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ORDINARY MEETING.*

D. HOWARD, ESQ., D.L., F.C.S., IN THE CHAIR.

The Minutes of the last Meeting were read and confirmed, and the following Elections were announced :—

LIFE ASSOCIATE :—Captain F. A. Molony, R.E., Nova Scotia.

ASSOCIATES :—Rev. C. H. Barlow, India ; Douglas Public Library, Isle of Man ; Rev. A. C. Rowley, Lincolnshire ; Miss M. E. Vaughan, United States.

HON. COR. MEMBERS :—Rev. R. F. McLeod, Hertfordshire ; R. Scott Moncrieff, Esq., Edinburgh ;—

Papers entitled "Evolution and Design," by Mr. G. Cox Bompas, and "Archæology and Evolution," by R. H. Walkey, Esq., having been appointed for consideration ;

The former was then read by its author :—

EVOLUTION AND DESIGN. By G. COX BOMPAS, F.G.S., F.R.G.S., &c.

TWO knights, the legend tells, fought about the colour of a shield, of gold or silver. Each spent his strength to confound the other's belief, and dying, found the shield had two sides, one gold, one silver. So it is with most controversy, for truth is one but many-sided, and it is hard to see all sides at once.

Evolution and Design have perplexed and still puzzle many minds as if opposed to each other. This host of living beings so marvellously fitted to their place in life ; have they, it is asked, and their fitness come by evolution or design ? Inanimate nature suggests like thoughts. But are evolution and design opposed, or two sides of the same truth ?

What is evolution, and how have this new name and notion arisen ?

Evolution has been defined by one as "a change from an indefinite incoherent homogeneity to a definite coherent heterogeneity through continuous differentiations and integrations" which another has translated, "a change from a no-

* 2nd of 28th Session.

howish untalk-about-able all-alikeness to a some-howish and in general talk-about-able not-all-alikeness," but we need not thus abuse our mother-tongue.

Before Darwin, the origin of species was not much considered; though Linnæus, Lamarck, and others had given hints of the line of thought he elaborated. Men saw the various races of animals, distinct, incapable of crossing, limited in their range, and assumed that species were created where and as we now find them. So before geology opened men's eyes to the history of the earth's structure, stretching through a succession of ages, men thought the earth was created in seven natural days. Darwin traced back the history of animal life, and showed that the likeness of structure was due to common ancestry, the unlikeness to diverging variation moulded by natural and sexual selection and varying circumstance, and rising in the general view from lower to higher scale of being.

For this growth of animated being the name Evolution was devised, a convenient term though sometimes misused.

Sceptics hailed it as a discovery, as if evolution explained the origin of all things and dispensed with a Creator. Others therefore feared that evolution might undermine the faith, and denied its truth without caring to understand its nature. Some men of science are still jealous of design lest it should check investigation of natural causes, and some men of religion still shrink from evolution as savouring of infidelity.

In truth evolution leaves both creation and faith untouched, for evolution is but a mode of creation.

Evolution is the product of two factors, Life and Circumstance. Life, including growth, variability, reproduction, and the laws regulating these forms of life: Circumstance, or environment, which moulds the growth, defines the course of variation, and influences the nature of the offspring.

The distinction between these two factors is often forgotten. The term Evolution is sometimes misused to confound or efface it.

Life and its origin lay outside the scope of Darwin's inquiry. He noted and traced out the facts or laws of growth, of variability, of reproduction, but these attributes of life he did not attempt to explain.

The causes of growth as of life are beyond the interpretation of science.

Variation proceeds in a certain harmony, so that variation of one part of a structure is accompanied by variation of

other parts necessary for the harmonious development of the whole. This correlation is as inscrutable as life itself.

The continuity of life is built up by reproduction, itself as great a mystery as the first origin of life. The likeness of the offspring to the parent or remoter ancestor, and its unlikeness—the plastic nature of each animal, shown eminently in domestication—the limits of change—the special variability of individuals or organs which have themselves varied, tending therefore to further change. These and all such other characters of life Darwin sought to observe and record, not to explain. They are as inscrutable as life itself.

The main scope of Darwin's work was to examine and explain the circumstances which moulded the growth and variance of life to its present form, how natural and sexual selection and the struggle for existence restrained to its present bounds the exuberant growth of life. But Circumstance is the "antagonism" of Life, balancing it, and keeping it in due control.

