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The Modern Ideas of Joseph McCabe in a Special Edition!

Sir James Jeans' "Mathematical God"

A Debate-Analysis by E. Haldeman-Julius

Of the making of images of a God there is no end. Now we are introduced to another image, fashioned in the mental likeness of Sir James Jeans, celebrated British mathematician. This latest God is a mathematical God, and of course, according to Jeans it is the God. In the beginning of his dissertation on his theism of higher mathematics, Jeans says that his God is pretty certainly, almost undebatably, the God; and then in conclusion, he says that he is probably all wrong and is only guessing anyway.

Like his fellow scientists, Eddington and Millikan, Jeans dives abruptly from the subject of scientific physics into the theme of the Unknown God (which, although they profess not to know, they waste many words in presuming to por tray and elucidate). The first four chapters of his most recent book, *The Mysterious Universe*, outline new developments in physics; the fifth and concluding chapter consists of speculation concerning God and Jeans' solemn announcement that he has discovered God to be "a pure mathematician"; and this last chapter is most fittingly called "Into the Deep Waters." My verdict is that he is neither a good swimmer nor a good diver. He should stay on dry land. He should pick out a firm spot and use that as a post of observation. It is not safe, principally for the reason that the man quite evidently has no idea where he is going. His intellectual journey in search of a God is distinguished by its erratic nebulousity.

Jeans boldly in spirit but poorly in the actual result combines mathematics and mysticism. It would seem that mathematical thinking deals, on different levels, with a real and an ideal world. Ideal words have the characteristic, more than all else, of being inchoate. They depend so much on the idealist. And when a mathematician, like Jeans, goes so far with his abstract symbolism and his highly refined and theoretical calculations, he winds up in the airy—no, the airless—nothingness of the metaphysician. Jeans' last chapter is obviously an exercise in metaphysics; the stuff of this metaphysics is, however, not obvious but obscure. What is the man driving at? He isn't sure himself. He is deft enough in constructing a chain of words that seem to link themselves into the simulacrum of an idea. But this idea is, to use Jeans' own simile, a soap bubble which evaporates and disappears the moment one gets close enough to examine it fairly. The idea lacks substance. And we are justified, Jeans admits, in speaking of *substance*; there are *substantial* things in our world, he says, although he says, queerly enough, at the same time that the whole universe is but the colossal thought of a God who does his thinking in terms that are magnificently mathematical.

Gods for Every Fancy

The savage, whose mind reflects primitive caprice and ferocity, imagines for himself a God in his own turbulent image. Theologians imagine a God who stands back of their dogmas. Liberal theists imagine a God who is a somewhat genteel figure of flimsy remoteness. Sir James Jeans, being a mathematician, imagines a God who is also a mathematician. If he were a musician (the comparison, by the way, is suggested by himself), his imaginary God would be a great composer. If he were an orator, his God would be the same and the universe would be represented as the masterly oration of God. If he were a football coach, his God would resemble him and the universe would be described as an example of God's cosmic strategy in the game of football. From the simple believers in primitive religions to the eminent Sir James Jeans, the general principle remains invariably true that all men fashion Gods in their own images. Their view is highly personal. And it will not be denied, surely, that even a mathematician can look at things in a very personal way. If Jeans fancies that he is engaging in tremendously impersonal metaphysics, he is the victim of a common delusion which afflicts lesser mortals as well as he. His abstractions are toys shaped to please his mind.

As is usually the case with this tribe, it is hard to deal with the mystical Jeans because he gives one so little material to work on. His idea can be stated in a sentence or two and, after all, it is so vague and so couched in circumlocution and so wrapped in elusive similes—or pointless similes—that the easiest thing to do and the entirely adequate thing would be to content myself with saying, "This is nonsense and Jeans doesn't know himself what he is talking about." Such a dismissal would be adequate for me and for others who are thoroughly familiar with the futility of mysticism and metaphysics; but many will be impressed—and, even so, confused—by the final chapter of *The Mysterious Universe*, wherefore it becomes a duty of rationalistic enlightenment to expound patiently the fallacies in the "tremendous trifles" which Jeans unloads upon the readers of his book. I trust I shall be pardoned for adding that these trifles exceed in popularity the more solid, scientific portion of the book. As a purely scientific book, *The Mysterious Universe* would have been little noticed and would have had a small circulation. The chapter, "Into the Deep Waters," gets the book such flattering and sale-stimulating notice as a page and a half review in the religious section of *The Literary Digest* and countless other reviews and discussions. This is not to say that the man was insincere in writing this final chapter. But it will be profitable and it will increase the prestige of Jeans among certain classes, although it certainly will not increase the prestige nor the positiveness of God among the multitude. For the masses will not care for this mathematical God.

They want a high, wide and handsome anthropomorphic God or none at all.

There are, however, a considerable number of liberals who want to combine theism with rationalism; and these seem always cheerfully eager to entertain any conception of a God which is put forward by a scientist. They believe at the same time in the God of intense, personal "soul" communion which is asserted by Prof. Eddington; in the God of wonderful goodness and power which is asserted by Prof. Millikan; and in the God of pure mathematics which is asserted by Sir James Jeans. Any God will do; if a scientist affirms a God all the liberal theists cry, "Yes, yes," and are glad to accept whatever odd decorations go with this latest "scientific" God. They hasten also to proclaim anew that science has discovered this God; when, as a matter of fact, only a single scientist is talking and he is not dealing with science at all but with theistic speculation composed out of pure moonshine rather than pure mathematics.

Garbled Theistic Propaganda

Thus *The Literary Digest* declares (italics mine) that "modern science sees a mind working outside of time and space, fashioning the universe on the rim of nothing and making of this tiny world a fit place for man's habitation." But nothing is clearer than that Jeans' "mathematical God" is not the vision nor the belief nor the assertion of modern science; it is peculiar to Jeans and, with variations (for no two minds can agree in their pictures of a God), a very small coterie of physicists; and Jeans

himself is honest enough to say that his idea has, after all, no scientific authority but is "frankly uncertain and speculative." The fact is that modern science has nothing directly to say about God; it concerns itself with the practical study of godless realities; it is atheistic, not in positive propaganda, but in its interests and conclusions. It is only in their private and peculiar role of mystics that the Eddingtons and the Jeanses are interested in the idea of a God.

Another blunder in *The Digest's* review is its statement that, according to Jeans (who is magnified and multiplied into modern science), a God has made "this tiny world a fit place for man's habitation." But Jeans expresses very strongly the opposite thought, namely that his "mathematical" God is indifferent to man or that, at any rate, he didn't intentionally create man. He says that "we, the only thinking beings, so far as we know, in the whole of space, are to all appearances so accidental, so far removed from the main scheme of the universe, that it is a priori all too probable that any meaning that the universe as a whole may have would entirely transcend our terrestrial experience, and so be totally unintelligible to us." A glance will show a world of difference between these two viewpoints.

At the same time I must say that *The Digest*, while it misrepresents Jeans, is more logical than he. If Jeans' "mathematical God" functions at all, he ought to work perfectly and with the most severe mathematical logic; and therefore man could not, on this theory, be an accident; but in blowing soap bubbles (which is Jeans' amusing pastime in the last chapter of his book) one doesn't have to be logical and indeed, sending forth Jeans' style of bubbles, one cannot be limited by logic. The mathematician who expatiates emptily upon a "mathematical God" must, to step a bit aside for a figure of speech, have plenty of rope.

Pure thought—that, says Jeans, is what the universe is. It is only an idea. God wrinkled his brow and jerked his gray matter into a reflective jiggle; and behold, the cosmos resulted. Thus our celebrated physicist, abandoning science, goes back to Emersonian transcendentalism; he goes even farther back, to the metaphysics of the eighteenth century Bishop Berkeley, whom he quotes with approval; and he goes still farther back to Plato, that pattern of a prettily word-spinning mystic. This quotation is given from Bishop Berkeley, who had the famous argument with the realistic philosopher, John Locke: "All the choir of heaven and furniture of earth, in a word all those bodies which compose the mighty frame of the world, have not any substance without the mind. So long as they are not actually perceived by me, or do not exist in my mind, or that of any other created spirit, they must either have no existence at all, or else subsist in the mind of some Eternal Spirit."

"Pure Thought"—What? After getting this far into the

deep waters with Jeans, we are not surprised that he remarks: "Modern science seems to me to lead, by a very different road, to a not altogether dissimilar conclusion." And he lays the emphasis not upon his own mind nor upon the mind of any human being "or that of any other created spirit" but upon the mind of a God: "their [objects'] objectivity arises from their subsisting in the mind of some Eternal Spirit." In taking this position of Berkeleyan transcendentalism, Jeans is simply throwing overboard the modern scientific viewpoint and counseling the mind of the race to slide back into the foggy, fustian nonsense of pre-scientific metaphysics. This sort of verbiage is as old as the first mystic; and it has no better, solid meaning when used by an eminent physicist of the modern age. It has no superior meaning coming from this source, because Jeans is not discussing strictly his own specialized branch of knowledge (physics) but is using physics, quite unscientifically, as a springboard into the sea of speculative spiritualism. The reader should bear in mind that in his last chapter the physicist is not a bit more authentic than a tabernacle evangelist affirming, in language more crude, ideas fully as unrealistic and not so much more grotesque at that. The physicist's "mathematical God" is no more than a rhetorical-idealistic whim. If he tried to make us believe that the moon was made of green cheese and that the moon-cheese was the consequence of a curdling motion in the mind of a God who was a divine dairyman, his words would have exactly as much authority.

Jeans pictures the universe as "consisting of pure thought"—that is to say, he pretends that he has so pictured the universe. As a matter of fact, such a picture would be impossible. It would not be possible for Jeans or any man to have the faintest conception of such a thing (or not-thing) as "pure thought." It is a solid world we live in, even though the mathematician may in fancy soar beyond it with his soap-bubble abstractions. One simple and sufficient proof that Jeans cannot imagine, much less picture, a world of "pure thought" is the fact that throughout his deep-water discussion he is forced to use decidedly material similes. His comparison of the world with a soap bubble is, for that matter, quite irreconcilable with his spiritual philosophy. Thin and evanescent as it is, a soap bubble is nevertheless very material. There is nothing in the least spiritual about it and it is far removed from Jeans' "pure thought."

