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SCIENTIFIC THEOLOGY.

[This paper is addressed to those who are dissatisfied with the views commonly set forth of a creator and ruler of the universe; to those who through some acquaintance with modern science find an inconclusiveness in theological reasoning, and to those who have noticed that religious dogmas have lost their hold upon the majority of intelligent men.

On the other hand those who find full satisfaction in a creed and those who have no practical familiarity with scientific induction will find here nothing worth while.

It is to be expected also that some who are unable to follow the reasoning will try to demolish it by attributing to separate phrases or statements meanings not intended by the writer. Life is too short to guard fully against such misunderstandings.—T. P. H.]

ALL men learn by experience. From accumulated experiences philosophers draw conclusions valuable to all. Experience being very common and reasoning rather rare in the early ages of humanity, reasoning was highly esteemed, then over-rated, valued as an end and not as a means to wisdom; and so the extravagant pretensions of philosophers fell later into contempt.

Then Science was born. Conclusions were logically drawn from wide and accurately observed experiences. These conclusions were further tested by application to new sets of facts and corrected as often as found defective. Astrology then gave way to astronomy. The "Black Art" became chemistry. Soothsaying and witchcraft were replaced by psychology.

The old philosophical views depended for their accep-

tance upon the authority of some great name. The greatest and wisest of men, the men nearest to nature's heart, felt and dimly saw the deep realities of the universe. Some of their immediate followers were able to see the same verities when pointed out to them. The others who accepted their views did so on faith, believing in the ability and truthfulness of their leaders who claimed to see what was beyond their own limited powers.

Scientific conclusions do not rest upon authority, but upon facts, the investigation of which is open to every one, and upon inductive reasoning which is worthless if it quails before the most searching criticism. The pursuit of science is the pursuit of truth inductively.

When we say that theology is unscientific, we do not imply that it is false. We mean that its utterances are given under the authority of great names, and acceptance is asked on the basis of authority rather than of facts and logic. The range of facts required for the construction of a scientific theology is so extensive that theology has been compelled to wait for the fuller development of science. Science has now covered the fields of space, matter and energy, and is rapidly including all organic life. That is to say, it is now generally admitted that in these departments the scientific method of investigation is the only one that gives results worth having.

Because of the complexity of their phenomena, religious experiences are among the last to be scientifically studied. It was necessary that scientists should first become familiar with the simpler phenomena of matter and energy before they were capable of understanding the more abstruse and complex. As the investigation of religious phenomena proceeds there will be developed from it the explanation of the facts, which will form the science of religion. A beginning has been made by William James and a few others, but it is not too much to say that at present no such science exists.

Theology, however, is not limited to religion. It attempts the largest generalizations of which we can conceive, and as a branch of philosophy it can become scientific only as an induction from all the classified facts of experience, of which religious experience is only a small part. At present it is therefore possible to give only a rude outline of scientific theology. Its fuller development waits the growth of biology, and especially of the science of religion.

What follows is written from the standpoint of realism. If the reader be accustomed to think in terms of idealism he may find it necessary to change the terminology. But the facts presented and the conclusions drawn are true, whatever view is taken as to the ultimate nature of the things considered.

From the unity of the universe Herbert Spencer drew the conclusion that polytheism is untenable. There cannot be more than one ruler of the universe. This conclusion meets with the approval of all scientists. Whether there is a God at all is a question for further investigation.

Let us first review some fundamental generalizations of science.

Time is something measurable. It enters into many other quantities, such as speed and power. But it is unchangeable, uncreatable and indestructible by any known power. It is as impossible for any of us to march one moment ahead into the future as it is to fall back into the past. We are in the march to stay, as long as we are in the world. Time is for us a cosmic element.

Space is a second cosmic element. It is uncreatable and indestructible. It is like itself only, and cannot be confused with anything else in the universe.

