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1926

689TH ORDINARY GENERAL MEETING.

HELD IN COMMITTEE ROOM B, THE CENTRAL HALL,
WESTMINSTER, S.W. 1, ON MONDAY, MAY 17TH, 1926,
AT 4.30 P.M.

MAJOR LEWIS M. DAVIES, R.A., F.G.S., IN THE CHAIR.

The Minutes of the previous Meeting were read, confirmed, and signed, and the HON. SECRETARY announced the election of Miss L. E. Cotesworth as an Associate.

A motion of condolence to Mrs. H. E. Fox and family, on the decease of Prebendary H. E. Fox, M.A., a Vice-President, and long a much-valued Member of our Society, was moved by Mr. A. W. OKE, B.A., F.G.S., seconded by Lieut.-Colonel MACKINLAY, and passed unanimously, those present signifying their assent by standing.

The CHAIRMAN, in calling on Dr. Schofield to read his paper on "Religion and Science," said :—

"There is probably no subject of greater interest to us to-day, as Christians, than the question of the relations between Religion and Science. Every religion, if it is to have any hold upon men at all, must have a basis in facts whose credit stands unshaken. This is peculiarly true of the Christian religion; and I do not suppose that there is a person here present who has not had to face the question as to how those things which he takes to be facts, proved by modern Science, affect his attitude toward the historic faith of his fathers.

"I think we are peculiarly fortunate, therefore, in having a man like Dr. Schofield here to-day to give us his own conclusions on this matter. As we all know, we have in Dr. Schofield both a convinced Christian and an eminent scientific worker, who has given far more years of careful thought to this subject—with far greater knowledge of Science in general behind that thought—than most of us, even in such an assemblage of thinking Christians as this, could hope to equal. It is with great pleasure that, on your behalf, I now ask Dr. Schofield to read us his paper."

RELIGION AND SCIENCE.

By ALFRED T. SCHOFIELD, Esq., M.D.

THE present position of Science has been so ably set forth by Karl Pearson in his *Grammar of Science* and elsewhere that I have no intention of attempting any general survey of either Religion or Science in my remarks. My principal object is to point out by what means the two, which in the last

century were so violently dissevered by geologists, evolutionists, and the concurrent wave of materialism (that wellnigh wrecked belief in the spiritual universe), have been brought together in the present century, by means so unexpected and unforeseen as to be well worthy of our consideration to-night.

We must remember that Religion and Science were once united, and dwelt together in peace : the one busy with the study of the invisible and spiritual, and the other with the wonders of the visible and material. But, as in the story of the Prodigal Son, Science gradually wandered further and further away from its parent, and sojourned for long in a far country. It is the manner of its return home that forms such a fascinating story, differing as it does so widely from that of the prodigal in the divine parable. He "came to himself," and repentance brought him back to his father's house ; but it was not so with scientists. Their return is perhaps better described in Francis Thompson's well-known lines on the subject :—

" In vasty dusk of life abroad
They fondly thought to err from God ;
Nor knew the circle that they trod ;
And wandering all the night about,
Found them at dawn where they set out."

But when the day completed the circle of their journey,

" Lo ! they were standing by His side."

We may add, to their own intense surprise.

In their homeward journey I think scientists have already passed the dawn of the poet, and the brightening day of reconciliation lies before them. For the wonder of the story is the way in which the spiritual was revealed to men who were exclusively searching for the material ; and how in their " last analysis " of visible matter scientists found nothing but the invisible force of an omnipotent Will.

The ties of Religion and Science are indisputably those of near relations, preferably those of father and son, for there can be no question that Science sprang from Religion. Science in its infancy was inseparable from Religion, its leaders being monks who pursued their researches in monasteries under the care of the Church. Previously to this it was in the hands of learned Rabbis who, before the Renaissance, were masters in Science, as Professor Einstein is again to-day. The subsequent history of Science, however, bears a strong resemblance to the story so

pathetically told in Gosse's classic work, *Father and Son*, where the son so strictly brought up is seen rebelling in his riper years against his early instruction, and diverging widely from it. Science has indeed retrograded even further than this, in both denying and repudiating its parent in more ways than one; and until lately there seemed but little prospect of reconciliation. But the history of Science in modern times shows us the miracle has now occurred, and that Science has recovered itself, through the staggering revelation that has burst upon it, that all matter is but the expression of an inscrutable "force" in action. This at once transformed, for the advanced scientist, the visible into the invisible; the material world entirely disappeared in the concept of almighty force, which in Christian phraseology is none other than the "God in whom we live, and move, and have our being." My object in this lecture is briefly to study this reconciliation of "father and son" in its various stages, and to show the present relations of the two.