Then, again, Jeans compares life to a game of chess—a comparison meant to show that life was designed as an intelligent and mathematical procedure. But certainly in a game of chess the chessmen are necessarily material; and the players of the game—must they not have material brains and material hands wherewith to make their plays? I do not know, by the way, of anything less illuminating than such comparisons; obviously, to say that life is like a game of chess is to tell us really nothing about life; here we perceive only a rather poor effort to import a style and gesture of impressiveness into the writer's lack of knowledge. Elsewhere Jeans likens the phenomena and actions of life to shadows cast on a cave wall; or rather he borrows this notion from Plato (the farther away from science and into the past Jeans goes, the more at home he seems to feel). This again is a quite unilluminating picture; and it does not, any better than the chess picture, bear out the theory of a spiritual meaning in life. Shadows must be cast by material objects. They must be seen by spectators with material eyes. They must be reflected on a ma-

Here is an interesting surprise for our readers—on February 7 we will issue The Joseph McCabe Special Edition of The American Freeman. This Special Edition of February 7 will be devoted entirely to the ideas and the great popular educational work of Joseph McCabe—a work which, as our readers know, has been planned and sponsored on a large scale in America by the Haldeman-Julius Publications. McCabe will be the star of this Special Edition—or rather McCabe's ideas will be the galaxy of stars.

It is a tribute which the man himself deserves in full measure. No man is better entitled to the name of The Modern Enlightener. Joseph McCabe undoubtedly represents and expresses with complete, brave, hopeful interpretation the progressive, humanistic spirit of the modern age. He has the emancipated—the scientific—viewpoint on every subject: on religion, on government, on morals, on history, on the larger problems of the universe which concern man and his future. There are, in McCabe's great works of rationalism, no holdovers of muddled sentiment and prejudice from a past age. He knows the past thoroughly—none better—and he is intelligent in taking what is demonstrably best in the past and fitting it into the expanding picture of the modern age. Progress is not an abstraction to McCabe, but it means something real through which mankind can win its way to sanity, civilization and collective happiness. As a leader of the thought of mankind, Joseph McCabe merits the very largest following. All men should know his works and be enlightened by the immense range of humanized knowledge which he offers.

It is the purpose of The Joseph McCabe Special Edition to emphasize in a new and impressive way the importance of this man who is called the world's greatest scholar—to stimulate our readers to a reawakened and more determined interest in the works of McCabe—and to enlarge the influence of McCabe by introducing him to new readers who have not yet had the opportunity of fully contemplating his significant, modernizing work. It is deeply deplorable that there is not in America a wider appreciation of this great popularizing scholar—of Joseph McCabe the Modern Enlightener. We feel the greatest appreciation and admiration for the alert, sensitive minority who have responded to the work of McCabe and have been steady readers of McCabe. They have made it possible for the Haldeman-Julius Publications to promote the educational campaign—a campaign without parallel in its progressive, daring scope—which Joseph McCabe and E. Haldeman-Julius together have outlined. But this support has been inadequate and far from the extent of recognition and response which McCabe deserves; and the economic depression has affected rather badly, has indeed threatened, our socially valuable McCabe educational program.

Of recent months McCabe has been relatively neglected by our readers—it has been more difficult to keep this educational work going—and yet McCabe has been during these recent months engaged in turning out the greatest work of his lifetime. He has been writing in The Joseph McCabe Magazine the most thrilling and thoughtful series of popular cultural works, such as *The Story of Human Morals* and *The Rise and Fall of the Gods and One Hundred Men Who Moved the World*. Unless our plans fail, this program of enlightenment will continue in a future series of works in which the broadest and richest scholarship will be made accessible on plain, understandable, useful terms to the masses who are readers or potential readers of McCabe.

And, frankly, The Joseph McCabe Special Edition of February 7 is a big effort which we are earnestly making to keep our plans for McCabe educational work from failing. We strongly urge our good, loyal readers to bring us in an extra large circulation for The Joseph McCabe Special Edition, so that our educational plans for McCabe's work will be able to go right ahead successfully, and thus the cultural opportunity of the masses will be maintained at the high level established by the Haldeman-Julius Publications.

And let us assure you that The Joseph McCabe Special Edition will be a very interesting issue of The American Freeman. How could it help being? We will, in this Special Edition, give a very thorough and inspiring representation of the ideas of Joseph McCabe. The material for this Special Edition will be freshly written in The Freeman offices, but it will all be based upon the works and the leading ideas of McCabe. We shall tell in our own language and necessarily (as compared with the immensity of McCabe's work) in brief what are the thoughts and policies and the nature of knowledge for which Joseph McCabe stands as the Modern Enlightener. McCabe the man will also be made the subject of a brief biographical and personal study and there will be a short account of the unique educational venture in which Joseph McCabe and E. Haldeman-Julius have cooperated during the past five years. The Special Edition will also contain a personal message from Joseph McCabe to his readers in America—especially, that is, to the Haldeman-Julius readers who have so intelligently given McCabe his audience in this country.

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Continued on page two

Jeans' "Mathematical God"

Continued from page one

terial surface. The handicap from which Jeans suffers in his mystical efforts is that, in affirming a universe of "pure thought," he must use objective similes and comparisons. In other words, he finds no peg upon which to hang his assumption of "pure thought" and a "mathematical God" which is not, unescapably, a materialistic peg.

The Reality of Matter

And Jeans, although he says that the universe "can best be pictured as consisting of pure thought," does not press this metaphysical reasoning to the limit by denying the substantial reality of matter. "Objective realities exist," he says, "because certain things affect your consciousness and mine in the same way." He adds that we have no right to assume that these objective realities are either real or ideal—the lines between real and ideal, he says, are blurred. Jeans is pretty vague in this attempt at a semi-distinction; what he seems to say is that material things are objective but they may not be entirely real or that we can't tell when they cease being real and become ideal; and that, if I may be pardoned for such a blunt dismissal of the thought of a subtle mathematician, doesn't make sense. It would seem that Jeans wants to have his conception of pure thought and his conception of materialism together; but he doesn't try to reconcile them—he simply makes an assumption far more temerarious than the one which he says we have no right to make.

"The label we have selected," continues Jeans, "does not of course relegate matter into the category of hallucination or dreams. The material universe remains as substantial as ever it was, and this statement must, I think, remain true through all changes of scientific or philosophical thought." This is a reassurance to realists, even though it does not lie perceptibly well with the Berkeleyan spiritism which, in another mood of mathematical fantasy, Jeans unfurls as virtually the banner of his faith. He hastens to add, however, that "substantiality is a purely mental concept measuring the direct effect of objects on our sense of touch." Thus, to illustrate, "We say that a stone or a motor car is substantial, while an echo or a rainbow is not. This is the ordinary definition of the word, and it is a mere absurdity, a contradiction in terms, to say that stones and motor cars in any way become unsubstantial, or even less substantial, because we now associate them with mathematical formulae and thoughts, or kinks in empty space, rather than with crowds of hard particles."

This is not quite clear. Does the man intend to say that stones and motor cars are no longer associated with "crowds of hard particles"? The fact that physicists have refined and subtilized their investigations into the world of matter to the point where, their knowledge being yet so uncertain and tentative, they must resort to mathematical formulae—this fact, does not seem to invalidate the fact, more immediately and easily perceived by our senses as well as by scientific examination, that stones and motor cars are indeed "crowds of hard particles." Certainly such material objects or, as Jeans concedes, objective realities are not merely theoretical expressions in mathematical reasoning or pure thought. He seems (I use the word "seems" frequently because Jeans' thought is often vague and I am not sure what he means) to deny in one breath and to assert in the next breath the materiality of objective realities.

If I may offer a humble suggestion, I should point out that this mathematical mysticism is a product of the confusion of matter in different stages of development or in different forms. An elephant, for example, is a far more obvious and solid—or, that is to say, a far larger—body than a microbe. Yet both are material enough. It would be foolish to say that, after discovering microbes, we must think of elephants in microbian formulae. Equally it is to intimate that the realistic perception of matter in "crowds of hard particles" is somehow less important or sure because science has discovered matter in more refined, subtle and elusive forms. It is all real (ma-

terial) and we can deal with it only on the terms of material reality.

Reality, "Ultimate" and Plain

Quite in the lofty tradition of metaphysics, Jeans says that the label of mathematics or the label of pure thought which he applies to the universe "does not imply anything as to what things are in their ultimate essence, but merely something as to how they behave." Metaphysicians have always been lured by the fancy of the thing-in-itself; they have not been satisfied with the sensory knowledge, either present or possible, which man might have concerning the phenomena of life; back of all that we can possibly know about things, according to the metaphysical view, there is a secret, ultimate reality of things-in-themselves, meaning presumably a reality that is independent of actual characteristics which can be apprehended by material methods of scrutiny. This is a metaphysical problem which we can well dismiss and which has never been clarified by all the discussion given to it in philosophy; it is more a mental exercise, a pastime of philosophical dialectics, than a genuine search for reality. Practically speaking, one may say that the term "ultimate reality" conveys no significance excepting that of knowledge yet to be gained—in the same way, too, that our present knowledge has been gained. Plain reality, as we know it, is the field of investigation of science to date; "ultimate reality" is the field of investigation which science will cover in the future. It is no better than a trick of language to suggest a distinction between downright, ordinary reality and what Sir James, parroting a long line of metaphysicians, calls "ultimate reality."

In dealing with simple reality, Jeans has a way of dropping into a vein of analogy which at times seems to imply that nothing is real but that "two things may have the same degree, or different degrees, of substantiality." Thus real and imaginary contacts, waking and dreaming experiences, are, he suggests, different only in their degrees of reality. He illustrates: "If I dash my foot against a stone in my dreams, I shall probably waken up with a pain in my foot, to discover that the stone of my dreams was literally a creation of my mind and of mine alone, prompted by a nerve impulse originating in my foot." I don't remember that any dream of mine left such a real evidence upon my awakening; but in any case, Jeans is wrong in saying that the stone was real or that it was "literally a creation"; what was real, evidently, was the nerve impulse and the foot itself and, let us say, a subconscious memory of real stones encountered in waking moments. No amount of analogies from dreamland or from the land of waking fantasy or illusion can win logical emancipation from the fact that, whatever the dream or the illusion or the idea or the mathematical formula, it must have a material origin and basis. "Pure thought" is an expression of the inconceivable which is, for all practical purposes, the impossible.

