JOURNAL OF

THE TRANSACTIONS

OF

The Victoria Institute,

OR

Philosophical Society of Great Britain.

VOL. LXVI.

LONDON:

Published by the Institute, 1, Central Buildings, Westminster, S.W.1.

1934

782ND ORDINARY GENERAL MEETING,

HELD IN COMMITTEE ROOM B, THE CENTRAL HALL, WESTMINSTER, S.W.1, ON MONDAY, JUNE 11TH, 1934, AT 4.30 P.M.

DR. JAMES W. THIRTLE, M.R.A.S., IN THE CHAIR.

The Minutes of the Meeting of May 28th, 1934, were read, confirmed, and signed.

Before proceeding with the ordinary business of the Meeting, the CHAIRMAN felt it necessary to make the sad announcement of the death of their Vice-President, Professor Theophilus G. Pinches, and asked the audience to stand while the HON. SECRETARY read a resolution of sympathy which the Council desired to put before them. The following Resolution was then read and endorsed, the audience standing:—

> "This Meeting learns with profound sorrow of the death of Professor Theophilus Goldridge Pinches, LL.D., M.R.A.S., for many years a Vice-President of the Institute. The end came on Wednesday, June 6th, at his residence, 31, Coniston Road, Muswell Hill, at the age of 78.
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> "Formerly of the British Museum, in the department of Oriental Antiquities, he was an authority on the Assyro-Babylonian and Sumerian languages, and gave to the world a large number of texts and other monographs of great value.
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> "From time to time he read papers before the Institute concerned with the languages, history and antiquities of the Ancient East, as these bore upon and illustrated the records of Holy Scripture, and thus he performed service which will long be appreciated by supporters of the Institute.
>
> "The Professor was pre-deceased by Mrs. Pinches, and it was not known whether there were surviving relatives."

In accordance with the Rules as to awarding of the Gunning Prize in 1934, the name of the Rev. D. E. Hart-Davies, M.A., D.D., was next read out as successful competitor, who, on coming forward, was presented with the prize, a cheque for £40, by the President of the Society, Sir Ambrose Fleming, D.Sc., F.R.S. After brief acknowledgment by Dr. Hart-Davies, Sir Ambrose was then called upon to deliver his Presidential Address on "Truth," the audience signifying their appreciation in a hearty vote of thanks proposed from the Chair.

ANNUAL ADDRESS.

ON TRUTH.

By SIR AMBROSE FLEMING, M.A., D.Sc., F.R.S.
(*President*).

1. WHAT IS TRUTH ?

PILATE'S insistent question, What is truth ? (John xviii, 38) meets us at every turn. In Courts of Law it is the main object of the procedure to discover the truth concerning the issue, and all scientific research is an endeavour to answer the same question.

Our existence as a Society is determined by a desire to ascertain as far as possible the truth on debated questions in philosophy, religion and science. We have had in the past session many instructive papers read to us in which this effort to reach truth has been manifest.

Hence in this Annual Address we may perhaps usefully spend a few moments in considering methods of reaching truth and the criteria of its attainment in various branches of knowledge.

In the first place one answer to the general question, What is truth ? is, that it is an exact correspondence between events or facts and statements concerning them. If things happen they do so in a certain way or order, and a truthful statement regarding them is one which agrees with the facts.

We are at once met, however, with the difficulty, How shall we ascertain the facts except by human observation and testimony ?

But human observation is imperfect, and what we observe depends to a large extent on our previous training, experience or constitution.

As a starting-point of thought we may notice that there are certain statements we call axiomatic truths, because most of us cannot think of them as contradicted. Our assent to them depends on the structure of our minds, and our minds will only operate in certain ways. We cannot force them otherwise any more than we can make water spontaneously run up hill.