It may be well if I point out, first of all, that the great advances of Science to-day are due, not so much to any increase in mental acumen or grasp, or to the work of any special scientific genius or intellectual giant, as to our wonderful modern instruments, and to modes of research which were utterly unknown a century ago—or indeed, as regards some of them, half a century ago. I refer more especially to the development of spectroscopy, the ultra-microscope, the liquefaction of air and other gases, the discovery of radium, and the amazing advances in chemistry and electricity. It is due to electricity alone that we can for the first time absolutely see the molecule, and thus arrive at the most modern hypothesis of matter, which is, as we shall see, the knell of the "material" and the final triumph of the "spiritual." It is not, however, for a moment to be supposed that this was the aim or object before modern scientists. They had no axes to grind, no preconceived theories to convert into facts; their researches indubitably were entirely and solely on behalf of truth; and none can question the purity and loftiness of their motives, nor doubt, as I have said, that the result at which they have now arrived was neither welcomed nor expected.

Biologists and scientists, indeed, had sought indefatigably to eliminate "spirit" from the scientific world. Dualists, or philosophers who believed in matter and mind as two distinct entities, were until recently all regarded as back numbers, and, indeed, obstacles to scientific progress. I well remember at

Harley Street the many desperate efforts of Haeckel and his numerous followers on behalf of monism—the gospel of material unity and the denial of mind and spirit—seemed at one time all but crowned with success, all mental and vital phenomena being merely mechanical action and chemical explosions of matter.

But what surprises Science had in store for these monists! Even before we lost Huxley, that great materialist had alarmed his friends by his utterances in his last Romanes lecture, in regarding the soul as an entity with laws of its own; and soon after the dualists could lift up their heads again, for here and there among scientists the words “vital force” were heard once more.

Had Science stopped here, and the position of mind and matter as distinct entities been absolutely established, monism would have perished and have been buried among the many errors of the past, without even a tombstone to perpetuate its dishonoured memory. But Science still progressed, by the aid of its modern instruments of precision, especially by advances in electricity and by the revelation of the disintegration of the atom in radio-activity, to discoveries of a truly momentous character.

Scientists are apt to speak of “discoveries” as if of established and demonstrated truths, but surely “hypotheses” would be a more suitable word, seeing that practically most of what they so name is a matter of theory and surmise and imagination rather than of fact; for here, scornful though Science may be of imagination and faith, it has to trust to both, in its modern path, to a truly surprising extent. Ether, for instance, is generally spoken of as a proved fact, although the fiercest disputes still rage as to its nature, or even as to its existence. The concepts with regard to it (for there are no percepts) range from that of an inert gas one million times lighter than hydrogen (Mendeléef) to that of a substance 480 times denser than platinum (Professor Reynolds), or millions of times denser than iron, so dense indeed that all matter compared to it is like an imperceptible mist (Sir O. Lodge). This ether, he points out, vibrates more times in a second in the smaller waves of light than there are *letters in all the books* in the British Museum Library! This requires an elasticity and density so amazing that the material world is as gossamer compared to it. When we are further told that this purely imaginary substance possesses energy in every cubic millimeter equal to a million horse-power, we do not feel so much inclined to contradict such a statement as to wonder

how the information was obtained. In 1926 Sir Oliver Lodge, speaking of the construction of the universe, says: "All is built up of two units—positive and negative electricity united by a third, radiation or light or ether" (*Creation and Evolution*, p. 10). He also says of the same subject: "First we postulate an undifferentiated and extensive substance, the raw material out of which everything is composed, and which we call the ether of space. We must then imagine this knotted up here and there into minute specks of two kinds, protons and electrons, or positive and negative electricity—the 'knotting' being accomplished by a process of which as yet we have no clue. Next, we must suppose these electrical units running together . . . and forming . . . 92 different patterns, which constitute the atoms of matter" (*supra*, pp. 66, 68).

"So far we have been trying to follow a process of which we have no real knowledge" (*supra*, p. 72).

It must be remembered that these hypotheses (not facts) belong to the "ether" school, of which Sir O. Lodge is the leader, and other schools of scientists deny much of the above *in toto* with authority as great as, if not greater than, Sir Oliver: so that as regards ether, at any rate, all is as yet hypothetical.

But while the immaterial ether is coming to be regarded as a fact, matter is dissolving into a fiction. So that, as ether, which no one has ever seen or perceived nor apparently could see, has become real; matter, which constitutes all that we either see or perceive, becomes a mere idea, having no existence apart from the thinking mind; consisting either of spaces in the ether, or of invisible movements and strains of force in it. The result, as scientists do not hesitate to affirm, is that when these ethereal ripples or motions cease, as they must do eventually, the universe will vanish as a dream, and

"Leave not a wreck behind."

"Matter," says Alfred Russel Wallace, "is force and nothing but force; force is will and nothing but will, and that the Will of one supreme Intelligence."