The stone in a dream, admits Jeans, "is clearly less substantial" than a real stone which one might kick when awake: I should say so—yet this is a rather handsome concession for a metaphysician (in the odd moments when he is not a physicist) to make. From the dream stone, however, Jeans leaps far into the cloudy realm of abstraction; at least that is what he appears to do, although really I should say that he merely writes a sentence which is shimmeringly meaningless. He says: "Creations of an individual mind may reasonably be called less substantial than creations of a universal mind." Reasonably? I am sure the word "reasonably" is quite out of place in that mystical sentence. I have no conception of individual minds creating anything except in an artistic sense; and a universal mind doesn't suggest a thing to me—and does it truly suggest anything more than a couple of high-sounding words to Jeans? Mysticism as mirror-like as mud is all that I find in the accompanying references to "the space of the universal mind" and "the time of the universal mind" and "the laws of thought of a universal mind." This is assumption gone wild. It is a reckless flinging about of words which convey no concrete picture and which have no relation to anything that we know.

"Universal Mind" and Moonshine

Deep waters? Jeans is not deal-

ing with anything as substantial as water. On the other hand, it may be said that he is (and this necessarily defeats his declared metaphysical purpose) dealing with substantial things even though he distorts them into irrational images. Thus to speak of a universal mind he must have before him the example of an individual human mind; and to realize the human mind he must know that it is physically expressed in a human brain; and to the human brain he must add all the physiological equipment which makes up the organism and he must further add all the objective realities which stimulate his brain to action. In short, Jeans can be mystical and metaphysical only in words; actually he is compelled by the nature of things to draw all his ideas and images, however fantastically he may twist them about, from the material world. Even his soap bubble, as I have pointed out, must be real and material although it is not as heavy, not as solid, not as lasting as a bar of soap.

It is important that Jeans does not suggest how a mind can operate or can exist at all without a material brain; indeed, "mind" itself is probably a metaphysical term, falsely implying a separate or superior reality distinct from the brain; or, if linked with the brain, having a character that is not material. But the tendency of psychological, combined with physiological, research is to identify the mind with the brain—the brain being the mechanism and the mind being the functioning of that mechanism. If, then, Jeans assumes the existence of a God who is a pure mathematician and of whose mind the universe is but the created thought, we naturally inquire about the brain of this God. Pure mind is as fantastic a notion as pure thought—they amount, indeed, to the same nothingness of metaphysics. And if the universe is "pure thought," is Jeans' God also "pure thought?"

Following him deeper into the waters of speculation, we find Jeans saying, with a defiance of lucidity which is almost admirable, that "if the universe is a universe of thought, then its creation must have been an act of thought." We are almost compelled, he says, "to picture the creation as an act of thought." And he goes on to this flabbergasting and flagrantly unjustified assertion: "Modern scientific theory compels us to think of the creator as working outside time and space, which are part of his creation, just as the artist is outside his canvas." The simile of the artist and the canvas reminds us again of how far beyond his depth is Jeans in his floundering endeavor to construct an image of a "mathematical God." He shows in every line that such an image is quite as inconceivable to him as it is to the rest of us, for he relies again and again on very much simpler and more concrete images. He is forced to fabricate his mysticism out of the humblest of materials. Can his mysticism rise higher than its source in materialism? The only reality in Jeans' idea of a "mathematical God" is the reality contained in the familiar images and illustrations upon which he depends; certainly there is no reality in the meaning which he seeks to import or pretends to import into these images. He tells us precisely nothing about his "mathematical God"—and we conclude that he knows nothing about this God.

Jeans Contradicts Himself

There is also a lack of consistency or candor in Jeans' assertion that "modern scientific theory compels" us to believe in this "mathematical God" working (that is to say, thinking) outside of space and time. I have both quoted and italicized that statement in order that its boldness may be fully appreciated. The statement is denied, a few paragraphs farther on, by Jeans himself. He admits that "everything that has been said [by him] and every conclusion that has been tentatively put forward is quite frankly speculative and uncertain." This is far, far different from the statement that "modern scientific theory compels" us to accept Jeans' metaphysical conclusions. Jeans even more definitely contradicts himself when he says (italics mine): "So that our main contention can hardly be that the science of today has a pronouncement to make, perhaps it ought rather to be that science should leave off making pronouncements." It is impossible for a mystic to write clearly or consistently; and the task is tremendously more difficult when a man

tries to blend science and mysticism. Jeans says one thing on one page, and on another he says exactly the opposite. He is indeed "speculative and uncertain." There is a more amazing contradiction between the last chapter and the first chapter of Jeans' book. So far apart are these chapters in their viewpoint, they read as if they had been written by two different men. In the beginning of his book, Jeans is devastatingly skeptical of all metaphysical or religious conclusions about the universe and he advances certain scientific views which annihilate all of the mystical guesswork which he parades in his last chapter. He elaborates, for instance, the idea that the universe is hostile not merely to man but to life itself. This is shown by the infinitesimal place which life has in the universe. "Life can only exist," we are told, "inside a narrow temperate zone which surrounds each of these fires [stars or suns] at a very definite distance. Outside these zones life would be frozen; inside it would be shrivelled up. At a rough computation, these zones within which life is possible, all added together, constitute less than a thousand million-millionth part of the whole of space. And even inside them, life must be of very rare occurrence, for it is so unusual an accident for suns to throw off planets as our own sun has done, that probably only about one star in 100,000 has a planet revolving around it in the small zone in which life is possible."

This doesn't have the appearance of a universe designed for the promotion of life, does it? Life is a lucky accident—or an unlucky one, if you happen to feel that way. It follows that the egoistic theories of theism and immortality and the like, which man has evolved for his own satisfaction, are sheer delusions. There is no miracle of eternal life to consecrate the outcome of an accident. If man is an accident (life itself being an accident), there is no God-conceived design of immortal purpose and supernatural triumph for accidental man. Jeans points out that "it seems incredible that the universe can have been designed primarily to produce life like our own; had it been so, surely we might have expected to find a better proportion between the magnitude of the mechanism and the amount of the product." He adds: "At first glance at least, life seems to be an utterly unimportant by-product; we living things are somehow off the main line."

Smashing His Own Image

We at once ask what this does to Jeans' "mathematical God." And it is clear that Jeans smashes his image even before he has shaped it and set it up. He lays down stern, relentless conclusions of science in his first chapter which entirely destroy the metaphysical theorizings with which he diverts himself in his last chapter. In the first place—and this comment should be enough—a "mathematical God" designing a universe on the lines of pure mathematical thought would not stumble into accidents. Such a God would be precise and thorough. He would know exactly what he was about and the word "accident" would not be found in his vocabulary. The paradox is still more grotesque when we observe that man, the accident, alone is capable of thinking in terms of mathematics and perceiving or himself arranging the mathematical explanations which, mistaking his own ideas for the ideas of God, Jeans interprets as pointing to a "pure mathematician" as the God-designer of the universe. I repeat strongly that a universe of accidents and a universe of pure mathematics are irreconcilable assumptions.

And Jeans upholds the accident view with all the skeptical conviction of a scientist who is soberly far removed (while writing his first chapter) from the lure of lush and purple metaphysics. Even our earth is relatively insignificant and was the product of an accident—a purely fortuitous nearness of another star to our sun, which attracted out into space the material that formed our earth. The earth, on the scale of the universe, is comparable to "a millionth part of a grain of sand out of all the sea-sand in the world." And the universe "appears to be indifferent to life like our own; emotion, ambition and achievement, art and religion, all seem equally foreign to its plan." It is not enough for Jeans, in expressing his scientific skepticism from his metaphysical attitude, to use the word "indifferent." He says more impressively:

"Perhaps indeed we ought to say it [the universe] appears to be actively hostile to life like our own. For the most part, empty space is so cold that all life in it would be frozen; most of the matter in space is so hot as to make life on it impossible; space is traversed, and astronomical bodies continually bombarded, by radiation of a variety of kinds, much of which is probably inimical to, or even destructive of, life."

It is a universe of blind chance in which things, without design or destiny, behave in certain ways which we are able to learn and which we conveniently represent in the form of laws; but laws of nature are merely our descriptions of the way that nature operates. If man is an accident (and no other view is reasonable under the circumstances), then it is certain that God and immorality and all the rest are merely dreams and that as man came into the world without purpose so the human race will go out of the world without purpose, save as it develops its own schemes of purpose for the better management of this limited life. "Into such a universe we have stumbled," says Jeans, "if not exactly by mistake, at least as the result of what may properly be described as an accident." The accident of the earth's formation and development need not occasion surprise, because, says Jeans, "accidents will happen, and if the universe goes on for long enough, every conceivable accident is likely to happen in time."

Accident Rules Out God

So firmly is Jeans convinced of the accident theory of life (and this is the same man, remember, who argues for a "mathematical God" at the end of his book) that he expresses it in the strongest possible way as follows: "It was, I think, Huxley who said that six monkeys, set to strum unintelligently on typewriters for millions of millions of years, would be found in time to write all the books in the British Museum. If we examined the last page which a particular monkey had typed, and found that it had changed, in its blind strumming, to type a Shakespeare sonnet, we should rightly regard the occurrence as a remarkable accident, but, if we looked through all the millions of pages the monkeys had turned off in untold millions of years, we might be sure of finding a Shakespeare sonnet somewhere amongst them, the product of the blind play of chance. In the same way, millions of millions of stars wandering blindly through space for millions of millions of years are bound to meet with every sort of accident, and so are bound to produce a certain limited number of planetary systems in time. Yet the number of these [planetary systems] must be very small in comparison with the total number of stars in the sky."