Hence they are true for us as at present constituted. Thus, for instance, when we say that two things which are each respectively equal in any way to a third thing are likewise equal in

that respect to each other, we are stating an axiomatic truth, because we cannot possibly think that two things which are each respectively equal in any way to a third thing are not equal in that respect to each other. In the same way we cannot think that a part of anything is greater than the whole.

There are then a number of self-evident or axiomatic truths consisting of statements which it appears we cannot contradict, constituted as our minds are at present.

Starting with these axiomatic truths we can in certain branches of knowledge derive, by deductive reasoning, certain other consequences which are true though not directly obvious.

Thus, when we have defined what is meant by the words "a plane triangle" we can, by the application of syllogistic reasoning on certain axioms, arrive at the conclusion that the sum of the interior angles is equal to two right angles. But what we are here doing is merely to ascertain the logical consequences of certain assumptions we make on the meaning of words as determined by the structure or limitations of our own minds.

We are not then reaching absolute truth but only relative truth, that is, what is true for us, at present. Other minds, able to perceive that these so-called axioms are not necessarily incapable of denial can arrive at different conclusions. We have a conviction, however, that the external Universe is not wholly the product of our own mind, but exists apart from our existence, and we desire, if possible, to arrive at statements of facts which do not depend upon our personal existence to observe them.

2. Various Methods of Reaching a Knowledge of Facts or Events.

There are four principal ways in which the course of events in the external world can be ascertained more or less accurately. They are: (i) by repeated experiment; (ii) by repeated observation; (iii) by concurrent human testimony; (iv) by inductive analysis and probability.

Consider the very large range of facts in the physical world, such as those included in the sciences of chemistry and physics. How, for instance, do we know the truth about the action of any acid, say, nitric acid, upon various metals? The answer is solely by trying experiments.

We find then that copper, iron, zinc, etc., dissolve in the acid, but gold, platinum and iridium do not. If we had never seen a lump of sugar or a cup of tea we could not tell what would happen when the sugar is put into the tea by any deductive reasoning or argument. But we have all tried the experiment thousands of times and so we know the result.

Then in the next place we can only reach truth in some other regions by observation. If we desire to ascertain the truth about certain things connected with the sun, such, for instance, that it has a tenuous atmosphere called the Corona surrounding it, we can only reach it by observations made on the occasion of a total solar eclipse. We cannot experiment with the sun and moon, and the same for any other astronomical truth.

There are, however, regions of knowledge in which we cannot apply either repeated experiment or observation, but are compelled to rely on human testimony or observation, as to events that only happened once, by persons other than ourselves. In the case of living witnesses we are then compelled to analyse their statements or consistency with each other.

In courts of law there is a process called cross-examination, which consists in sifting the statements of witnesses by questions intended to ascertain the accuracy of the powers of observation of the witness, or the consistency of these statements with each other or with circumstances or other testimony. When skilfully applied it is a powerful means of ascertaining truth or the high probability of it.

In the case of a number of witnesses to past events it is found that the nature of their evidence will differ, because each will take notice more especially of certain things depending on his or her vocation, experience or character of mind. Considerable difference, however, in their testimony will not invalidate it. In fact, too close an agreement might indicate collusion between the witnesses.

In a large number of cases when we cannot assemble the witnesses and apply cross-examination we are compelled to rest on indirect or written evidence as to their accuracy as observers.

Nearly all our personal knowledge of, or assurance concerning, scientific matters is based on the evidence of experts who do not contradict each other, and concerning whom we have had experience as to their accuracy in matters we can personally verify.

It is, however, a familiar experience that we do not rely on a single experiment or a single observation or the testimony of a single witness to give us confidence that a statement as to the course of events is true or the course of events is in accordance with a statement. Our experiment must give the same results as often as repeated and the same for our observation. We attach little weight to the statements of a single witness. There must be a plurality of identical experiences in our experiment or observation and an identity in the evidence of many independent witnesses before we can feel confident we have reached the truth.

A single variation or departure from this identity serves to nullify the effect of a large number of coincidences or agreements.