Darwin attributed the origin of species to the preservation and accumulation of beneficial variations of structure, either by means of the advantage such variations would naturally confer in the struggle for existence, and which would tend to perpetuate them by natural selection, or by means of the preference excited in the other sex by such variations, which would tend to propagate and preserve them by sexual selection.

Thus natural or sexual selection may mould the growth of life into diversity, and so explain the origin of species; but these are only limiting and restraining forces, the negative side of evolution which includes and mainly springs from life and growth. To confound natural and sexual selection with evolution, or attribute to them creative power would be a mistake; as if a man should attribute the motion of the train to the friction of the rails, because that friction guided the train safe to the terminus, and saved it from catastrophe.

This distinction between Life in its origin and growth, alike inscrutable, and Circumstance, the force shaping that growth, and which is the special province of science, is a distinction vital, yet often forgotten. Its clear perception preserves from materialism, and from the notion that evolution is a creative power, instead of a name for the development of life.

Natural selection cannot create a new organ or structure,

but only preserve such variations of growth as are best adapted to the conditions of life. If the humming-bird's bill, or the insect's proboscis grows longer, its better adaptation to the flowers on which it feeds may cause that form to prevail to the extinction of the shorter bill or proboscis, but the flower does not make the bill or proboscis grow, nor cause the offspring to inherit the more favourable form.

It may be that the desire of the parent is impressed on its offspring—mother markings are well known. The effort of the humming-bird or insect striving to reach the honey of the flower may tend to produce in the offspring a longer bill or proboscis. Such unconscious maternal influence may be one of the causes of diversity of species. But if so, this cause is an attribute of life distinct from natural selection, which is the direct action of circumstance.

Whatever may be the nature and limits of hereditary influence, a subject often debated, that nature is a character of life, the limits are imposed by circumstance.

Natural selection is therefore only a secondary cause of the forms of life around us. It has moulded their present shape by checking and limiting their growth and reproduction, but can neither cause nor explain the life on which it acts, or the laws of reproduction. The origin and first cause of these is beside and beyond the interpretation of science.

I do not debate with those who deny the existence or necessity of the Author of Life, who prefer to suppose that matter created intelligence rather than that intelligence created matter, thus deifying atoms while denying a God. Such unreason does not belong to evolution as held by its greatest teachers. "The birth both of the species and of the individual," Darwin wrote, "are equally parts of that grand sequence of events which our minds refuse to accept as the result of blind chance. The understanding revolts at such a conclusion, whether or not we are able to believe that every slight variation of structure, the union of each pair in marriage, the dissemination of each seed, and other such events have all been ordained for some special purpose."

And Wallace, who claims with Darwin the discovery of natural selection, insists "that there are at least three stages in the development of the organic world when some new cause or power must necessarily have come into action" namely when vegetable or unconscious life, when animal or

conscious life, and when man's intellectual life began (*Darwinism*, p. 474).

I assume that life is an endowment from the Creator and that its development is moulded by circumstance.

Evolution therefore does not deny a Creator, but explains the manner of His working, and the laws and secondary causes through which He acts. These in their infinite complexity and marvellous adaptation it is the province of science to examine.

If life flows direct from its Author, how is it as to circumstance? Is this chance, is it the mere result of natural law, or is it subject to ever present control?

Naked chance is out of fashion. No one now teaches that the Universe is a fortuitous concourse of atoms. But dressed in philosophical garb, disguised as Natural Law, chance is still much in vogue.

Law without a Law Giver,—Force without control, is but chance. The throw of the die is not less chance because it falls by gravitation. There is no real difference between a chance concourse of atoms and a chance coincidence of circumstances, each alike must produce not Kosmos but Chaos.

Life and Circumstance from which the Kosmos springs must be designed and controlled.

The existence of evil in the system of nature has, however, led some who admit a Creator and Author of life to suppose that He has ordained fixed laws to work out their results in nature without after control or interference. But is this hypothesis logically consistent?

Grant that life and growth are endowments of a Creator, but that the structure of each animal has been modelled in its growth to its present form by the circumstances surrounding itself and its progenitors, by climate thickening its fur, by food modifying its teeth, by distribution of land and water changing a four-footed mammal into the likeness of a fish, by struggle for existence eliminating the inferior types.

What is that struggle but the competition of exuberant life, its force due to and measured by the quantity and energy of life. That struggle therefore has the same source as life itself; that cogent circumstance must be designed. Why has the cod seven millions of eggs, the elephant but one offspring: yet each justly balanced against the destructive forces to which it is exposed, and keeping its place in nature. Is this difference chance or planned by the Giver of life?