I cannot imagine a more devastating statement of the accidental character of all theistic theories whether of a "mathematical God" or of a God fashioned in the image of any other type of human mind. What happened to Jeans between the writing of his first and his last chapter? Or is this merely another queer case—queer and yet so commonplace—of one part of a man's mind contradicting another part? No sort of God has any place whatever in the universal "scheme" which is outlined, with scientific skepticism, by Jeans in the beginning of a book which ends with a fog of mysticism. If the world and man and life are accidents, that alone is tremendously enough to rule out the possibility of a God. This is especially a severe contradiction of Jeans' own notion of a "mathematical God."

And the human race is doomed—not soon enough for the present generation to be alarmed but in millions of years. According to physical laws (or the inflexible behavior of nature) known to science, the earth cannot support life eternally. Jeans affirms this with a calm and realistic eloquence and thus administers another jolt of destructive logic to his subsequently suggested theory of a "mathematical God." He says that "it is the tragedy of our race that it is probably destined to die of cold, while the greater part of the substance of the universe still remains too hot for life to obtain a footing." And how will this come about? Not as the demonstration of a perfect mathematical theorem, nor yet as an exercise in pure thought, but, "The sun, having no extraneous supply of heat, must necessarily emit ever less and less of its life-giving radiation, and, as it does

so, the temperate zone of space, within which alone life can exist, must close in around it. To remain a possible abode of life, our earth would need to move in ever nearer and nearer to the dying sun. Yet science tells us that, so far from its moving inwards, inexorable dynamical laws are even now driving it ever further away from the sun into the outer cold and darkness. And, so far as we can see, they must continue to do so until life is frozen off the earth, unless indeed some celestial collision or cataclysm intervenes to destroy life even earlier by a more speedy death. This prospective fate is not peculiar to our earth; other suns must die like our own, and any life there may be on other planets must meet the same inglorious end." How can a "mathematical God" be fitted into that picture?

Jeans Versus Jeans

A complete basis for atheism is laid by Jeans in the first chapter of his book. He knocks out the creation idea, the idea that the universe was designed for the promotion of life, the idea of man's peculiar importance (in a theistic view) and immortality, the idea of a "far-off divine event toward which the whole creation moves"—and he dismisses the idea of "soul" or "vital spirit" quite as positively. He says: "Today one phenomenon after another which was at one time attributed to 'vital force' is being traced to the action of the ordinary processes of physics and chemistry. Although the problem is still far from solution, it is becoming increasingly likely that what specially distinguishes the matter of living bodies is the presence not of a 'vital force,' but of the quite commonplace element, carbon, always in conjunction with other atoms with which it forms exceptionally large molecules."

Although Jeans in his last chapter speaks of the mechanistic view as having been abandoned, he sets forth in his first chapter the very strongest reasons for accepting the mechanistic view as true. And when we say "mechanistic" we do not mean crudely or narrowly that everything is constructed and behaves exactly like an ordinary machine that man has made; what we mean, more broadly, is that real material agencies account for all phenomena; we mean, in a word, the opposite of spiritism or vitalism. And mathematics, which Jeans tries to interpret mystically, deals with material and not with spiritual questions. There is no mathematics of "spirit." There is no mathematics of a God.

In another place (also in his first chapter) Jeans aims this other annihilating blow at his image of a "mathematical God," as follows: "An omnipotent creator, subject to no limitations whatever, would not have been restricted to the laws which prevail in the present universe; he might have elected to build the universe to conform to any one of innumerable other sets of laws." Good material for a debate could be arranged under the heading of Jeans versus Jeans. The man himself brings forward the most destructive objections to his own theory of a "mathematical God." If the first chapter and the last chapter of Jeans' *The Mysterious Universe* were printed in parallel columns, one would completely cancel the other; and for his attitude of skeptical realism Jeans has the convincing evidence of science, while for his later attitude of mathematical mysticism he has no evidence whatever nor

even a reasonable idea of what he is driving at—he cannot, that is to say, present us with a faintly conceivable image of this "mathematical God," but instead engages in a shadow dance of far-fetched verbiage and imagery.

The "Theology of Gaps"

What seems to be the trouble with Jeans is that he ventures verbally (though he could not go actually) beyond the limitations of present scientific knowledge. Discussing scientific realities, he feels himself on pretty sure ground and what he says is comprehensible and convincing; but when he turns his back on these realities and begins to speculate without any real basis of evidence—indeed, without anything more than his own mood to guide his speculation—he quickly loses himself in the shadows of mysticism. Like so many other theists, Jeans too leans heavily on the "theology of gaps." All that he says about his "mathematical God" and the contrast that he suggests between mathematics and mechanics is evidently inspired by his ignorance rather than by any clear theory. His ignorance is, of course, our ignorance; we are all limited by the boundaries of human knowledge and we can only advance with that knowledge as science leads the way.

Jeans points to the dark field which science has not fully reduced to terms of concrete understanding and he says: "There is God." And as he frames his speculation in mathematical symbols and imagery, he therefore adds that this God of ignorance is a "mathematical God." It is the deficiency of his knowledge (a deficiency which he shares with all of us) which prompts him to say that "our efforts to interpret nature in terms of the concepts of pure mathematics have, so far, proved brilliantly successful. It would now seem to be beyond dispute that in some way nature is more closely allied to the concepts of pure mathematics than to those of biology or engineering, and even if the mathematical interpretation is only a third man-made mold, it at least fits nature incomparably better than the two previously tried." But the fact seems more significantly to be that, whereas biology and mechanics have worked out as brilliant explanations in the fields of knowledge that have been definitely traversed by science, mathematical symbols have had to be used where the knowledge of science is yet vague.

Jeans himself admits that the indefinite realm of speculation in which he disports himself mystically and in which he puts his symbolic mathematics is still to be investigated and, in discussing what he calls "the law of probabilities" as verbally distinguished from the old law of cause and effect, he suggests that these images and reflections are probably or at any rate possibly due to an incompleteness of knowledge. He says: "When we speak in terms of probabilities in ordinary life, we merely show that our knowledge is incomplete; we may say it appears probable that it will rain tomorrow, while the meteorological expert knowing that a deep depression is coming eastward from the Atlantic, can say with confidence that it will be wet. We may speak of the odds on a horse, while the owner knows it has broken its leg." In the same way, the appeal of the new physics to probabilities may merely cloak its ignorance of the true mechanism of nature." This is

[Please turn to page four]

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Why I Reject the Idea of God

By Julian Huxley

[Professor Huxley is a distinguished biologist and grandson of Thomas Huxley, the famous Victorian evolutionist and defender of Charles Darwin.]

I had occasion recently to remark in a public address that to many people whom orthodox religion does not satisfy, a religion without God might, I thought, make appeal. Then, of course, followed a storm.

But what disturbed me was not the abuse or the imputations that I was not quite right in the head, but the almost universal misconception and incomprehension of what I was after—indeed, of the essence of the problem I had tried to state.

First of all, I believe that religion is a function of human nature.

By this I mean to assert simply that, during the development of life on earth, religion did not appear before the evolution of human beings; but that, once they had appeared, religion of some sort was the inevitable result of their nature interacting with their experiences of the world around them.

The corollary of this is that the idea of revelation, in the sense of verbal inspiration or revelation of complete truth, is false (and, if false, therefore immoral).

Religious inspiration exists, but is not different in kind from poetical or mathematical inspiration; it is natural, in fact, not supernatural. With this most liberal divines would, I fancy, be in agreement.

Next point: the essence of all true religion is the feeling of what, for want of a better word, I will call sacredness. The only alternative is to use the word *Numinous* (from the Latin *numen*, a divinity) coined by Dr. Otto, the German theologian, to denote the specific religious emotion.

Sir Arthur Thomson, in a broadcast talk on Science and Religion, said that man became religious when he had stretched his tether—his intellectual, practical, or emotional tether—to the limit.

There is a great deal in this; but it is not enough. Some men, when they are at the end of their tether, wish only, as did Job, to curse God and die.

Others are so frightened of the immensities—not merely of fate and the unknown outside them, but of the immensities within their own beings, the surging violent capacities for suffering or joy or other depth of feeling which, repressed under convention, occasionally reveal themselves—that they back off, to forget about immensity in dissipation or routine.

The End of the Tether

It is only when, having reached the end of his tether, man faces the immensity beyond and faces it with the aid of this feeling of sacredness that he becomes religious.

It is then that he can convert violent despair, not into blasphemy or revolt, but into religious sorrow or resignation; can make of the secrets of the universe, where our knowledge confronts our ignorance, a sacred mystery; can redeem his excess of joy from sinking into mere pleasure by tinging it with awe; can convert his baffled, pedestrian morality, which sees, well-meant, efforts come to nothing or turn accused, or finds good springing out of evil or out of pain, into a winged and aspiring quest, pursued with the aid of a religious faith.

This it is to be religious; and I am merely stating a fact of experience in asserting that man can do this without thinking in terms of a God or gods.

But we westerners have been used to thinking in terms of a God-theology for so long that it needs a great intellectual effort to see how one could possibly think about religion in other terms, and this is where the difficulties begin.

For we cannot help thinking about our religious experiences, trying to fit them into some general scheme of things, some idea of the universe and its workings; and the result of that thinking, when organized so as to reach above the level of mere religious fable or myth, we call theology.

Unfortunately, as history abundantly shows, the intellectual interpretations of a theology too often become mistaken for the vital essence of a religion; the theology becomes itself sacrosanct, refuses to grow, and so in the long run either kills the living spirit of religion within, or has to be shattered as that living spirit grows

and bursts the house that had become a prison.

And when a theology has become sacrosanct, it needs a moral as well as an intellectual effort to subject it to dispassionate analysis. Dispassionate analysis, however, is the business of science; and just insofar as theologians embody truth, they have nothing to fear from science.

I take it everyone would agree that in primitive religions we can see how men have embodied in their gods various ideas drawn from themselves and the world around them.

Sir James Frazer's exhaustive book on *Myth and Folklore in the Old Testament* shows how our own religion has its roots in such ideas.

Four Ideas of God

If we apply the same methods to our own theology I believe that we shall find that we have compounded in our current views of God a number of ideas that are as definitely drawn from ourselves and the world around us as those of primitive religions.

There is, for instance, first the idea of power, drawn from the impersonal forces of nature.

Secondly, the idea of a creator, reposing on the fact that we want to account for the existence of the world.