3. Difficulty in Ascertaining Truth in Past or Abnormal Events.

The most difficult matters in which to ascertain truth are historical events in which the contemporary witnesses are all dead or cannot be brought together for cross-examination, and particularly when the event has only occurred once, and especially when it is abnormal or out of line with large experience. We may have then only written or printed documentary evidence which may not even be contemporary with the event in question. It may be a single case of an event quite contrary to our usual experience. This brings us to consider the validity of evidence for so-called miracles. Even when we have a number of witnesses who assert that they have seen a certain thing happen or event take place there is great difficulty in reaching certainty or truth.

We have only to call to mind the number of statements made as to observations of the sea-serpent, the Loch Ness Monster, or on the rope trick of Indian conjurors, and the associated suggestions of mass hypnotism or deception of some kind to see that a very careful and skilful examination of evidence is necessary before the statements of even a plurality of human witnesses can be considered as leading to a knowledge of the truth.

We are compelled then to rest very much on the evidence we have in other ways on the accuracy or competence of the witnesses to the events.

Of these non-repeated or non-repeatable events concerning which we desire to know the truth, the most important are those

historical events which form the foundation for religious beliefs, and especially for that called Christian.

Above all we seek to ascertain the actuality or truth of such events as seem to violate our general experience of the uniformity of natural phenomena. We have a very large and ever-accumulating experience that there is a constancy in the mode of happening of events in Nature, and that we can depend upon this constancy. If it were not so life would be impossible for us.

There is a very widespread opinion amongst the cultivators of knowledge of the physical universe that no variations of our present observed order of Nature or mode of happening of events as we now know them has ever taken place. Hence they reject as untrue any accounts of events called miraculous, not in line with our present experience of physical phenomena. It is important to bear in mind, however, that the uniformity in physical events is a thing to be explained and not taken for granted as essentially necessary.

There is a term Entropy which is used in a certain branch of science called thermodynamics to describe the fact that there is a spontaneous tendency in physical events towards disorder, and not order. For instance, atomic disorder of a certain kind tends always to increase and does not of itself tend to reproduce order. This may be illustrated by a simple example.

If we allow a heavy mass of matter to fall from a height under gravitation the particles or atoms of it whilst it is falling have all a component of motion in the same direction with the same speed. But when it strikes the ground this uniform motion is arrested and its energy is wholly converted into heat, which consists in an irregular motion of vibration of the atoms.

We cannot, however, gather up this heat and convert it all back into energy of mass motion. This is an illustration of two important laws called the First and Second Laws of Thermodynamics. The first states that we can convert the whole of the energy of a large moving mass such as a motor car or train into energy of irregular motion of atoms we call heat. The second states that we cannot convert back the whole of the energy of heat into mechanical energy of any kind.

The process is not entirely reversible, and the result of a transformation always is to diminish the amount of available or useful energy in the universe. As far as it can be reversed

it always requires the co-operation of intelligence. Hence we can conclude, I think, that the uniformity of phenomena in Nature is not self-produced, and we cannot argue that no deviations from it are possible. Hence the abnormal events we call miraculous are not to be ruled out *a priori*, but their occurrence is to be tested by the ordinary rules of evidence.

4. Truth in Biblical Records and Narratives.

By far the most important of the non-repeatable events concerning which we desire to know the truth are those which concern the short earthly life, acts and words of Jesus of Nazareth which are described to us in the four short biographies we call the Gospels. Outside of these narratives we have little or no information except a few very brief references in secular literature.

Of these four, three are distinguished as the synoptic Gospels from their similar characteristics, but the fourth is agreed to be later in date, somewhat different in character from the other three.

There are then two different fundamental questions to which we require answers in accordance with truth. The first is whether the copies and translations we now possess of the writings called the Gospels and all those comprising the rest of the New Testament are in substantial agreement with any original documents nearly contemporary with the events they describe and the deeds of the Person round whom they centre ?