Professor Tyndall said long ago, "We know no more of the origin of force than of the origin of matter; where matter is, there force is; for we only know matter through its force."

From the doctrine of the conservation and dissipation of energy, it is deducible that the duration of the earth as a living planet must be strictly limited in time. It must have had a

beginning, and at the beginning was furnished (by some one) with a store of energy which it has been losing ever since ; and when the store is exhausted, the bankrupt earth will be numbered among the dead planets.

Seeing that all that is visible is resolved into the invisible, as is now scientifically believed, and is said to consist in its ultimate basis of nothing but centers of elastic strain in a purely hypothetical ether ; and when, moreover, this is seen to be nothing but kinetic force, which is not an entity at all, has no existence in itself, and is but the expression of will, we have indubitably reached a new monism.

This time, however, instead of its denying the existence of mind and expressing all in the terms of matter, and so degrading the whole concept of man and the universe as was done not so long since by distinguished scientists, monism now affirms there is nothing but what is of the nature of spirit as opposed to our concept of visible matter. It is the material that has disappeared, and the revolution effected is complete, and the new monism holds the field. Those dualists who fought for the double entities of matter and spirit have achieved a victory they never dreamed of in the new monism, wherein this time the things that are seen are proved to be temporal, and only the unseen and its expression in the universe remains. One may add that while fifty years ago Science declared, in opposition to Heb. xi, 3, that things which are seen *are* made of things which do appear, it now asserts the opposite, and witnesses to the truth of Holy Writ that "things which are seen are *not* made of things which do appear." It is not too much to say that this aspect of monism was wholly unexpected, and that in arriving at this point scientists were led by "a way that they knew not." In simple honesty they pursued their researches, and the reason why the results were so often contradictory and sometimes appeared absurd was because of the absolute truthfulness of their scientific reports. The ignorance of Science has become also greater than it ever was, simply because of its advance in knowledge ; for the fact remains that every fresh truth discovered raises more questions than it solves, and after all it is only the wise who know how ignorant they are. In face of this it is well that the present attitude of scientists is so markedly humble and unassuming.

Let me here recapitulate. The scientist, in finding that mind and spirit could not be eliminated from the *organic*, turned with relief to the material *inorganic* world, in the illusion that he was

exchanging what was doubtful and inscrutable and invisible for that which was certain, intelligible, and visible. But how complete the disillusion, when first ether and then electrons appeared ; when at one cruel blow the solid atom, which had so long posed as the corner-stone of the scientists' physics, was shattered by the explosions of radium, and all his material elements gradually melted away, leaving him nothing but a Something, which he called "force," for want of a better word ! But is force a creation of Religion or Science, or is it not the real reunion of the two ; and are we not at length within sight of reaching ultimate truth in the long-suspected unity of all ?

Is not force itself not so much an entity as the expression of the will of the Creator, setting indeed the emphatic seal of Science on the apostle's wonderful address to the Greek philosophers on Mars Hill—"For in Him we live, and move, and have our being" ?

There is no doubt that such a conclusion was anything but palatable to many scientists. Many a kick, and many a struggle, was made by the more conservative to avoid being drawn over the edge of the fall—the stupendous fall—of human pride, in the revelation of One greater than themselves. They felt they were already in the rapids above their Niagara ; they tried to grip the solid shore of the material, but it crumbled beneath their fingers, and they were swept over—not to destruction, as they fancied, but into the presence of the great origin and unity of all—God Almighty !

Such is the present position of Science, and it is one that is endorsed in different ways by the highest authorities.

And now we can see why this monograph is written. It is simply because, in his studies, the writer was irresistibly impressed by the new monism. Himself a dualist so long as monism meant the material only, he has joyfully become a monist at last, now that monism means that spirit and mind are practically all !

Dr. R. C. Macfie emphatically says : "Nothing more spiritual than matter can be conceived. Matter is really energy and nothing more than energy—the energy surely of the Spirit in whom 'we live, and move, and have our being.'"

More remarkable still, in his latest book, *Ether and Reality* (1925), Sir Oliver Lodge's last word is "God"; for in his final analysis he can find no other word for ether than that it is the very garment of God (p. 16).

Perhaps I may here be permitted to illustrate what seems to me to be the present position of Science by a childish experience that many have had, and can recall in after years. A child's first pantomime used to be, in the unsophisticated days—now, alas! gone for ever—an event never to be forgotten. The excitement of taking one's seat before the drop-curtain, and the ensuing hour's enjoyment, can only be experienced once in a lifetime. But all this was as nothing compared with the child's feelings at the unveiling of the final transformation scene. The child, absorbed up to this moment in the entrancing story, quite believes that nothing can exceed it in wonder—when, lo! the dim suffused light that now fills its view slowly brightens as a gauzy curtain is raised. Veil after veil is withdrawn, and gradually the golden glory grows and glows, until, the last screen gone, the radiant vision appears, surpassing all ever seen before, and the child's enraptured gaze bespeaks emotions too deep for words.