The races of man if their multiplication were unchecked might in a few centuries fill up this globe, but the reproductive power of some of the lower animals, fishes or insects, is thousands or millions of times greater than that of man. How is the balance of nature preserved, unless the same Creator who pours out this flood of life has planned and set its bounds?

Food, another cogent factor in building up the forms of life, is itself the supply of animal and vegetable life therefore not chance, but due to the Author of life; and who will affirm that sun and earth, climate and land and sea, which help to mould the forms of animated nature, are freaks of chance?

Insects are endowed with taste, smell, and sight, which lead them to various flowers stored with honey, breathing fragrance, and dressed in bright colours, and by the insects' visits the flowers are fructified. The mutual adaptation of insect and flower has grown with the evolution of both. Are the life faculties, the insect senses an endowment, and the existence of flowers a chance? Neither the insect nor the flower could become adapted to the other unless each had the special life and growth and variability required to make the one the complement of the other, and with these each has been endowed. Is it a reasonable hypothesis that the two being thus endowed were brought together by a chance coincidence of circumstances to work out each other's development?

The ocellated plumage of the peacock and Argus pheasant has been ascribed by Darwin to the gradual influence of female preference; by Wallace to superabundant vitality in the male; but this preference or vitality and the variability of the feather on which they act are alike characters of life, and therefore evidence of design.

Like reasoning may be applied to every animal structure and to the whole order of nature, showing that natural and sexual selection and the struggle for existence are not independent forces, but mainly the result of the interaction of the forces of life, and therefore, like life itself, the offspring of design.

Evolution is, moreover, admittedly subject to law; but law rightly understood implies design. It is the expression of the will of the Law Giver; and every law in proportion to the wisdom of its Giver is adapted to control the varied circumstances to which it is to apply. A perfect law would be adapted to work out its ends in every circumstance.

Are not the laws of nature thus adapted, can they be without control and subject to chance?

The truer question is not whether there is evidence of design, which life and law alike prove, but how that design operates, whether by direct interference, or through a chain of secondary causes. Admitting in each case creative energy and control, the more recondite is the chain of causes, the more profound would appear to be the creative wisdom.

A time-piece which, as we say, goes of itself for days or weeks, is more admirable than a dummy watch, whose hands must be turned with the finger; a paper-machine in which rags at one end become paper at the other is a higher exhibition of intellect than the process of hand-made paper; so those who insist most strongly on the evidence of design in the creation do not oppose, but should rather compete with the veriest agnostic in the endeavour to trace back to the furthest the method of His working who worketh all things according to the counsels of His will.

If law is the will of the Creator, wherever that law operates, that will controls. But its vigour is hourly seen in the exuberance of life.

Each new-born life is a new being, a new creation, of origin as mysterious as the first origin of living beings upon earth, and springing from the same source of life. The parents are but secondary causes, and can no more create a new life than they can form a star.

The up-springing of life in all its reproductive forms is proof of the ever-working power of the Creator as plainly as the existence of life is proof of a First Cause.

And circumstance works by laws of life whose wise adjustment passes the profoundest search of human intellect, being the constant expression of the Creator's will.

So Evolution is Design.

The CHAIRMAN (D. HOWARD, Esq., D.L., F.C.S.)—We are much indebted to Mr. Cox Bompas for placing before us one phase of this question. We shall be very glad to hear any remarks upon his paper.

Mr. H. M. BOMPAS, Q.C. (a Visitor).—There are one or two remarks I would venture to make on this paper, with the whole of which I entirely agree; and one is this—that even if we did not assent to the whole of the author's argument with regard to evolution being only a greater proof of design in creation (with which I entirely agree); still, outside all the circumstances and facts to which evolution has ever been applied, I take it that there are many proofs of design in the world which should be quite sufficient to prove the wisdom of the Creator under any view that might be taken of evolution. Take, for example, the fact that water almost alone as a liquid becomes lighter when it becomes solid, without which, I suppose, life (except perhaps just at the equator) would be practically impossible, because our rivers and lakes would be frozen to the bottom, and water would therefore be wanting in the winter time. That curious quality of water cannot be the result of evolution, so far as I can understand it, on any theory of evolution that can be given, and yet surely it is a striking proof of wisdom and design in the creation of the world. So that while evolution is of itself, as the paper says, to most of our minds, only a greater proof of wisdom than direct creation would be, we have, in addition, evidence of design to which evolution would not be applicable. As to the passage which refers to those who think that imperfections, as they are called, difficulties, and strange suffering, which are found in the world, are inconsistent with the laws which regulate evolution and other matters of the world, being the result of wisdom and design, it occurs to me that it may be true that the fact of law and the fact that creation has to so large an extent, apparently, been through law, *may* account for some of those penalties which we should not otherwise expect. It is essential, if the world is to be governed by laws, that these laws should be regular, and I suppose it would be absolutely impossible for anyone to live in a world which was not governed by laws, where they could not reckon on the result of each particular act they did in the future as well as in the past; but if you have regular laws it must lead, sometimes, to results to which one would wish otherwise, but which are less evil in their results than irregularity would be. Take the very instance that has been given you of a clock which goes for a considerable length of time. It must go regularly, and you cannot by that clock provide for any special peculiarities, which you might