Matter has many forms. For more than a century the elements withstood the efforts of chemists to change them one into another. Nevertheless every scientist has believed

that though the elements are many they are all forms of one "matter," whose properties are described in every textbook of physics. The transformation of the radio-active elements recently discovered are of intense interest, but they add nothing, because nothing could be added, to the belief of the scientist in the essential oneness of matter, of which he sees only the varying forms. Matter, including under this term the ether, is indestructible and uncreatable by any known power. It is a third cosmic element.

One other such element is known to science. *Energy* (as defined in physics) has existence in many convertible forms, as motion, strain, heat, light, sound and electricity. But, though easily transformed, energy is indestructible and uncreatable. That is to say, not the least particle of energy is ever known to be created or destroyed. Energy is a fourth cosmic element.

These four are the only cosmic elements known to physical science. All other things in the visible world are variable in quantity as well as form. These have also the common character of simplicity. The smallest conceivable part of any of them does not differ in kind from any other part of the same element. All other things are complex and can be so divided that some of the parts are essentially unlike other parts.

These four elements and their combinations form the whole physical universe. Outside of them we know only one other class of things, namely, those directly relating to conscious life. In this class we know of no single thing that has the marks of a cosmic element, nothing that remains constant in quantity through all changes of quality and form. But by analogy we may infer that there is to the things of this class a substratum which does remain constant. Let this substratum be named "*Spirit*." Then the argument for the existence of spirit as a fifth cosmic element is as follows: Five distinct classes of things—time,

space, matter, energy, and the things relating to conscious life—form with their combinations the known universe. The first four of these are each decided by scientists to be permanent in quantity. The fifth class must also be permanent in quantity or else subject to partial annihilation and creation from day to day—an unthinkable condition. If the fifth class is quantitatively permanent it must have under its apparently variable phenomena a common and permanent substratum (here named "spirit") having the characters of a cosmic element.

If this argument seems inconclusive, let it pass. It may be that these cosmic elements are not absolutely permanent. It may be that, just as has been found with some of the elements of matter, there is a slow transformation taking place, one cosmic element changing into another. It may be that spirit is the least constant of the five, and that the evolution of the ages is making spirit a larger and larger element of the universe. It may be that other cosmic elements exist, of which we have not yet the faintest intimation. These are speculations going far beyond our knowledge.

Let us return to things we know. About the ultimate nature of the chemical elements we know a little. The little that we know about the transformation of matter from one element into another does not invalidate any of our previous knowledge of the elements. We continue to call them elements, and we know that they mark a definite stage of aggregation of matter. So also any speculations we may indulge in about the ultimate nature of the cosmic elements cannot alter the fact that they are a very distinct and definite stage in the formation of the universe, and no future discoveries can alter that fact.

If five or more cosmic elements form the universe, there must be some fundamental bond amongst them, something holding them together as a universe, some substratum

common to them all and of which each is a manifestation, just as silver and carbon are two manifestations or forms of matter, and as heat and electricity are two manifestations of energy. To this common substratum let us apply the term "God."

It may be objected that the word "God" is already in use with an entirely different meaning and therefore should not be used here. But if it can be shown that the word as here defined is similar in its essential meaning to the term in common use, the objection falls. The only knowledge we can possibly have of God (using the word in the theological sense) is gleaned from his expression in the universe. But as long as the term is philosophically defined there will continue to be as many gods as there are thinkers to define it. Moreover the use of any term for this substratum, this common bond of the cosmic elements, would suggest to the reader the hypothesis of two gods, one immanent, belonging to the whole universe, the other an outsider, a Royal Mechanic who impresses his will upon the universe. Though the latter view of God is commonly taken by ignorant men, it has not the sanction of the greatest theologians. It would be folly to claim that all the efforts of the ages to find out God have been wasted. Men have blundered and will blunder, but there has been progress. If science has now reached a stage where it has some contribution of value to offer in the search after God, let us accept it and if necessary modify our ideas; but let us not forget what has been already learned, and that we can at best bring only a small contribution to this age-long quest. The God discerned by science is not a new God, but the same Eternal seen from another standpoint and seen in some respects more clearly.