Thirdly, the idea of personality (or something akin to it, though superior), drawn from our experience of human personalities; this includes our attribution to God of love and wisdom, and of the capacity to respond to our personalities when they aspire to Him.

Fourthly, the idea of absolute and eternal qualities, drawn from our method of thinking in terms of abstract ideas such as goodness, truth, justice, beauty, and so forth.

The theologian would, I suppose, say that this is quite natural, since, being imperfect creatures, we can only think of God in inferior terms, drawn from the temporal world. But this seems to beg the question; to my mind, the issue is as follows:

Is there a God of personal or spiritual nature of whom we can have real and direct though imperfect knowledge, with whom we can have real and direct though imperfect contact?

Or is there a God behind phenomena whom we can never know directly, but of whom we glean indirect knowledge from our knowledge of the world, whom we can never reach, but toward whom we can dimly grope?

Or, finally, is our religious knowledge and experience as direct and vital as it seems and as Christian orthodoxy asserts, but is our interpretation of it, in terms of a spiritual being outside of us, at fault?

Is, in fact, the idea of God which man has constructed the only God that matters, and if so, is not the term God misplaced?

The first is the ordinary theological view. The second is what I may call the philosophical view. Whether it be true or not, I must confess that it seems to me to have little vital importance for religion.

A God who is only a Creator and then leaves the world to run itself; a God whom you deduce intellectually but with whom you can make no direct contact; a God who may be a philosophical necessity but who remains always hidden behind phenomena—such a God has no real connection with the God whom the religious man worships, to whom he prays, with whom he enters into communion.

To apply the term God to both is to use the word in two wholly different meanings.

The Mystic Experience

It is the third alternative which to me personally seems the correct one.

In this view the realities of religious experience remain real, remain valid; but they need not be interpreted in theistic terms.

The sense of dependence upon power greater than self; the feeling of mystic union with the driving forces of reality; conversion; grace; the sense of sin, and of forgiveness for sin; atonement, direct and vicarious; prayer, not in the sense of petition but of meditation guided by aspiration; worship, not in the sense of propitiating a divine being but of celebrating the mystery of existence in the beauty of holiness—all these are spiritual realities which cannot be denied, and are demonstrably of the greatest importance in the spiritual progress of concrete human beings.

But they will continue to exist

whether we choose to explain them in terms of a personal God or not.

Evelyn Underhill, in her remarkable studies of mysticism, claims that the sense of union with the divine nature, as recorded by many Christian and other mystics, is an immediate experience of God, a proof of his independent existence as direct and simple as is the proof of the existence of a tree by our seeing or touching it.

To me, however, the experience seems on a wholly different level of complexity and indirectness.

What we know of psychology assures us that, if the idea of an external personality is already consciously or unconsciously at the back of our minds, we shall almost inevitably mold our experience in accordance with that idea. If so, then our thoughts on the power and mystery of nature; our discovery of unexpected heights and depths in our own being (you remember Wordsworth's "High instincts before which our mortal nature Did tremble like a guilty thing surprised"); our aspirations; our capacity, through spiritual effort, for reconciling apparent contradictions in peace or love—all these and other motions of our spirit, becoming blended in complex unity, can take shape (as our sleeping thoughts take shape in dreams) in the organization provided by our idea of an external divine personality.

Do not let us forget that the same thoughts can take other shapes under the influence of other ideas.

A nature-mystic like Richard Jefferies experienced them in the woods and fields, and could only say that to him the reality they apprehended was above God.

The Buddhist mystic has a wholly different interpretation from the Christian's.

Through poetry and music, or through love, some people can arrive at essentially the same kind of experience, leading to results of equal spiritual value for them.

Religion Without Theology

My point is that even without the idea of an independent unitary God the religious mystic could still attain his experience of communion with a reality greater than himself, although the precise form in which his experience cast itself would be somewhat different.

And so with all other religious experience and practice; it, too, can persist, whatever your theological mold.

It is an interesting and, I think, a profitable spiritual exercise to take current religious activities and try to see with what transposition of key, so to speak, but what continuity of real value, they could persist in a theological scheme which set out from the assumption that the ordinary idea of God was derived from a number of separate aspects of experience, each real and true in itself, but irreconcilable in combination.

Nothing could be further from the truth than that I am making a deliberate attack upon religion.

On the purely personal side I happen to have found that, whereas the ordinary theological ideas had all through my early life stifled and stood in the way of my natural religious impulses, these other ideas at which I gradually arrived for myself allowed me to satisfy them much more freely and fully.

But, quite apart from any such individual considerations, it seems to me that if religion sticks to the ordinary theistic interpretation it may find trouble ahead.

The trouble is one that has been getting more and more imminent for some centuries; it is the danger that God will grow so remote that, if religion means thinking in terms of God, people will cease to trouble about religion.

I am talking of God in the sense of a separate being of spiritual nature who in some real sense controls or participates in the affairs of the universe in general and human destiny in particular.

Newton and all later physics have made it superstitious and, indeed, impossible to imagine such a being as controlling the working of lifeless matter.

Darwin, and later biology, makes it equally superstitious and impossible to imagine him as designing living creatures, including man.

And today Freud, Jung and Pavlov and the rest of the psychologists and neuro-physiologists are doing the same for the realm of human mind and spirit.

It is possible still to introduce

the idea of such a being in the guise of original Creator; but a Creator who simply sets the whole machine going and then does no more about it is hardly a present refuge in time of trouble.

For me, what matters is spiritual and religious experience, through which common life can become sacramental and receive a direction or a goal.

And it seems to me that by returning to the facts of spiritual experience, accepting them as what they are—direct and immediate reality—and not trying to force them into theological con-

A Reply to Professor Huxley

By Dean Inge

"Religion Without God."—Such was the title the newspapers made of a lecture by Professor Julian Huxley at Conway Hall. His own title was "Science, Religion, and Human Nature." Far be it from me to judge anybody by these picturesque headlines.

I have suffered too much from them myself. The other day a member of Parliament horrified me by expressing regret that I am in favor of companionate marriage. I have to thank a daily paper for this.

What I had really said was that if people do not accept the Christian view of marriage, they ought not to be married in church.

The professor now protests that he did not intend an attack on religion, and obviously he did not. He points out that some religions, like Buddhism, have no personal God.

But he did speak of "dismantling the theistic edifice, which will no longer bear the weight of the universe, and attempting to find other outlets for the religious spirit," and of "abandoning the idea of God as a single independent power with a nature akin to personality."

He does not believe in a Being "who can survey from outside the world He has made, who can be pleased or wrathful, who can purpose or plan, who sent His Son into the world to save sinners."

In place of all this, he would like to see a religion "with a scientific basis and outlook."

It is quite useless to discuss belief in God until we have explained what we mean by God.

Dogmatic atheism—the position of a man who says, "Whatever you mean by God, I don't believe in Him"—is an unusual attitude except in Bolshevik Russia.

But both philosophers and scientists, with the most praiseworthy intentions, are rather too fond of using the word in senses of their own.

F. H. Bradley, the great Oxford thinker, said that philosophers call the apex of their dialectical pyramid God, "because they don't know what the devil else to call it." (I seem to hear some pluralist, like my friend, Dr. Schiller, saying, "Yes, Dean, and when you Platonists come to something which is obviously too many for you, you call it the One." But we will let that pass.)

Scientific writers sometimes do the same. The famous Gifford Lectureships in Scotland were founded for the discussion of natural or rational religion.

But one or two courses that I have read have been pure natural science—very good natural science, as far as I can judge—and then in the last lecture out comes the Deity unexpectedly, like a rabbit out of a hat.

What Does "God" Mean?

We want to know whether "God" means the intelligent creator and ruler of the world, or a spirit among other spirits, or the slowly developing self-realization of the Absolute, or the ideal standard of moral effort.

To use the same word for all these very different ideas is rather confusing.

We may therefore be grateful to Professor Huxley for stating so clearly that when he says "God" he means an intelligent and conscious Spirit, distinct from the creation, and capable of will and purpose.

Of course, he is not correct in saying that a God who "created the world and leaves it to run itself" is "the God of philosophy."

This view, which is technically called Deism, has very little philosophical backing.

The question really is whether science excludes the intelligent and purposeful God of Christianity.

ceptions which, however essential in their time, are now more and more difficult to reconcile with the rest of our outlook, we shall be doing not a disservice but a service to religion.

We shall have to admit a greater ignorance; a lesser certitude; but, in return, we shall get back from hunting a God who seems to retire further and further from us into a philosophical existence behind phenomena, to the rich and living play of spiritual reality engendered by the contact of the human spirit with the concrete world around us.

These men did not call themselves materialists; they disliked the name. But they did all their serious thinking in terms of mechanism.

That is reality which can be weighed or counted. The world of mind, or, as modern philosophy more often calls it, the world of values—art, philosophy, religion, and I think we may add, of science itself—floats like a luminous haze over the "real" world of measurable and ponderable things, not affecting it at all.

The theologians, such as Gladstone in his controversy with Thomas Huxley, defended their position so clumsily that the victory seemed to be with mechanical science all along the line.

But the pundits of science did not treat their opponents fairly. Their attitude towards such acute objectors as the Roman Catholic Mivart and that brilliant free lance, Samuel Butler, was like the attitude of an old-fashioned bishop to an obscure layman. They brushed aside their arguments as the objections of impudent and ignorant amateurs.

Still less did they meet the philosophical objection that mechanism, an abstract theory valid for certain purposes, leaves out half the things which, if it aspires to be scientific and philosophical, it is bound to explain.

The Higher Interests of the Mind

It cannot explain any of what men have agreed to call the higher interests of the mind, except by explaining them away.

And there is one person whom this theory can neither explain nor explain away—the thinker himself. The sacerdotalists of scientific orthodoxy did not feel these difficulties, because they illegitimately imported into their lay sermons traditional morality and pantheistic poetry, and even played with the idealism of Berkeley when they were driven into a corner.

This was creditable to them as men, but hardly as thinkers. But the progress of science itself has made mechanism more difficult to hold. More and more physics seems to be resolved into mathematical symbols, which are valid whether there is anything corresponding to them in the nature of things or not.