The second is whether these original documents, accurately or nearly accurately, described events which did actually happen and words which were spoken ? It is needless to say that any short convincing answers to these questions are impossible. Whole libraries of books have been written in reply to them.

Very shortly the assured results are as follows :—The original manuscripts of the Gospels and New Testament books generally are all lost or destroyed. They were in all probability written on the perishable material papyrus. Nevertheless, about two thousand existing MSS. have been catalogued, each comprising copies of portions small, large or nearly complete of these writings. The oldest of these known copies was written about the middle of the fourth century.

The Codex Vaticanus in the Vatican Library, Rome, is deemed to be the oldest of them, and the Codex Sinaiticus, now in the British Museum, is the next oldest. These are written on vellum or parchment in so-called uncial capitals, but without spacing between the words. These two contain the whole, or nearly the whole, of the New Testament. There are also an immense number of fragmentary MSS. The Syriac, Latin and Coptic-speaking peoples all had translations of the New Testament writings in the second century, and fragments at least of these versions are still extant.

All these MSS. differ in their text in a slight or even larger degree, and the task of textual criticism is to decide as nearly as possible the actual original words. "Roughly speaking," says Dr. Warfield in his "Introduction to the Textual Criticism of the New Testament," "there have been counted about 180,000 or 200,000 various readings, that is actual variations or differences in the existing documents, the results of errors in copying or other causes." But most of these are very slight and Dr. Hort, of Cambridge, one of our great experts in this subject, presents the results in the following way:—

He says that in about one word in every eight in the various New Testament manuscripts very small differences exist sufficient to bid us pause and note it. About one word in sixty has such various readings in different manuscripts as to make decision between them a little difficult, but most of these differences are so trivial that not one word in a thousand has such substantial variation to call forth the efforts of critics in deciding between the various readings as to the original or true reading.

Broadly and generally then the great mass of the New Testament has been transmitted to us down the centuries, say the experts, so accurately that we can be confident we have a truthful presentation now of the original manuscripts in substantially the form in which they left the hands of the original authors.

In addition to the partially complete or fragmentary manuscripts we have also such compendia of them as Tatian's "Diatessaron," a Gospel harmony of the second century, which bears witness to the existence at that date of written Gospels, practically identical with those we have now.

Hence we can assert, with a large degree of confidence in its truth, that the Gospels as we have them now are substantially identical with those in existence by or shortly after the beginning

of the second century, and some authorities consider much earlier. There does not appear to be any good evidence of an evolutionary development of these Gospels or gradual change. What they are now they were at the outset.

The second question to which we desire an answer is whether the statements in the original manuscripts were in accordance with fact and in short, truthful accounts of events which actually did take place, and words and discourses which were uttered as described. Here, however, we come up against the real difficulty in ascertaining the truth as far as it is a matter merely for the intellect alone.

For the Character and Person presented to us in these documents is absolutely unique. Never spake man as this Man, and no human being ever acted or achieved that which He is stated to have performed. His words had an appealing and persuasive power and authority, beauty and novelty absolutely without comparison with any others before or since. Then further, according to the accounts given of His actions: in His hands all the materials and energies of Nature were perfectly under control. Water became wine, bread and fish multipled, chronic organic disease vanished, the dead were raised to life at His word, and storms were instantly stilled. In short, His words and works were supernatural in all respects. These things stand so completely outside of all other human experience that multitudes have declared or believed them not to be true, but the accounts given of them in the Gospel writings are deemed to be an embroidery of fiction added later on to the accounts of a merely normal but noble life. But all the original eye-witnesses have gone.