do if you moved the hands according to your particular wish on any particular day. These are results which regular law must produce.

Professor J. F. BLAKE, M.A., F.G.S.—I may say that I agree with what Mr. H. M. Bompas has said, but I should probably go a little further. I do not think it is a question of science, whether the whole course of evolution itself is or is not a matter of design and due to a Creator, but it is rather with the methods that antagonism comes out between different schools of thought. Take the well known instance that everybody refers to, viz., the length of the proboscis of the bee or the butterfly, and the tubular shape of certain flowers. The question is whether they came to be adapted to each other without intention, or whether there has been a design to adapt the one to the other. That is where the difficulty comes in, when you come to particular cases. I quite agree that evolution shows design, though I have a little doubt whether the distinction between the two views is quite clearly drawn out in this paper. There is another point to which I would call attention on the second page of the paper:—"circumstance or environment, which moulds the growth, defines the course of variation, and influences the nature of the offspring." It is a very common thing for people to believe that it is environment only that works the evolution, and so far this paper accounts quite correctly for circumstance being a matter of design; but besides all this there is, I think, a definite tendency in evolution independently of circumstances. Take the eye or a feather, these are two of the most remarkable things we have to account for—what is the reason we may ask, why there should ever have been a feather? It seems to me so extraordinary a thing—so marvellous in its structure—so admirably adapted to its purpose, that I cannot conceive such a structure was ever produced by chance variations controlled by environment, unless there was a certain definite intention, so to speak, to produce a feather in the end. We may call the production of a feather, if we will, one of the properties of animal life, just as the freezing of water at a certain temperature and it then being lighter than unfrozen water is one of the properties of water. Why certain things either animate or inanimate should have certain properties is a matter of speculation or faith, which we cannot discuss scientifically.

Mr. L. THRUPP.—The author began his paper by saying that truth was like a shield that has two sides to it. Where he has kept on one side I agree with much that he has said; but I doubt whether he could contend for a moment that evolutionists will go from side to side as he has done, or admit half the statements that he has made. Both Darwin and those who follow him, appear to me to contend for self-evolution without the interference or guidance of Providence, and to have caused in the minds of a large number an increased infidelity. It has been said that if evolution be true, it merely shows that the Creator originally designed the universe and set it working rather than interfering constantly during the progress of the earth's history. That is the position the author's mind seems to me to occupy. Of course, if that were the case he can say at once that evolution is the original design of the Creator, and having left it there, it goes forward in fulfilment of His design. Now, in the first place, the author has alluded to a very common phrase of some evolutionists who declare that the world has been started like a clock, with all the previous arrangements for its going, and having been so constructed it has been left to work without further interference. Here you see at once that such a theory, whether right or wrong, appears to exclude the Creator from an over-ruling Providence and further interference in the world. It therefore becomes a very serious question whether such an evolution theory is true or false, because it undoubtedly undermines all, or the greater part, of those points of faith upon which we rely, I should say, as the very basis of our religion, for the basis of our religion itself is the relation between the Deity and man, and if that relation be abandoned after the first creation of the world, and the world is left to the working of things like a clock, it can no longer be, for a moment, regarded in the same light in which we have always been taught—a constant communication, as it were—between the Deity and man, and His over-ruling providence at all times and all seasons. Hence the issue is far greater than that alluded to in the paper, and I think it is quite idle to attempt to amalgamate the two ideas, because they appear to me antagonistic. As to some parts of the Darwinian theory, they might be rejected at once. I allude to sexual selection. Professor Wallace in his last work on Darwin, said they could not be entertained any longer, that they were not correct and must be dis-

regarded. And also the same author, who you remember was the co-originator of the evolution theory, has given strong proof against the theory itself when he alluded to three grand stages in the progress of creation, which could not be accounted for by the evolution theory at all, and "must have proceeded from the action of the spiritual world" (that is the expression of Professor Wallace). What he means by "the spiritual world" I do not profess to say, further than that we must be cautious in fixing our own opinion on it, for he may not mean by that expression exactly what we mean. But he does show you there are three grand stages to which the evolution theory does not apply, and that a direct interference from the spiritual world, as he calls it, or, as I should call it, from the Supreme Spirit, has brought about the rise of the organic from the inorganic, the establishment of mind in the animal, and, subsequently, of spirit in man.