How do we learn the properties of matter? We know matter only in its various forms or manifestations, as iron, wood, coal, rock, water, air, etc. Whatever properties are

present to some degree in every form of matter are properties of matter, such as mass, elasticity, volume. Properties found only in a few forms of matter are not considered fundamental. Magnetism belongs to iron, but not to copper; it is therefore not a property of matter. So also we know energy by finding what properties are common to its various forms. Proceeding in the same way to study the cosmic elements, we may gain a fuller knowledge of their substratum, God. Taking in each cosmic element one prominent character that is also found to some degree in each of the others, and is therefore universal, we may get, in rude outline, the attributes of God. Many others may be added, and every addition to our knowledge of the universe increases the possibilities of our knowledge of God.

From *Time* we get the suggestion that God is eternal; from *Space*, infinite; from *Matter*, that all action is according to regular law; from *Energy*, the principle of evolution; from *Spirit*, intelligence. The God of the universe is thus an eternal, infinite, consistent, evolving, intelligent God. These are attributes to which every scientist must give immediate assent. Careful study will enable him to add many more. Every one is at liberty to investigate and draw his own conclusions, as in every branch of science. The dogmatist is he who draws conclusions without sufficient investigation.

Men's ideas of God have been fragmentary and distorted. According to theologians God is spirit. But this is evidently no more true than the statement of the astronomer that God is infinity, or of the evolutionist that God is power, or of the materialist that God is matter. Each of these statements is an approximation toward truth. Since men are characteristically and essentially spirit, their first clear ideas of God were as spirit. Knowing little of matter, they clothed God with the common attributes of men; described him as irregular, capricious, selfish, vengeful, ty-

rannical; so that Ingersoll was moved to say, "An honest God is the noblest work of man." With the development of natural science came the knowledge of natural law and evolution. Scientists could no longer accept the theologians' ideas of God. By a revulsion of thought many men turned from the theological idea to an equally fragmentary idea based on materialism or on evolution. Caprice cannot coexist with natural law, and absolute and final perfectness is inconsistent with evolution. Gradually it has come to be generally realized that law is universal, and the theological idea of God has been modified accordingly. Evolution as a process in nature is now generally accepted, but it has not yet found a place in the theological system. The idea of an omnipotent and absolutely perfect God cannot be reconciled with the imperfections of the universe as we know it. But an evolving God is in harmony with all the facts we know, and cuts the knot of many an unsolved problem. This idea of evolution as an essential character of God is not easy to grasp fully. It contradicts the common view of God as unchangeable or as the Absolute. The whole known universe is in the march of evolution. Its essence is therefore evolving. Its plan is being formed. Its aims are more clearly defined now than ever before, its consciousness clearer and more extensive. Of a beginning or an end science knows nothing. The process only is seen. We are conscious portions of the universe. God is in us and is through us enlarging the plan and developing its parts. We have no reason to suppose there was ever an original design perfect in all details. The design itself is growing into consciousness in the heart of the universe, just as it grows in the life of an individual.

The problem of evil is recognized and its solution attempted by every known system of theology, from the ancient Egyptian down to the most modern Eddyism. The Zoroastrian doctrine of twin deities—one of them good, the

creator of light and life; and the other evil, the creator of darkness and death—has been partly incorporated into the Miltonian doctrine of a good and powerful God who has already defeated and will ultimately destroy the arch-rebel Satan, the source of all evil. Mrs. Eddy shifts evil into the realm of idealism, explaining it as delusions of mortal mind,—which are to be at last all cleared up. Every theological system recognizes that a contest of some sort is going on, and that evil is being overcome by good. But the origin of the fight, or the necessity for it, is nowhere made clear. If the creator of life cannot overcome his evil twin, or cannot destroy Satan, or cannot prevent “delusions of mortal mind,” these causes of evil, he is not omnipotent. If he can but will not, he is not good.