"Force" has disappeared from the language of science, and "matter," the other Victorian ultimate, is vanishing into electrical charges.

To say that Newton and Darwin have disproved purpose in nature seems to me a relic of the old idea that God can only assert himself by breaking his own laws.

There is no contradiction between purpose and orderly working. What we call mechanism may be the teleology of the inorganic.

I have not space to say half what I would like to say. But it is the fact that some of our greatest scientists are returning to the belief in God which Professor Julian Huxley rejects with so little respect.

There is no astronomer in the world with a higher reputation than the two Englishmen, Eddington and Jeans. Eddington is a Christian, a member of the Society of Friends; and this is how Sir James Jeans speaks in his new book, *The Mysterious Universe*:

Mind no longer appears as an accidental intruder into the realm of matter; we are beginning to suspect that we ought rather to hail it as the creator and governor of the realm of matter. The universe shows evidence of a designing and controlling power that has something in common with our individual minds.

It is precisely this designing and controlling power which Professor Huxley finds incredible. The astronomers, on the other hand, see great difficulties in regarding the realm of mechanism as a closed system.

A "Personal" God

Especially, there is a flat contradiction between the Second Law

of Thermodynamics, according to which the whole universe is running down like a clock, and the dogmatic denial of creation in time. Someone or something must have wound the clock up.

Physiologists, like Professor Haldane, have their own quarrel with the mechanists. Scientific dogmatism is in no better case than theological.

Roman Catholic philosophers hold that the existence of God may be demonstrated, not as a self-evident proposition but as a valid inference.

Without going quite so far as this, I think we may say that the hypothesis of theism is open to fewer objections than any other, and that the latest science has removed most of the difficulties which the dogmatic materialism of the last century created.

The proof of religion must be experimental. Faith, as I have said in my books, begins as an experiment and ends as an experience.

We begin by "walking by faith, not by sight"; we end by "seeing Him who is invisible."

And those who have earned the right to speak are unanimous that the God whom they have found is a Being who, for want of a more adequate word, may be called personal.

A Priest's Reply

By Father Woodcock

[Father Woodcock, a Jesuit, is a prominent priest in England.] "That man is the product of causes which had no prevision of the end they were achieving; that his origin, his growth, his hopes, his fears, his loves and his beliefs are but the outcome of accidental collocations of atoms; that no fire, no heroism, no intensity of thought and feeling, can preserve an individual beyond the grave; that all the labors of the ages, all devotion, all inspiration, all the noonday brightness of human genius, are destined to extinction in the vast death of the solar system, and that the whole temple of man's achievement must inevitably be buried beneath the debris of a universe in ruins—all these things, if not quite beyond dispute, are yet so nearly certain that no philosophy which rejects them can hope to stand.

"Only within the scaffolding of these truths, only on the firm foundation of unyielding despair, can the soul's habitation henceforth be safely built."—Bertrand Russell, *A Free Man's Worship*.

I believe that Professor Julian Huxley would subscribe to all the articles of the above Creed of Naturalism, with the exception of the italicized parenthesis—"the firm foundation of despair." His "religion without God" seems an attempt to get rid of this logical conclusion to the materialistic or atheistic interpretation of the universe. Possibly he is temperamentally an optimist.

Mr. Huxley has invented a "religion without God," because he believes that the present and future generations have been deprived of belief in God by the advance of scientific knowledge.

The main question then is—Can a scientist today be a sincere theist? If he can, there is no need to produce the caricature of religion offered us by Professor Huxley.

The God of theism is a God Creator. Professor Huxley's distinguished grandfather, speaking of "creation" in his *Lay Sermons* (p. 248) was very emphatic in his contempt for the mentality of any scientist who included the idea of creation in his explanation of the universe.

"That such a verbal 'hocus-pocus' should be received as science will one day be regarded as evidence of the low state of intelligence in the nineteenth century," was his view.

Yet elsewhere this eminent Victorian admits "Creation is perfectly conceivable, and therefore no one can deny that it may have happened."

The general position of post-Darwinian science was that every known reality, living or lifeless, was due to the internal evolution of pre-existing matter; but, as Professor Tyndall and others warn us, "If you ask the materialist whence is this matter . . . he has no answer. Science is mute in regard to such questions."

Yet one of the greatest scientists of that age, Lord Kelvin, refused to be mute on the question. "Do not be afraid of being free-thinkers," he said. "If you think strongly enough you will be forced by science to the belief in God, which is the foundation of all religion. You will find science not antagonistic but helpful to religion."

A Few Devout Scientists

The verbal "hocus-pocus" of creation has recently recurred, as a scientific conclusion reached by

Sir James Jeans. It would seem that the science of today has had to resurrect the God Creator whom Victorian materialism was alleged to have slain.

It is not a question of science merely leaving room for a Creator. The explanation of the universe is admittedly incomplete till He has been posited, and science itself echoes the opening words of the Bible: "In the beginning, God created."

In his *Mysterious Universe* Sir J. Jeans tells us:

Modern scientific theory compels us to think of the Creator as working outside time and space, which are part of His creation, just as the artist is outside his canvas. The creation must have been an act of thought.

In *Eos* (p. 56) he says: "Everything points with overwhelming force to a definite event or series of events of creation at some time or times not infinitely remote."

Some twenty years ago, from another scientific angle, the great Lister went beyond the position of the theist in affirming: "I have no hesitation in saying that, in my opinion, there is no antagonism between the religion of Jesus Christ and any fact scientifically known."

A more general testimony was recorded when four years ago the Paris *Figaro* addressed to all the members of the Academy of Sciences the query: "La science, est elle opposée au sentiment religieux?"

Not a single voice was raised in recognition of any true opposition between science and religion. The great majority of these learned men went further and affirmed "une compatibilité positive, voire a une entente cordiale."

It would be easy to fill literally pages with the testimonies of scientists that their scientific beliefs were not incompatible with belief in a God Creator.

Christianity, by K. A. Kreller (Herder), gathers into 400 pages some of these testimonies. No advance in knowledge during the present century has produced any new fact or well-lieff more difficult today than it was in the last century.

Rather has the pendulum of science swung from the dull, dead grounded theory which makes materialism of the Victorians to a greater recognition of spirit and spiritual value-judgments.

The God of Aquinas

It is, in a true sense, easier to be a theist today. Paradoxically, it is the scientists who seem often afraid to use their reason and to rely on the capacity of the human mind to reach valid conclusions about the invisible from the facts they observe with their senses.

There is something pathetic in Charles Darwin's confession of his distrust of his reasoned convictions, and it is pitious to see the illogical motive for his lack of confidence. He speaks in his *Autobiography* of the

extreme difficulty—or, rather, impossibility—of conceiving this immense and wonderful universe, including man as a result of blind chance or necessity. When thus reflecting I feel compelled to look to a First Cause, having an intelligent mind in some degree analogous to that of man; and I deserve to be called a Theist. But then arises the doubt—Can the mind of man, developed, I fully believe, from a mind as low as that possessed by the lowest animals, be trusted when it draws such grand conclusions?

And in the *Life and Letters* (I, p. 316) we are told: Darwin speaks of a horrid doubt whether the convictions of man's mind, which has been developed from the mind of lower animals, are of any value or at all trustworthy.

Would anyone trust the convictions of a monkey's mind? Poor Darwin forgot that he had developed. He might as well have distrusted his mind because he remembered that he was once an irrational child!

I quote the above because I cannot but feel that Professor Huxley falls into the same fallacy. It is useless to discuss the hypothetical origins and childish fancies of primitive religion. Let him face and deal with the theism of, e.g., St. Thomas Aquinas.

It would be as fair to condemn Christianity as a result of criticizing the presentation of the beliefs of the colored folk in *The Green Pastures*.

He seems unacquainted with the difference between the true theories of analogy and a mere metaphorical predication in his analysis of the theistic theology.

His accusation of anthropomorphism would avail did Aquinas present God as a biped in brown

A Criticism of Three Mystics

By E. Haldeman-Julius

If I were to sum up the meaning common to all three of the foregoing statements of faith and speculation and confusion, I should say that they unite in giving a mystic color and the name of religion to the something in life which they do not understand. I should add immediately that they do not, by this attitude, advance one step nearer to an understanding of the field of mystery (not mysticism) which yet lies beyond the boundaries of present knowledge. They are satisfying a temperamental inclination or, as in the case of Father Woodlock, also expressing an orthodox viewpoint; Dean Inge is not so orthodox—he is known as a liberal in religion—but he too is professionally as well as temperamentally on the side of religion.

Professor Huxley is in a different situation, being specialized in pursuits that would ordinarily make him indifferent to religion and which have made it impossible for him to accept a definite religious creed and even to admit that idea which, with few exceptions, is at the base of all that calls itself religion—the idea of God. In Professor Huxley's make-up there is clearly a strong strain of poetry and an abounding, absorbing sense of wonder: so far as sensitive men may be said to share his feelings; but in calling this a mood of sacredness and defining it as religion, he is indulging in an arbitrary use of words which convey no meaning and which do not add one trace of nobility nor inspiration to his poetic state of mind. In fact, to call poetry by the name of religion is to reduce, not exalt, the quality of poetry.

The Collapse of Theology

Here it would be useful to draw a brief comparison between Professor Julian Huxley and his famous grandfather, Thomas Henry Huxley, who led the cause of scientific rationalism in the middle nineteenth century. The elder Huxley also had a vivid poetic temperament; it found expression all through his lectures and writings on scientific subjects; he too felt the limitations of man's knowledge and the mysteriousness that challenged man to intellectual inquiries in the future. But it did not occur to the elder Huxley to call this sensitivity by the obscure and distorted name of religion. He needed no such name, no such traditional begging of a mantle of mystic sacredness, to fill his attitude of poetic-scientific rationalism with intense meaning. Life to the elder Huxley was something to be known; something to inspire insistent inquiry where it was not yet known; something to be felt and observed and lived in human, rational terms.