I cannot expect to take up the time of the meeting unreasonably; but I do bring before you one point which should never be slurred over, and that is the question of man being a spirit. If the evolution theory be true then every created thing in this world, be it plant, or animal, or man, in all its parts and in all its characteristics must have arisen from the same cause.

How can we believe, if that evolution theory be true, that there is an immortal spirit? It is impossible, unless you contend that the spirit exists right back through all animal life. You must either do that or come to some period when spirit was introduced into the world. Then, if it could not have been evolved in such a way, and yet the doctrine of evolution is true, there is but one final result to come to, that man is like the brutes that perish. The more I read books on evolution, the more I am convinced that the whole theory is utterly unsound, and has no foundation whatever.

The CHAIRMAN.—Before asking the author to reply may I sum up the result of my own reading of the theory of evolution, and that is to advise everyone, when they speak and read of evolution, not to attribute to Darwin what he did not say, and to be sure of what is meant by the word. I do not know one word among the many words that have a dubious meaning, which is used in more widely different senses than *evolution*. (Cheers.)

The AUTHOR.—I have a few words to say in furtherance of what the Chairman has said, and in reference to what Mr. Thrupp said just now. If by evolution was meant self-evolution, as I

understand to be held by Haeckel and some others of his school, meaning that atoms by degrees evolved themselves into life and sense and intelligence, Darwin would have considered that, I believe, revolting to our common sense. That is not the evolution I speak of, and the object of the paper is to show that that is not the evolution theory held by Darwin or Wallace; and further to show that life is the gift of the Creator, that life is the active force of evolution, and that environment is merely a negative force; and therefore that creation,—whether *evolution* or *environment* be used to shape the thing created,—is the work of God, the Creator, Who, as well as life, gave also intellect and spirit, so that the whole creation is due to His design. (Cheers.)

COMMUNICATIONS RECEIVED

ON THE FOREGOING PAPER.

Dr. D. BIDDLE writes:—

It is quite true that, rightly considered, evolution is not incompatible with design, but rather enhances our conception of the ingenuity displayed. We, however, who are Christians, regard the Deity as "knowing the end from the beginning," and as using evolution simply as a method. Extreme evolutionists, on the contrary, rarely do this. For the most part, their God is Nature, or if they be deists of an optimistic tendency, they regard the Deity as learning by experience, or (at least) feeling His way towards the perfection of His works. A clearly cut design, even though worked out through the centuries, partakes too much, in their eyes, of the "carpenter-theory" of creation. Their preference is for a Deity resembling those novelists whose characters evolve themselves, by a kind of current cerebration, whether their own or the author's being a matter of small account. Evolution of the fashionable kind depends upon *chance-variations*, and, in so doing, puts itself outside the pale of true science, which would bring all variations under some law. Indeed, it is not difficult to see that he who could observe and accurately chronicle a veritable chance-variation, would record a greater miracle than any to be found in Holy Writ, and would in more telling terms confound the philosophy of

Hume than all the Christian apologists put together. Philosophy itself would then have produced the contrary to experience, and although the variation might be trifling, still, where the question of degree is excluded, the occurrence would be no less convincing than if one rose from the dead. Truly, they have no call to sneer at miracles who accept chance-variations.

The Rev. J. M. MELLO, M.A., F.G.S., writes:—

I venture to send a few remarks on Mr. G. Cox Bompas's paper on Evolution and Design, for I quite agree with him that "Evolution is Design." The late Professor W. Clerk Maxwell in a clever parody of one of the British Association Addresses, tells us how the philosopher bids us contemplate "the seeds of the mighty world."

> "The pure elementary atom, the unit of mass and of thought,
> Which by force of mere juxtaposition to life and sensation is brought,
> So down through untold generations transmission of structureless germs
> Enables our race to inherit the thoughts of beasts, fishes and worms."