I trust this simple illustration is not too vivid a picture of the soul of a great scientist to-day, whose whole career has been filled with growing wonder at the marvels of nature, but who now, in his advancing years, armed with the mighty weapons of modern research, takes up the investigation of matter. As he proceeds further, veil after veil disappears, and he discovers that what he had ever regarded as stationary and immobile is in incessant, bewildering motion. Matter itself dissolves bit by bit under his eyes before it vanishes away—first into ether, then into electricity, then into energy or force; and even here the process does not stop, for, as the last veil disappears, he perceives that this force is the expression of an absolute will which is the one great Cause of all. Thus, by a path he knows not, step by step along the brightening road of modern research, he finds himself, as the last cloud dissolves, standing in the perfect day, in the unclouded presence of the divine

“ We clasp our shadows tight,
 Bidding them shield us from Thy light;
 Till one by one they melt, they pass, they fall,
 And Thou art all ! ”

Geographically it is remarkable how we find that Religion and Science are everywhere found together; there is no spot where Religion flourishes without Science, or Science without Religion.

Everywhere on earth, with the highest and purest forms of Religion the most modern Science flourishes, whereas a degraded form of Religion is generally accompanied by a low development of Science.

Of late years the fact has become more and more obvious to scientific explorers, that the further they progress in their researches the stronger are the indications of the underlying unity of all sciences ; and this perhaps accounts for the fact that in all great scientists we find a deep-rooted instinct to try and discover unity in multiplicity, and identity in diversity, which is nothing more than an instinctive groping for the idea of God.

Hume long ago remarked : “ Events may seem at first to be loose and separate.” But soon we see that

“ Nothing in this earth is single ;
All things by a law Divine,
In one another’s being mingle.”

This is nothing less than the discernment of intelligent purpose in the mechanics of the universe.

If a table turns without a visible cause we exclaim : “ This is the work of a spirit ! ” : but every atom of the table is incessantly revolving with incalculable speed : is not this also the work of a spirit ?

It is idle to say that motion is as natural as rest ; this the mind refuses to believe. If a face should grow out of clay without any visible moulding hand, we should say it grew by spiritual power ; and thus, in the development of an egg, Huxley says we appear to be in the presence of an unseen modeller, which amounts to the same thing.

The atomic theory (especially in its more recent form) doubled the mysteries and wonders of life. Any artist could mould a bird out of clay, but where is he that could fashion so much as a little-finger nail out of dancing molecules ? The germ in an egg contains countless molecules in incessant motion which are all alike ; and yet if these are subjected to gentle heat they all begin to make various structures, which will become the organs, bones, beak, and feathers of a bird ; and every single atom must occupy its right place, for every one is needed. If we were to take all the letters in Shakespeare’s plays and jumble them together, and then shut them into an egg-shell, and were to find that by gentle warmth the letters arranged themselves into the plays and sonnets, it would be far less wonderful than the forma-

tion of a chicken. When we consider that the atoms in an egg which construct all the molecular combinations of a chicken—its veins, arteries, bones, muscles—are at first exactly similar in proportion and position, we shall experience no surprise that scientists in their study feel instinctively they are in the presence of an unseen and mighty force, far beyond all human conception. After this, why quibble about miracles ?

The very existence and possibility of Science, equally with that of the scientist's mind, postulates God ; for all scientific researches are based on the hypothesis that nature is intelligible—that is, constructed by mind. If nature were the result of the caprice of an irrational being, like the scratches left by a cat on a wall, no science would be possible. All Science truly so-called is a sincere attempt to decipher the handwriting of the Almighty on the universe ; but it proceeds on the belief that the writing is there and that design is a fact. Design, of course, may be equally shown in constructing anything in a natural product, or in inventing a machine to make what is artificial ; but in both cases the article is a product of the mind and not of a machine, only in the one case it is primarily, and in the other secondarily, produced. So if all nature is intelligible, and Science reveals plan and order everywhere, a mind must have produced it, great enough to be capable of such work. All this very familiar line of argument is well summed up by Herbert Spencer : “ The one absolute certainty is, that we are ever in the presence of an infinite and eternal Energy from which all things proceed ” ; but which, not accepting Christianity, he states is unknowable.

Science, however, is limited to the investigation of phenomena ; it is mainly a study of facts ; it stops short of first causes as before an impenetrable barrier, which it is not the function of Science to remove. Many biologists go further, and say that Science is the study of things that can be known and proved, while revelation deals with matters that are unknown but are to be believed. This distinction, however, on careful investigation will not stand. The language of the Bible always is, “ we know.”