Before I consider these addresses separately, let me also point out another feature which all three have in common. This feature is an appeal to the modern prestige and authority of science. Not even the Catholic priest, Father Woodlock, rests his case purely on grounds of dogmatic theology. Taking the most extreme and theological position of the three, he nevertheless calls science (or a few scientists) to his rescue, thus reminding us how utterly discredited have been the old appeals and alleged authorities of theology. Not even philosophy is felt to be a strong enough support in this modern day; no—religion makes its last stand by trying to bring science to its justification.

This means that theology is no longer recognized as authoritative even by theologians. And in appealing to science they are hastening their own final defeat, because science affords them scarcely the shadow of a real basis for their theistic assumptions. These theologians can only appeal to science or use supposed arguments drawn from science by denaturing science and treating it theologically. Unable and indeed unwilling to take a scientific view of the question, they are thus forever excluded by the very character of their theistic position from the help which they vainly imagine they can find in science. And how loftily (and withal vaguely) they speak of the support which science affords to theism, when all the while they have in mind and are able to mention only a few eccentric scientists who, in their odd discussions of religion, are departing from their scientific fields and training. The immense preponderance of scientific

evidence, scientific thought and scientific interest is heavily against theism.

Religion and Human Nature

Now for Professor Huxley—a scientist who, relaxing from his labors, enjoys an intellectual vacation in a burst of poetic rapture. His first statement, however, cannot be gracefully dignified by calling it poetry: it is simply an example of very poor thinking and very inadequate science—surprisingly inadequate in such a celebrated biologist as Professor Huxley. He says: "First of all, I believe that religion is a function of human nature." He goes on to elaborate this amazing proposition by saying:

By this I mean simply to assert that, during the development of life on earth, religion did not appear before the evolution of human beings; but that, once they had appeared, religion of some sort was the inevitable result of their nature interacting with their experiences of the world around them.

It is not entirely clear whether Professor Huxley meant to assert that there is a religious instinct in man and that religion and human nature, so to speak, appeared simultaneously and as inevitable corollaries. Yet if this is not his meaning, then he is but stating a pointless platitude. We know very well that man did become religious; that he began in time to slough queer myths and superstitions around in the corners of his uninformed and groping and wondering mind. But this is no more significant to the present argument than is the fact that man evolved the system of polygamy; or that he developed various kinds of governments and political systems; or that he grew to use all the arts and confusions of language; or that he learned how to brew and distill intoxicating drinks; or that he became mighty in war and cunning in theft and skillful in lying.

As for the contrast between man and the lower animals, it is ludicrous in this instance and too, too unworthy of Professor Huxley. It is true that, so far as we know, the lower animals have no religion. But it is equally pertinent to remark that the lower animals do not have the science of astronomy nor political economy nor cocktails nor sonnets nor symphony orchestras nor daily newspapers—but why go on? Reduced to comparisons, Professor Huxley's argument is so foolish that it makes me ashamed for such a distinguished man. It only shows how even a little touch of religious feeling—or of mysticism, since Professor Huxley's attitude is not properly nor definitely to be called religion—weakens the mind of even the best man.

Evidence of Primitive Man

More seriously, it is surprising that Professor Huxley should bring in this plea that "religion is a natural function of man," when he should know that anthropology has entirely destroyed this plea by showing that at primitive levels man has no conception of religion nor of religiosity; that he has no feeling of sacredness nor reverential awe nor sublimity such as Professor Huxley so loosely identifies as religion; man's first feelings about nature are mainly objective and then there follows a superstitious, animal fear which cannot be by the wildest stretch be called religious. If religion had appeared when man appeared, and if man had always been religious, and if man had become more religious as he became more civilized, there might be something in Professor Huxley's assertion; as the facts are, however, his assertion is merely not true and is not even fairly intelligent sophistry.

And as his fundamental proposition is not true, his whole case falls to pieces. All the long, fervid chant of poetic mysticism which follows is predicated upon this first statement that "religion is a function of man." On the contrary, primitive man, at the lowest levels, had no religion; then at a considerably higher level, but still a savage level, man's ignorant speculations and the sense of wonder which his more active mind stimulated led him into religious notions which of course Professor Huxley would not regard as very poetic or dignified; with the beginnings of civilization, man developed weird and complicated theologies and for centuries religion was an absorbing interest; then when man began to have scientific illumination upon the processes of life, when he became more civilized, when free thought

and realism were brought into man's life, religion began significantly to shrink and to reduce its claims and to retreat from first one argument to another until finally all that is left is a flow of rhetoric which is not even good poetry and, of course, the remnants of orthodoxy which face the irrevocable doom of extinction. This history of the evolution of religion and its modern decline in the face of realistic culture constitutes the best refutation of Professor Huxley's intellectually feeble and evanescent appeal and equally the vain, floundering arguments of the two clerical God-defenders.

While Professor Huxley rejects the idea of God and indeed dismisses every shred of what is properly to be called religion, expressing only a vague and mystical feeling about nature or rather about that part of nature which is not yet perfectly known to man, the other two figures in this symposium are theists, each after his different fashion. They are—and I do not say this as a reflection upon their sincerity—professional believers in a God.

Science Remains Realistic

Dean Inge, the celebrated Dean of St. Paul's Cathedral in London, has acquired a wide reputation as a liberal theologian and it has been said that he is more a follower of the metaphysics of Plato than the theological metaphysics of any school of Christianity. Like all metaphysicians, the Dean is inclined to love rhetoric more than realism. Reason, as he views it, is a vast making sport with abstractions; it is of course a sport taken very seriously; but where does it lead? Dean Inge (and the same objection applies to Father Woodlock) does not offer the faintest vestige of proof that a God exists.

The Dean is handicapped, in that he does not believe in most of the old arguments. A fair summary of his position is that he rests his belief in a God on a sort of inner conviction: he enjoys believing in the idea, and so he does believe. His address is largely taken up with the claim that mechanical or material explanations cannot account for the phenomena of life. Thus he adopts the well-known "theology of gaps"; i. e., where there are gaps in man's scientific knowledge, Dean Inge tucks away his idea of God to explain the gaps; and of course it doesn't explain a thing.

If the Dean means to imply that science has abandoned mechanistic or materialistic explanations, or the further search for such explanations, he ought to know that he is egregiously misrepresenting the situation. Science has explained a great deal of life; it faces a great deal ahead to be explained; but it is proceeding along its further explanations by precisely the same means that it has always used—namely, mechanistic and materialistic means. If Dean Inge's main argument were true (that science has abandoned materialism) it would follow that science has turned to mysticism for the explanation of life; in a word, that science has ceased to be scientific. Nothing could be farther from the truth, as even a slight knowledge of the present and persistent physical researches of science will testify.

Do Not Represent Science

It is also important to remember that the religious discussions of such scientists-on-a-holiday as Eddington, Jeans and a few others are not in the least scientific and have nothing whatever to do with the real investigations and theorizings of science; these are merely personal, temperamental expressions of these few scientists. And Dean Inge is unfair when he says: "But it is the fact that some of our greatest scientists are returning to the belief in God which Professor Julian Huxley rejects with so little respect." The great scientists to whom he refers (Eddington, Jeans and others) are not returning to a belief in God; they have always held this belief—this has been simply a congenial expression of their temperament which has been at war with their activities as scientists—and their belief has no more value as proof than Dean Inge's belief and certainly it has no more bearing upon what is the modern trend of science as a whole.

Prof. Eddington, for example, likes to believe in a God (in much the same way that Dean Inge likes to believe in a God); he has

always been a religious man; he has kept his feelings about religion and his ideas about science in separate, close compartments—and this compartmentation remains true even though he tries to bring the two together; and to say that this eccentricity of a single scientist means a change of front by science as a whole is obviously a most extravagant, irrational claim. It would be quite as much to the point if one were to say that Dean Inge is returning to a belief in God.

The Dean says that "the hypothesis of theism is open to fewer objections than any other." Why! It is open to all the objections conceivable! It has never explained a thing; on the contrary, every one of its attempted explanations has been discredited, in an inexorable succession, as fast as science has extended its domain of knowledge. Theism is incapable of being proved. It has always been incapable of proof—and it is noteworthy that Dean Inge does not even attempt to prove it. This, I think, is a very serious and immense objection.

How inconsistent, how lacking in logic, these theologians are driven to be in their lame twistings of intellectual futility! Dean Inge objects to the mechanical view of life (which might, even so, better be called the realistic view) because it has not yet explained everything in final, concrete, entirely comprehensible terms. Then he says that the view of theism "has fewer objections than any other," although theism has never explained anything. If the positions were reversed—if theism had explained a great deal but not all of life and the mechanical view had explained nothing at all—how these theistic theologians would boast and blow their trumpets of triumph! As it is, they vociferate arrogantly over their own emptiness and, having nothing to explain, object to scientific realism because it has still something to explain.

Not a Shadow of Proof

"The proof of religion," says Dean Inge, "must be experimental." Exactly—it must be proved by realistic contact with the facts of life, it must be proved concretely, it must be proved by the tests of solidly experimental science. And this proof is wanting: there is not a line of it; there is not a shadow of it; there is not a shadow of it. Look again carefully at the Dean's flow of rhetoric and strive; you will strive quite in vain—to detect one syllable of even pretended proof of the existence of a God. No, the best he can do is to swing wide such theological mouthfuls of pater as the following: "Faith, as I have said in my books, begins as an experiment and ends as an experience. We begin by 'walking by faith, not by sight; we end by 'seeing Him who is invisible.'" If Dean Inge can see that which is invisible; he has a secret magic which is far beyond my humble range of realistic observation; and his little epigram about faith is—simply a pulpit epigram and nothing more.

Finally, what could be weaker than the Dean's concluding paragraph? He says: "And those who have earned the right to speak are unanimous that the God whom they have found is a Being who, for want of a more adequate word, may be called personal." Behold how nebulous is Dean Inge's God! He isn't even confident enough to come right out and say it is a personal God. This God is "a Being who, for want of a more adequate word, may be called personal." The italics are mine; they are an eloquent commentary on the vague vacuity of verbiage which constitutes the Dean's "idea" of God. And what does he mean by those who have "earned the right to speak"? Does he mean that only those who have persuaded themselves, in the face of all the atheistic evidence, to believe in a God have "earned the right" to speak with authority on this subject of theism? Does he mean that there can be only one side to the discussion? That seems to be his suggestion; and it accords well with what I have observed concerning the queerly arbitrary operations of theistic minds—even the minds of liberal (but not therefore reasonable) theists such as Dean Inge.

