ames religion is something so profoundly natural and human that to defend it, to try to prove its validity and legitimacy, is to be guilty of the absurdity of laboriously demonstrating the self-evident. But what is religion? To Dr. Ames, a way of contemplat-



ing and reacting to the whole of nature, the totality of all phenomena, physical and spiritual, intelligible and incomprehensible. Nature is studied by the science piecemeal, and properly so. Things have to be isolated for the purposes of science, and all observation and experimentation have to be made under artificial conditions. Truths yielded by science are valuable as far as they go, but they leave much unexplained. The same is true of any philosophy that claims to be scientific. Not so with religion. To religion nature is something organic and indivisible. Man is part of it, and cannot be supposed—as Huxley, for example, contends—to be *at war with the rest of nature*. That is, human ethics cannot be really incompatible with cosmic ethics, whatever the appearances may suggest to the superficial observer. Men's ideals and noblest conceptions are as natural as the so-called animal passions and appetites which he must satisfy, albeit in sublimated forms. The basic harmonies of nature are clear to religion, if not to science. And religion inspires effort to banish apparent discords and reduce or eradicate apparent evil.

God, to Dr. Ames, is nature viewed as functioning in a certain way, the way that leads to the most abundant and worthiest of lives from the human point of view. In other words, God is a name we humans give to the ideal and the excellent *in ourselves* and therefore in nature. Since ideals exist, and since moral progress is real, God exists. To doubt his existence is to doubt what we most value and cherish in life and in thought and feeling—and this is inconceivable. God is *not* a person in the literal or strict sense of the term, but he has a personal aspect, since he personifies, *to us*, our own personal qualities of goodness, virtue and moral beauty. When we pray to God, we pray to a whole aspect of nature and life, and prayer is efficacious, because something in us answers the prayer and grants the favor sought. Prayer makes us purer, gentler, sweeter, more human, and by affecting *us* affects *nature*—though not what we may call physical phenomena, like wind, flood, earthquakes, fire, etc.

It will be seen from the foregoing inadequate summary that Dr. Ames is neither heterodox nor orthodox, but a cross between the two types. He has little sympathy with the ordinary modernist, and none at all with the Humanist. He stresses the impossibility of *ignoring* the supernatural or drawing a sharp distinction between

it and the natural—agreeing in this respect with Professor Eddington. He thinks the position of the Agnostic unscientific and unphilosophic, out of date and out of harmony with contemporary habits of thought.

However, the unrepentant Agnostic, while paying tribute to Dr. Ames' sincerity and courage, will not hasten to surrender his position unconditionally after reading the book under notice. After all, Dr. Ames coins terms and makes definitions to suit himself. He stretches logic rather violently when he contends that God is "personal" in a sense. And how many men would pray if they thought they were praying to themselves—to their better natures—and asking these better selves to conquer the worse selves? If God is a name for one side of nature, the good and ideal side, what is the name for the ugly, seamy, disagreeable and odious side or sides of nature? The Devil? Again, how many intelligent persons will accept these definitions as satisfactory substitutes for the old and conventional definitions or conceptions?

But, going a little deeper, let us ask whether Dr. Ames is not guilty of a naive anthropomorphism in his reasoning regarding human nature and nature at large. It is true, and no one has ever denied, that *man is part of nature*—what else, indeed, *could* he conceivably be? But what grounds are there for magnifying his importance in nature? Man is supposed to be the last word in Evolution, but even if that is the case—and we cannot be sure, since there may be life on other planets, and that life may have assumed forms superior to ours—what ground is there for assuming that man is of interest or significance to anybody save himself? Man's habitat is the tiny, unstable, inconsequential globe. Man's destiny is uncertain and his career is short and full of terrible misdeeds. He is still rapacious, brutal, stupid and ignorant. He kills for fun and is not ashamed. He slays his fellows without reason because he is full of envy and malice. He is vain, petty and arrogant and cannot be trusted with power. He is hypocritical, professing creeds he has no intention of practicing. He is superstitious and gullible. There is no evidence that his disappearance would cause a ripple in the cosmos. What does he *know* of nature? Nothing. How presumptuous, then, it is in him to propound theories concerning his relation to nature and his rôle and place in nature.

Words may serve the purpose of concealing intellectual poverty.

But the critical thinker is not deceived by words. The Agnostic is first and last a critical thinker and a frank realist. He knows that human knowledge is pitifully meager, and that it will always remain meager so far as the ultimate problems of nature and life are concerned. Man does well, indeed, to identify himself with his better nature; he shows sense in endeavoring to make his existence more and more comfortable; he is slowly learning the advantages of kindness, forbearance, mercy and generosity, and occasionally he rises to the plane he calls altruistic. He is to be encouraged to persevere in his difficult and thorny upward march, but it behooves him to remain humble and simple. He must bear in mind that nothing is more ridiculous than pretension to wisdom where no wisdom exists and where at every step one encounters insurmountable obstacles to understanding.

The Agnostic, remembering all these things, refuses to claim knowledge beyond science and empiricism. He will not accept Dr. Ames' religion or philosophy of religion because they are largely verbal and rhetorical creations.