Knowledge, however, is of two sorts—personal and hearsay. The verification of any facts must be personal, and it is the ease with which this is accomplished in scientific facts that makes its truths readily proved. When it asserts that water consists of H_2O , it knows that almost anyone can produce it by uniting the gases in this proportion. This, then, is first-hand knowledge.

Curiously enough, there are scientists who deny that this sort of knowledge can be arrived at in Religion, for, as a matter of fact, the absolute reverse is the case.

Hearsay evidence is, indeed, of less value in revelation than in Science; it is everywhere condemned, and no man can be truly said to be a Christian whose religious knowledge is wholly hearsay. "We speak that we do know; we testify that which we have seen," is not the language of those who value second-hand evidence.

I submit, also, that the possibilities of personal verification of the truths of revelation are, in their own sphere, as simple and evident as those of Science. In Science the introduction of a certain chemical into a fluid can be relied upon to produce a definite change in every case; and in Religion it is the same. Take any man or group of men the world over; introduce into the heart the truths of revelation, and certain results will ensue, and can be as positively predicted as those of any chemical action. Of course, both Science and revelation insist that the experiments must be conducted according to fixed conditions. The latter, for instance, being a moral force, will not tolerate experiments, *qua* experiments, but only for the moral benefits of those involved.

Capron well points out the close connection of Science and Religion in the opening words of revelation, where the five essential concepts of Science, according to Herbert Spencer, are all brought together in the first two verses of Genesis. "In the beginning," being *time*, "the heavens"—*space*, "the earth"—*matter*, "the Spirit of God"—*force*, "moved"—*motion*. These are the five essential scientific concepts—time, space, matter, force, and motion. It is also possible that in the word "brooding," or hovering, we see an indication that the special form of motion was molecular and not molar.

Sir Oliver Lodge has perhaps gone into the subject of my lecture more fully than any other scientific writer. He states that in their products Religion and Science are opposites. "Science cultivates a vigorous, adult, intelligent, serpent-like wisdom, an active interference with the course of nature; religion fosters a meek, receptive, child-like and dove-like attitude and resignation to the divine will"—forgetting, perhaps, that Christians are also to be "wise as serpents."

In one sense it is true that Science and Religion have no point of logical contact, for the essence of scientific knowledge is by

discovery and induction, that of religious knowledge is by revelation and deduction. Revelation is also occupied almost exclusively with much which is unknown to Science, and which no research can ever make plain. Another distinction between the two is that Religion accepts truth on authority, Science on proof. Authority is the *bête noire* of the scientist—there is nothing he dislikes and distrusts more ; the most rabid anarchist is not more impatient of the slightest authority than the meekest scientist. It is only great scientists, that is, men who are something more than scientists, who can breathe the air of heaven. The man of science who is nothing else cannot live in the pure religious atmosphere ; in it he would die of inanition ; he requires what he calls the solid food of fact. In a similar way, the religious man living in the cold, dry atmosphere of Science could not breathe, and would die of asphyxia ; he requires Faith. As a matter of fact (though they may not know it), both require both.

So far we have spoken of revelation and Science as the two revealers of truth ; but on closer research a third voice is heard of a most inscrutable nature. Proof of truth by experience we can understand, and also revelation from the supreme Being is quite intelligible to us ; but what are we to think of a voice that proclaims truth to us from the recesses of our own being ?

Three voices really speak to us of external truths : (1) The voice of Science—this is *reasonable* and requires proof ; (2) The voice of conscience within, unconditioned in space and time, speaking of laws—this is *instinctive* and requires no proof ; (3) The voice of revelation, which alone reveals causes—this is *authoritative* and also requires no proof. The voice of conscience lies in the borderland of Religion, for its real form and character have never been fully disclosed ; all we can do is to listen to it.

Theology is the scientific exposition of what we know of God and His relations with all created things. Science is the attempt to discover the working of God's providence in nature ; the expression of His will in those laws which to Science are known only as observed uniformities, sequences, and coexistents.

The standing controversy between Christianity and Science is not whether the world is made by a great first Cause, but whether it is controlled by a living Personality accessible to prayer, influenced by love, able and willing to guide our spirits until they become in some sort akin to Himself : and there can be no doubt that there will be ever those who affirm and those who deny this. Mathematical proof is impossible ; for none can attain to the

knowledge of God through the intellect, but solely through the heart. Cardinal Newman, among other leaders of thought, strongly insisted on this. In this sense we may say of the divine what one reads in the temple of Isis at Saïs : " I am that which is, and which was, and is to come, and my veil has no man ever lifted." Revelation alone has made known to us what is known of the unknowable.

The substitution of spirit for matter, and even of God for ether, although it postulates a Creator, is only, at most, a first stepping-stone to Christianity : and to very many it is not even this.