5. The Indirect Mode of Reaching Truth.

When we cannot obtain a direct proof of the truth of any statement or event, it is sometimes possible to reach a strong probability of truth by an indirect process which consists in proving that any other assumptions than those of the truth of the proposition or statement land us in absurdities or contradictions or greater improbabilities. Thus in geometry if we require to prove a certain proposition or theorem is true, we can often show that absurd consequences follow from assuming it is not true. We can apply this indirect method to the consideration of the truth of the supernatural events described in the

Gospels. Let us assume that they did not happen, and that the actual events were simply those of a normal, but very noble human life, and that the written accounts of it became embellished later on with fictitious narratives. If then the abnormal events we call miraculous did not happen someone must have invented the accounts of them, and put them into circulation, and obtained for them general acceptance as true. But was this possible ?

We know that there are certain so-called apocryphal Gospels containing accounts of miracles said to have been performed by Christ in His youth, but the character of them is totally different from those described in the accepted Gospels. These latters were always works of mercy done in infinite compassion for human sorrow and needs or else works of power " signs and wonders " as evidence of His deity and Messiahship.

There is nothing of this in the non-canonic narratives. These latter were puerile, useless or vindictive. Hence we have accounts of two different classes of abnormal events and the question is which of these, if either, is most likely to be true, or rather, can we say that one set are likely to be true and the other set likely to be false. We have a vaguely defined feeling that those least likely to have been the result of human invention are most likely to be true. We can then only in these cases place before our minds some statement and its contradiction or alternatives, and ask ourselves which of these is most probably true.

It is a common saying that truth is stranger than fiction, but with regard to some events it is certain that the event itself is more probable than its denial or substitutes. That is certainly the case with the greatest of all historical events, viz., the Resurrection of Christ from the dead. You are doubtless familiar with the alternatives which have been proposed to escape from an acceptance of the literal truth of the Gospel narratives.

There is the " myth theory " of David Strauss attributing the accounts to an eager acceptance of an hallucination on the part of an excited woman, Mary Magdalene, and its appropriation by uncritical disciples. But, tested by all human experience, it utterly fails to bear the weight of the facts or to account for the rise, experience and conquests of the infant Christian Church. Then there is the so-called " swoon theory," which implies that the Lord never really died upon the Cross.

This involves as a necessary consequence extensive and deliberate fraud by a number of persons, and is absolutely inconsistent with previous and subsequent ascertained history. The same is true for the false explanation put into the mouths of the Roman guard by the startled Sanhedrin. It carries in it its own contradiction. If the Roman sentries were asleep, how could they know it was His disciples that stole the Body ?

Anyone who, like the writer, has seen the type of large millstone used at that time to close burial vaults and the impossibility of one, or even a few men, moving it will realize at once the utter absurdity of the suggestion.

It is an accepted principle that every event must have a cause, and also a sufficient cause. No theory of deception or hallucination will account for the remarkable and immediate acceptance of a creed based absolutely upon the truth of the Resurrection by the thousands who accepted it within a few weeks of its occurrence, including a multitude of priests, except the fact that it did occur exactly and precisely as stated.

6. Criteria of Truth.

On the other hand, it must be noticed that even a widespread, popular acceptance of any statement as true does not necessarily prove its truth, or else we should have to accept all non-Christian creeds, such as Mohammedanism, or Buddhism as truth equally with Christianity. Even a scientific theory such as Evolution widely advocated and held, is to be judged on its merits without regard to the number who embrace it.

Broadly speaking, in scientific matters of fact, we rely on capability of repetition of our experience as often as we please as one of our tests of truth of fact. In the case of human evidence we depend chiefly on plurality of congruent testimony.

Nevertheless, evidence must be weighed as well as counted, and we cannot always dismiss the testimony of a single or of very few witnesses, even to an abnormal occurrence as untrustworthy, provided we have proof in other ways of their accuracy of observation and statement. One source of error in scientific theorizing is failure to define sufficiently the meaning of words used, or the employment of terms which beg the question at issue. This is particularly the case in the case of the theory of the evolutionary origin of the human race. Words

are then used such as "man" and "acquired," or "adapted," without adequate definition and assumptions made as to the age of fragments of skeletons which are little more than vague guesswork.