Granting evolution as a fundamental principle in the universe, this conflict takes on a different appearance. Intelligence being also fundamental, there appears before us always ideals, which are the scouts of the evolutionary process. Present conditions are “good” as they make for our ideals, and “bad” when they do not. To a democrat the growth of the trusts was only bad,—his ideal was in the past. To a socialist the same industrial movement appeared good because it pointed toward his ideal of a co-operative future. The general trend of ideals, themselves the product of evolution, is necessarily in harmony with the general trend of evolution, of events, and hence it has come to be an essential part of doctrine in every religion that good will finally conquer. Social conditions that are now universally condemned are called bad because ideals are already picturing out the coming advance into something better. And when these ideals have become realities, higher ideals will take their place, compelling a re-classification of the events and conditions to suit the new ideals. So the forces of the universe mould its materials by means of intelligence into forms of higher organization. And as

the universe evolves, as knowledge becomes broader and truer, as ideals become more cosmic and events follow more closely, more and more of the universe is classed as "good," and stronger and fuller appears the harmony of all.

"Yet I doubt not through the ages one increasing purpose runs,
And the thoughts of men are widened with the process of the suns."

As an example of further investigation into the nature of God, let us consider the question whether or not God is love. This is equivalent to the question, Does love or its analogue appear in every part of the universe where such appearance is possible?

Love is not in any sense known to belong to time or space *per se*. Neither is its opposite. Nor can we conceive of either love or hate belonging to what we know of time and space. These two cosmic elements may therefore stand aside from this question. Taking the next element, matter, we find an analogue of love in gravitation, a universal attraction. If there are any atoms that repel each other, they do not belong to the visible universe, for they would ages ago have made their way toward the boundary of the ether, into the outer darkness, hence beyond the possibilities of our knowledge. In all atoms we find also chemical attraction more or less strongly developed. Cases of apparent repulsion are probably apparent only, and are easily explained on other grounds. Coming to the next cosmic element, energy, we find here and there antagonistic forms. For example two opposite electric charges tend to coalesce, disappear as electricity, and become light and heat. With such small and insignificant apparent exceptions, the energy of the universe is harmonious. In the fifth cosmic element, spirit, both love and hate appear. It remains to be seen whether both are real or whether one is merely the relative absence of the other. As a factor in life, love is supreme over hate, else the human race would perish. Every

man loves himself; and does what he thinks right and best for himself—perhaps not by your standards, but by his own. At first, in early childhood, his “self” includes only his own wishes and feelings. Later as he develops it comes to include successively his own body, his possessions, his family, his friends, his clan, his society, his class, his nation, his race, and all life. Everything outside his “self,” that threatens to interfere with it, rouses antagonism because of his devotion to his “self.” Here love is clearly seen to be the prime moving force, which appears as hate only in certain undeveloped conditions. Hate is then only limitation and negation. By definition, God is the essence of the whole universe; his love then extends to all that of which he is the essence, leaving no place for hate.

As a second example consider the question “Is God just?” By justice is meant equality of conditions and opportunities; or equal results for equal efforts of different individuals. As so defined justice is conspicuous by its absence from the universe. Paul claims that one vessel is made for honor, another for dishonor; and the inequality of conditions among men is patent. In the field of energy a very slight factor often makes the difference between intense action and almost no action. In matter, too, there is endless diversity of relation. And no two portions of either space or time are similarly related to the rest of the universe. Hence justice does not belong to the essence of the universe.

Justice is, after all, only a kind of rule-of-thumb that we apply to human affairs in default of fuller knowledge and stronger love. It is a negative standard, exceedingly defective, and wholly inferior to intelligent love. It could not be fundamental in the universe, and God is infinitely superior to it. In the evolutionary sense, God is not wholly good, but is becoming good; and he is not limited to justice because he has already gone far beyond it in unlimited love.

Whatever may be thought of the illustrations just given, the main contention of this paper is that it is now possible to apply the scientific method to investigate the characters of God. The facts of religious experience will ultimately be a great aid in such investigation, but as yet they have not been sufficiently studied. This method of investigation, being the most reliable and accurate known, must supersede all others and give later a scientific theology in which men of all creeds and races will agree.

In conclusion, the method of investigation here outlined and illustrated leads toward the center and source of being, which center is generally designated as God. The use of any other term instead of "God" would lead to wrong inferences. Outside of this center there is no known God, and he is known only through study of the universe.

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