The faith in a Saviour from sin, with its creed of the Virgin birth, atoning death, and physical resurrection, touches science at no single point.

Hence Christianity proper must be distinguished from theism, of whose relations with Science we speak, which comprehends the first part alone of the address on Mars Hill.

It is only at the end of that memorable oration that the great apostle reaches the tenets of Christianity proper.

Sir Oliver Lodge's recent utterances are as strong in denying the fundamentals of Christianity as in asserting the Creative power of God.

We thus see that it is not so much Religion in its pure theism, and even in its general revelation, as Christianity itself that is in conflict with Science ; and let none think that theism and Christianity are identical. The former is at any rate suggested by scientific research, but not the latter. Sir Oliver Lodge says that the situation between *Christianity* and Science is, that while the belief of our fathers was " As in Adam all die, even so in Christ shall all be made alive," and that man fell, and is now far from his Father's house, to which he is privileged to return at the cost of the Son of God ; Science teaches that man is the one event towards which creation moved, the crowning glory of organic life, the product of a ceaseless evolution, the heir of all the ages, with head erect and brow serene, knowing of no fall, requiring no Saviour, and confident in himself.

But Science does not teach all this. There is no contradiction nor connection between Science and Christianity, but we see the impassable gulf which lies between Science and Christianity as opposed to the *rapprochement* and correlation between Science and theism. The whole scheme of philosophy is the advance and culture of what the Bible calls " the natural man " ; while the whole aim of Christianity is to replace him with a being a

distinct grade higher in the scale—the spiritual man (a true super-man), one whose life is no longer in time, but is “hid with Christ in God”—words which, however mystic, certainly point to an origin and a destiny superior to that of the natural man.

While, therefore, we cannot co-ordinate Science and Christianity, Science and Religion (apart from the spiritual doctrines of Christianity) are correlated and have much in common. It will, of course, ever be a problem to bring into a unity the dualism of physics and morals without destroying the distinct character of either, and some conflict between Religion and Science will ever persist; and yet there will never be disruption, as they are both parts of one whole.

One word, in closing, about miracles. The real difficulty now between Theology and Science is in these, which raise the question: Does the Author of miracles sometimes alter His works and laws? There appear to be laws in nature which are invariable, and phenomena are produced by the operation of these; but still invariable elementary laws, when used by will power, can produce varying phenomena.

In saying a word or two on miracles, then, we must first be careful to maintain that they are not due to a suspension of natural laws, but to the power of some higher law. A miracle is always, to those who read it aright, a revelation of some greater law. Natural laws are not suspended when I throw a ball into the air, or when an apple “climbs up” into a tree; it is only the introduction of a stronger force—life. Gravitation, space, light, sound, heat, can all be modified by superior forces. What we call the laws of nature are but a few fragmentary instances that we have discovered of the eternal order of the entire universe. God’s powers are as wonderful in His continuous acts of which we think nothing, such as the bringing of a chicken out of an egg, as in His occasional acts which we deem miraculous and incredible.

The line drawn between the natural and the supernatural is purely arbitrary, and is rather the expression of our own ignorance than of any truth. It is constantly being moved backward and forward by fresh discoveries and theories; in fact, it does not really exist at all. Of course, in the miracles of which we speak we postulate the action of God, whom we also regard as the Author of all natural laws. If we admit that a mere earthly king, such as Ahasuerus (or Xerxes), could counteract, so as to

render futile, the changeless laws of the Medes and Persians (which alter not) by a decree which paralysed their action, how impossible is it for any sane man to deny that the Creator of the universe can do the same with His laws !

In order to understand the cause of miracles we must first of all understand all natural laws. It is essential, however, as I have pointed out, that no miracle be frequently repeated ; otherwise, though just as marvellous, it is soon called a natural event, and all surprise ceases. We read in Scripture of an iron axe-head made to swim in the water ; and the same Bible constantly speaks in anthropomorphic language of God's arm stretched forth in power. Now, any of us can keep an axe-head floating by holding it level with the surface of the water, and if one could render one's arm invisible this would be called a miracle.

The necessity of miracles was evident when Christ was on earth, to prove His supernatural mission, and also in the early establishment of the Church. Hence the real value of miracles at that time. Of course, the fact of their actual occurrence rests upon the testimony of those who saw them ; and we must ever remember that the greatest miracle of all, the physical Resurrection of our Lord, was established in the teeth of most determined opposition, and in the midst of sceptical disciples, and was never, so far as is recorded, publicly denied by either Jew or Gentile, but became the corner-stone of the Faith that conquered civilized humanity.

Returning to our subject, we may say that Religion and Science are as the Mary and Martha of knowledge, and the contrasts are well marked between the two.