The Jesuit priest, Father Woodlock, adds nothing to the case for theism, but in the main he repeats the misrepresentations of the attitude of science upon which Dean Inge relies. This is even more significant as coming from the priest. One would think that a Catholic theologian would consider the dogmas of his church quite sufficient as a statement in behalf

of theism. But no, the priest scarcely enters into the field of theology. He is most anxious to bring science to his rescue; and his chief witnesses are not modern scientists, but scientists of the Victorian age, the age when science was just clearing the confused boundaries between realistic knowledge and traditional religion.

Jumping to Medievalism

His quotation from Professor Tyndall is, by the way, singularly unfortunate. He quotes Tyndall as saying: "If you ask the materialist whence is this matter . . . he has no answer. Science is mute in regard to such questions." And of course when you turn to the theists, they have an "answer"! Oh, yes! They are not mute. They look, oh, so awfully solemn and profound and make their little bow and say: "It came from God." Isn't that a wonderful "answer"? And when the atheist counters by asking where this God came from, the theists cry that he is being impertinent or superficial or something that is very mean and of course unpleasant to the baffled theologians. It came from God. God did this. God did that. God explains what is not explained. God is this, that and other—in other words, nothing but a word. And yet Dean Inge has the effrontery to declare that "the hypothesis of theism is open to fewer objections than any other!"

Father Woodlock also quotes "the great Lister," who was very narrowly though ably a scientific specialist but who was childish as a thinker about religion: who, in fact, was merely an orthodox, devout Catholic. Lister is quoted as saying: "I have no hesitation in saying that, in my opinion, there is no antagonism between the religion of Jesus Christ and any fact scientifically known." Lister, you see, went even farther than the assertion of the God idea: he affirmed the compatibility of the whole weird structure of Christian Catholic theology with scientific knowledge. This only shows us that the great Lister, when he stepped aside from his specialty, closed his mind in darkness and conjured up whatever fanciful beliefs were pleasing to him; or, to be more accurate, accepted the traditional beliefs which were handed to him.

It is, again, an amusing contrast—what a jump indeed across a well-nigh immeasurable abyss—which Father Woodlock offers when he turns from a few religious-minded and past-century scientists to that mole-like burrower in the darkness of medieval spookology, St. Thomas Aquinas. It is pretty plain, too, that Father Woodlock has more veneration for St. Thomas than he has for modern scientists. I do not for a moment believe that Father Woodlock believes that science and religion are reconcilable; what he believes, I daresay, is that science should surrender to religion.

These three minds span centuries. Father Woodlock's is the mind of a medieval theologian. Dean Inge's is the mind of a nineteenth century liberal. Professor Huxley's is the mind of a modern mystic which, scientifically unable to accept the idea of God or the ideas of any definite religion, loves the traditional name and attitude which it calls sacredness. None of the three gives any proof for a God nor any realistic meaning to religion.

"Mathematical God"

Concluded from page two) plainly (and by his own admission in other paragraphs) the dilemma in which Jeans finds himself; and instead of accepting the dilemma and waiting patiently for the researches of science to solve these remaining problems, he plays around with notions that are "frankly speculative and uncertain."

No Clarity in Metaphysics

It is no doubt true, as Jeans says, that "science is not yet in contact with ultimate reality." And no scientist pretends that it is; but most scientists recognize that this ultimate reality will be discovered by the well-tried principles of investigation which have won man's knowledge so far and not by mystical chanting about a "mathematical God" and similar images of ignorance. But isn't Jeans misleading when he says that "the outstanding achievement of twentieth century physics . . . is the general recognition that we are not yet in contact with ultimate reality"? Science (and I am speaking of the period of modern science) has never yet claimed to

be omniscient and to understand life completely. Jeans is not so impressive when he gravely refuses a claim which modern science has never made. And science has been saved from making such a reckless claim by its scrupulous method of sticking to observable, ponderable facts of reality. It is only when an individual scientist, now and then, falls into a mystical mood, like Jeans, that he vies with theologians in sweeping assertions about "ultimate reality." Thus Jeans himself presumes to call "ultimate reality" by the name of a "mathematical God" and declares, not only without evidence but without meaning, that the universe consists of "pure thought." He could not make such assertions as a scientist; they arise simply from his forgetfulness of science and his temporary surrender to metaphysics.

And what does Jeans get out of his metaphysics? Not clarity—not even for himself, for assuredly if by this mystical flight of fancy he had obtained a clearer view of life he should be able to communicate such clarity to others and show us a more lucid picture of things. On the contrary, his words explain nothing (not even the words themselves, which require their own explanation) and the mystery of life remains what it was before Jeans embarked upon that vaguely venturesome last chapter of *The Mysterious Universe*. It is obvious enough that the man himself is immersed in the "deep waters" and has found no tangible, sure vantage point from which he can observe life in different and superior terms. When he turns away from science, he leaves all reason and all substantiality behind him (excepting insofar as he is compelled to depend upon similes of substantiality in order to express any meaning at all).

The idea of a God, mathematical or otherwise, is superfluous unless it definitely explains something about life or unless no other explanation is possible but the conception of theism. But what is true of other God images is true of Jeans' God image: it explains nothing but involves its author in logical and philosophical contradictions which are insuperable and which indeed he does not even attempt to surmount with a bold, clear vision of truth. To imagine a "mathematical God," as Jeans pretends to have done (actually such a feat of imagination is beyond him and he is dealing only with words that trace no pattern of precise sense), is not to bring order or enlightenment into the universal picture, so much of which remains hidden from us. And it has never been shown that the God idea is needed as an explanation. In a brilliant course of investigation and realistic thinking, science has solved a remarkable succession of problems by purely natural means. Its method has been and still is that of definite research, not indefinite and "infinite" metaphysics.

Now Jeans himself would be the first to concede that science has not abandoned its realistic method of investigation. It is proceeding today along the well-known lines of observation and experiment; it is still at the business of elucidating the secrets of nature; it is, in its methods and aims, the same science which has triumphed so grandly, yet so patiently and realistically, in so many fields. The reasonable view, then, is that science will solve further problems in much the same way that it has solved a long succession of problems, which at the time seemed no less intricate and baffling than the problems which lie before.

"Speculative and Uncertain"

The explanation for which we look, in this feature or that feature of life, is a realistic explanation—a materialistic explanation—in the broad sense of the word, a mechanistic explanation. Our knowledge is not complete—very well, it is idle to go through the hocus-pocus of filling these gaps with images of a God. Jeans' image of a "mathematical God" is no more pertinent to the mystery of life and it explains no more than does the crude anthropomorphic God of the savage or the dogmatic, theological God of the Christian or the God of beatific vaporousness imagined by other mystics.

This fanciful deity of Jeans does not bear out the notion of purpose in the universe. It has no relation (Jeans himself claims for it no relation) to man's life or man's problems: human life, says Jeans, is apparently an accident outside the calculations of his "mathematical God"—or, as I should put it, an accident with

no kind of God nor any conscious purpose behind it. The dream of immortality, the notion of a divine moral law, the illusion of a celestial, spiritual destiny for the human race, the problem of good and evil (its reconciliation with the view of theism)—none of these confusing corollaries of the God idea are clarified by the mere verbal novelty of Jeans' "mathematical God." It is notable, indeed, that Jeans himself does not attempt to link this imagined God with the real problems of life nor to give it an intelligible place in the universal "scheme." He fashions this "mathematical God" (a fashioning in words only) and evidently supposes nothing for him to do—unless it be to send forth streams of "pure thought" (but does "pure thought" go in streams?) somewhere and somehow (or nowhere and nowhow).

And I repeat that Jeans denies the importance or the reality of his own metaphysics. His final words are an admission of doubt and futility and meaningless rhetoric. He says: "We may well conclude by adding, what might well have been interlined into every paragraph, that everything that has been said, and every conclusion that has been tentatively put forward, is quite frankly speculative and uncertain. We have tried to discuss whether present-day science has anything to say on certain difficult questions, which are perhaps set forever beyond the reach of human understanding. We cannot claim to have discerned more than a very faint glimmer of light at the best; perhaps it was wholly illusory, for certainly we had to strain our eyes very hard to see anything at all. So that our main contention can hardly be that the science of today has a pronouncement to make, perhaps it ought rather to be that science should leave off making pronouncements: the river of knowledge has too often turned back on itself."

Certainly individual scientists, intellectually on an idle holiday, should leave off making mystical pronouncements.

Jeans the skeptical realist performs the appropriate funeral rites over Jeans the mystic.

A Priest's Reply

Concluded from page three) sers' and a frock coat, looking down on the world over the wall of heaven.

"Eternal Values"

It is widely astray when it refuses to accept the validity of such affirmations as "God is Good, Powerful, Intelligent, Loving," the result of reason's assurance that the Creator must possess in an unlimited degree all positive perfections whose abstract concept does not involve limit or imperfection.

Christians are not held to a fundamentalist and over-anthropomorphic interpretation of the Bible, and it is only such interpretation that makes Christianity stand in contradiction to true science. Christ's revelation gave new force and authentication to the conclusions of philosophic theism. When He taught us the "Our Father," He affirmed, what theism concluded, that some true analogy is to be found between the human perfection of mother-love and the Creator's attitude towards men, and that God is Love. To fall back on Freud and the New Psychologists with their subjective "father-complex" solution of the philosophy of theism is to dethrone reason, man's highest faculty.

The *Summa* of St. Thomas is not based on such an insecure foundation, nor can psycho-analysis interpret it in terms of a complex. One final word. Mr. Huxley avoids the all-important matter of personal immortality. Theism cannot be indifferent to the solution of that question.

If man be not immortal and if all human life and aspiration is to end in the scrap-heap of the universe which science prophesies to be its destiny, then the experiment of creation would have been the grim sardonic jest of a fiend.

If "eternal values" weigh for anything, the human mind cannot face that hypothesis.

Till it is proved to be true we have no need of Mr. Huxley's "religion without God."

WHAT a man believes is no better than why he believes it.

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