We have not yet found sufficient material to construct any impregnable theory of the origin of the human race which is strong enough to invalidate the Scriptural statements of its origin in an act of Divine creation.

Furthermore, we have no right to dismiss as untrue a statement of fact because we are unable to visualize its nature or mode of happening. Thus, for instance, we can form from experience a clear idea of space of three dimensions, and by limitation of space of two dimensions. But not even a mathematician can visualize space of four dimensions, though he is able to conduct mathematical calculations on the assumptions that it can exist. Certain astronomical phenomena to which attention was drawn by Einstein's Theory of Relativity, have given strong indications that our space of three dimensions may have a curvature in a fourth dimension, and be limited in amount though unbounded by any margin. If so, there may be a multiplicity of spaces not identical, but separate and co-existent.

We cannot make either our power to visualize or our power to explain by mechanical explanations an essential quality or condition for a statement of truth.

7. Is a Revelation of Truth Necessary in some Matters?

This brings us, however, to consider in the last place whether in certain matters a revelation or Divine Communication of truth is not requisite.

It is a wide experience that we cannot give absolute and incontrovertible proof in matters of religion, such as the existence or goodness of God or the survival of the human personality after bodily death, as shall forcibly convince a sceptical enquirer, in the same manner that we can bring conviction on certain intellectual questions.

Yet they are questions on which certainty is of the utmost moment. Is there not then a probability to say the least that there has been some mode of communication of truth on those

things which lie beyond the unassisted power of the human intellect to fathom ?

As Bishop Butler suggests in his book, "The Analogy of Religion," the answer which countless numbers have given to this question is that this communication has been given to us in that Hebrew and Jewish literature we call the Bible.

We have unquestionable and continual proof being given to us now, that its history, archæology, and especially its prophecy of past events fulfilled, have been found to be true even in face of antecedent doubts or disbeliefs. The conclusion we can then draw is that it may be trusted to give us truth in those matters and questions yet beyond our powers of verification.

The point to notice is, however, that this proof never has such character as to dispense with a personal experiment and a voluntary action. The reason is that in all the emotional relations of rational and intelligent beings any degree of compulsion, physical or mental, vitiates that relationship entirely.

The character of the proof that is effective varies with the nature of the subject. No mathematician would admit that a mathematical proof could be obtained experimentally, and no chemist that a chemical one could be obtained otherwise than by an experiment. Hence in matters of religion which are personal and concern our relation to a Supreme Personality, the only valid proof can arise from a personal experiment. The truth may be suggested or buttressed by various arguments or lines of the thought, but in the last resource conviction of it must rest on a personal venture and act of free will.

There is a type of certainty which does not arise merely through ratiocination or intellectual argument, but through a willingness to carry out into practice the truth as far as it is known.

"If any man will do His will, he shall know of the doctrine, whether it be of God" (John vii, 17). The truths of religion are, in short, largely experimental truths. "In the day that I cried Thou answeredst me, and strengthenedst me with strength in my soul" (Ps. cxxxviii, 3). Truth or agreement between statement and fact is represented in Scripture as something indescribably precious, and its opposite or falsehood as essentially destructive. The importance of it is indicated by the occurrence of the word "truth" about one hundred times in the Old Testament and one hundred times in the New.

We are not encouraged to think that in matters spiritual we can ascertain absolute truth by our own unaided efforts, but, on the contrary, we must have it communicated to us, and that it is the special work of the Divine Spirit to make this communication.

"Howbeit when He, the Spirit of Truth, is come, He will guide you into all truth; for He shall not speak of Himself; but whatsoever He shall hear, that shall He speak; and He will show you things to come" (John xvi, 13).

There are countless voices in the modern world calling us to embrace error of various kinds in scientific, philosophic, economic, social, and religious matters, and it should be our earnest effort to ascertain concerning them, the truth, the whole truth, and nothing but the truth, to the very best of our ability, under present conditions and limitations of our minds.