We have busy Science exploring the riches of the provision for human need and comfort stored in the universe, bringing into all our homes the hidden treasures of the earth, and the results in all the applied sciences are brilliant. There is nothing we use or enjoy but has been enriched to us by the deft hand of Science ; our complicated marvels of machinery do all but think and speak—they have every power but that of life. It is thus that the patience, the self-renunciation, the service of what Kipling calls "the sons of Martha," is rewarded, and enjoyed by the "Sons of Mary."

When we turn to Religion, however, we find, as in Mary, an ear open to unchanging and eternal truth that never varies, and to deductions from it which are solid ground. The rock of revelation was revealed two thousand years ago to give a firm

foothold to man, and stands unshaken "far down the ages now" by the storms of time or the blasts of adverse thought.

All and more that Science by the hand of Martha brings us of material comfort richly to enjoy, the words that Mary receives bring to us spiritually; and thus the whole man is blessed by the ministrations of the two sisters, Science and Religion. But there are still those so deaf that, while they accept all the Martha service, will not hear the word from Mary; and there are those so blind that, while they can hear the word of revelation, cannot appreciate the service of Science. We require both of God's gifts—reason and revelation—along the whole of the pathway of life. The two are well expressed in their value and unity in Tennyson's well-known lines:—

"Thou wilt not leave us in the dust,
Thou madest man, he knows not why,
He thinks he was not made to die,
And Thou hast made him—Thou art just.

"We have but faith; we cannot know,
For knowledge is of things we see,
And yet we trust it comes from Thee,
A beam in darkness; let it grow.

"Let knowledge grow from more to more,
Yet more of reverence in us dwell;
That mind and soul according well
May make one music as before."

DISCUSSION.

The CHAIRMAN said: It is with considerable diffidence that I comment upon Dr. Schofield's paper, since I am so much younger a man; but I think we will all agree that Dr. Schofield has given us a most excellent bird's-eye view of the subject before us. It is a most striking fact, of which he reminds us, that matter is, so to speak, passing from our ken. Matter resolves itself into force, and force into will; and if we are to have, as most of us desire, both an explanation and an unification of material phenomena, then we are bound to postulate One Infinite Creator behind the universe. This fact hands the modern scientist over, bound, into the hands of Religion. Between Religion, as such, and Science there is no longer any necessary conflict at all. What Dr. Schofield goes on to show us, however, is

that there *is* a conflict between what often passes for science and *one* religion, namely, Christianity. That is only too true, for Christianity speaks, as no other religion does, of the sinfulness of sin, the irrevocable Justice of God, and man's need of a Saviour.

Early last year I happened to be reading some papers before the Indian Science Congress at Benares, and, between sessions, the members of the Congress visited the various Hindu shrines and sacred places of that very religious centre. As we were going over the Buddhist remains in the vicinity, a fellow geologist remarked to me that Buddhism seemed to him to be almost identical with Christianity, and he asked whether I did not agree. I told him that, on the contrary, there seemed to me to be a fundamental difference between Christianity and *all* other religions, Buddhism included : all other religions, Buddhism included, talk of man's power to redeem himself ; Christianity alone speaks of man's need for an Infinite Redeemer, namely, God Himself, Incarnate and dying for our sins. This, then, introduces us to miracle, or Divine Intervention, which is essential to Christianity as it is to no other creed that I know of. Dr. Schofield recognizes this by pointing to the essential Christian facts of the Virgin birth, the vicarious death, and the physical resurrection. These are things which, unfortunately, too many men of science strenuously oppose to-day, although nothing in Science can disprove them.

All that the man of science can point to is recurrence of phenomena. As Dr. Schofield has shown, the facts of reproduction are, intrinsically, a greater miracle than almost anything abnormal that we could conceive of. Being sufficiently often repeated, however, they become commonplaces, and are dismissed as being due to natural law. The fact remains, though, that what is fundamentally as inexplicable as any "miracle" is continually happening before our very eyes, and therefore Science appears to be powerless to deny miracle by any scheme of valid reasoning. Certainly we cannot oppose it upon the grounds of its inexplicability. On the other hand, if people fall back upon a *prioristic* reasonings, and object that God would not suspend or interfere with His own natural laws, we can point out that sin itself is, according to Scripture, an *intrusion* into nature.

I maintain that God could reasonably meet that intrusion by a counter-intrusion. There is nothing in Science, so far as anyone can

show, to oppose the facts of Redemption as put before us in the Bible.

I am sure that you will join with me in thanking Dr. Schofield most heartily for his most interesting and instructive paper.

Mr. PERCY O. RUOFF said : The paper submitted by Dr. Schofield is of considerable interest. The lecturer's statement that Science sprang from Religion is rather inaccurate : it would be more accurate to say that religious persons were the first to undertake serious scientific inquiry. The problem of Religion and Science, according to Dr. Schofield, stands in the same relations as father and son or Martha and Mary. The arguments presented in the paper do not appear to sustain such a view, and it is not clear that the history of the relation of Science and Religion, with the constantly recurring conflicts and antagonisms, does so either.

It is well to consider how far, admitting all the claims of Science, and especially modern Science, the argument carries us. In reality a very little way. If, for instance, the teachings of the Bible are taken as the basis of Religion, it becomes clear, on reflection, that the number of possible themes on which Science can speak are extraordinarily few compared with the mass of themes which form the bulk of revealed Religion. It is above all things necessary that we should preserve the proper proportions in assigning to Science and to Religion the respective spheres and scope which belong to each.

Mr. THEODORE ROBERTS pointed out a slight inconsistency in Dr. Schofield absolving the scientists from any bias in their investigations, while he affirmed that they had not welcomed the theistic conclusion to which these investigations brought them, and had indeed detested having to make the admission of a First Cause.

He also suggested, while agreeing with Dr. Schofield that man's intellect was infidel, that it is needful to bring in the conscience as well as the heart in order to have true religion. He quoted, " By faith we understand that the worlds have been framed by the word of God, so that what is seen hath not been made out of things which appear " (Heb. xi, 3), as showing that scientific men had only recently reached a truth which had long ago been revealed in

Scripture, namely, that the apparent universe originated from what was unseen.

He felt the only safeguard against the doctrine of theism (which Science now recognizes as a needed postulate) becoming pantheism was the recognition of God as a moral Being. This He must necessarily be if He was the Creator of moral beings like ourselves. Upon this, of necessity, follows the revelation of God in this character, in the Person of Jesus, as we have it recorded in the New Testament.

Mr. Roberts regarded the miracles of Christ, which were all of them works of beneficence to man, as the necessary consequence of a divine Person being surrounded by human misery; for this He could not do otherwise than relieve, so far as was consistent with those moral attributes of God which He had come to reveal.

Mr. W. HOSSE understood the lecturer to say something as to matter having now disappeared and having no real existence, and that consequently we may henceforth comfortably style ourselves monists, because all is spiritual; but would it not be more correct to say that our views of matter, having been too crude, have had to be modified? To deny the existence of matter is to confound matter and spirit. Certainly it does not seem logical to infer, from Heb. xi, 3, "the things which are seen are not made of things which do appear," that the resultant creation is spirit. The verse only means, he would suggest, that God did not need visible materials to create the visible worlds.

He did not know that it was possible in the most ultra-microscope to see a molecule. If a molecule appears, as the lecturer describes it, like a swarm of bees, each bee is, therefore, also visible and represents an electron; but if there are as many electrons (or is it atoms?) in a thimbleful of water as there are thimblefuls of water to the Atlantic, as we are informed—or, to use another simile, if the size of the electron is to the atom of hydrogen in the ratio of a pin's head to the dome of St. Paul's—it must require very good eyesight, even in a super-microscope, to see the ultimate particle. May not what the lecturer said have been merely some form of radiation?

If the electrons are "point charges of negative electricity," surely we must be careful not to confound matter and spirit, lest we give

countenance to the blasphemous concept of a modern heresy. But how, then, can we accept the discovery which the paper professes to announce, and accept the theory that we are monists on the spiritual plane ?

Rev. Dr. H. C. MORTON said : To my great regret, I only succeeded in reaching the room in time to hear the eloquent close of Dr. Schofield's paper, and I should not have arisen had it not been for the remark he made, that wine is always fermented, and that the wine made by our Lord at Cana must have been fermented wine. I am quite sure that is a mistake. The Hebrew word *yayin* sometimes means grapes in the cluster, and grapes in the cluster are neither fermented nor intoxicating. There have always been two kinds of wine.

Col. HARRY BIDDULPH, C.M.G., D.S.O., writes : The wine at Cana, in Galilee, is contained only in Greek (original) records : the varieties of Hebrew words which denote the various products of the grape have nothing to do with the subject. The one question in this case is, What does *oinos* mean in Greek ? and the one possible answer is " wine."

AUTHOR'S REPLY.

Dr. SCHOFIELD replied : What Mr. Ruoff says is true ; but the question is—Why did religious persons undertake serious scientific inquiry ? The answer undoubtedly is—Because they thought it to be part of their religious work to study the works of God. So that, I think, my view *is* maintained.

I do not think the " inconsistency " of which Mr. Roberts speaks has in reality any existence. What I tried to convey was that nowhere does bias in any way influence the researches of scientists. The molecules are seen, but not the atoms ; and it is to the ultimate construction of these that I referred. If Mr. Hoste is prepared to state that force, of which they are composed, is material, then he seems to me to stretch the word. He seems on doubtful ground when he asserts that " visibility is confined to what is material." Ghosts have been seen : are they material ? Dr. Norton seems to introduce a side-issue, not relevant to the paper.