Thus we are in our highest development the outcome of a long process of evolution according to that hypothesis which is now so widely accepted, although it is still confronted with more than one serious difficulty.

But granting that its truth be finally established, and that the old view of special creations of species, or at least of genera according to definite plans give place to the newer theory and be regarded as untenable, I do not, I must confess, see how this would in the slightest degree affect my belief in design in creation; it would not relegate to chance or to "a fortuitous concourse of atoms" the wonderful adaptation to environment, the fitness of special organs for special purposes which we see on every side of us, and which, by whatever means or process of change these may have been brought into existence are clear evidences of Thought and therefore of Design. There are some who may sneer at what they term "the carpenter-theory" of the Universe; but is that which it implies the less true? If we can see the adaptation of means to an end in man's work, we do not say "Oh, that is a mere matter of chance," but we at once recognize underlying the complicated machine, or the simple tool, the previously existing plan, the evidence in them of a set purpose, and from this we rightly assume that a thinking mind, a Personal Thought, *not blind unreasoning forces*, must have been the ultimate cause of what we see.

Does it not stand to reason that you cannot bring out of a thing that which has not been first placed in it; you cannot bring out of it more than was placed in it; in other words you cannot "evolve" that which was not first "involved."

Say then that all the varied and complicated phenomena of nature around us, that we ourselves are the outcome of the primordial "structureless germs," the atoms, those "small incompressible spheres of our "poet-philosopher." If we are what we are, and if other things are what they are, it is because all that we and they have become was wrapped up in a germ, was in it in the beginning, was *involved*, and to my mind Evolution can have no explanation save on the assumption of an Involver Who has planned all from the first, for all that we see implies Thought, Intelligence, and Design, and therefore a Personal God.

Professor H. LANGHORNE ORCHARD, M.A., B.Sc., writes:—

The chief merit, in my judgment, of Mr. G. Cox Bompas's interesting paper ("Evolution and Design") consists in showing that both life and circumstance are inexplicable apart from design and will in the Creator. I note that the author speaks of the fall of a die being the result of "chance:" this is hardly scientific. That fall is as truly the effect, or result, of law as is the earth's revolution round the sun, and can be calculated mathematically. With regard to "chance" it has been well remarked that it is "an expression which in science can only stand for a cause not yet discovered."

SECOND PAPER.

The following paper was then read by the Rev. R. F. McLeod, the author being unavoidably absent abroad :—

ARCHÆOLOGY AND EVOLUTION.

By R. Huyshe Walkey, Esq.

THE Science of Archæology is now so far developed that it has as much right to tell the world what it thinks and teaches in regard to the theory of "Evolution of Man" as one of the older sciences.

Of course, I am far from the first to give its testimony; but it seems to me that those who have already done so, have treated archæology only in conjunction with geology or palæontology; whereas, just as it is the one science which devotes itself entirely to pre-historic man, so it is the one branch, of all the branches of science, which is most intimately affected by evolutionary theories. If there ever was a connecting type, half man half anything else, its remains would lie within the field of archæological study. It is always difficult to lay down any hard and fast definition as to where one science begins and another ends; thus, in the present case geology and antiquarianism blend into the two extremes of archæology, while palæontology runs all through it; but it may I think be pretty accurately described as the study of pre-historic man, his remains and surroundings. And it is as such that I have claimed for it

a more direct interest in the evolution of man, than is felt by any other branch of science.

So far as we at present know, it seems to give no uncertain answer to the problem; nothing less, in short, than a complete negation of the evolutionist theory. Whether the embryo of a man resembles most the embryo of a carnivora, a lemuroid, or a marsupial, or whether it resembles any of them at all, is nothing to the archæologist. The question resolves itself into the simple form:—Is there any reason to suppose that there ever existed a race of beings, standing half way between that of man and that of the great anthropoid apes? if so, has that race left any implements or other trace of its existence? and was primitive man any nearer to such a race than the man of the present date is?

The greatest difficulty lies in answering the first part of this question, and I shall therefore take it first and devote more attention to it than to the second part. First, then, if there ever existed a great, semi-simian, semi-human race, would it have left remains other than its bones? The answer to this question appears to me to be in the affirmative. Our knowledge of how far advanced the chimpanzee and other great apes are, entitles us to expect that such a race would have arrived at the knowledge of the use of the simpler forms of implements, and probably also of the knowledge of fire; also it should be carnivorous. Thus, we may fairly expect to find traces of this race associated with rude implements and traces of fire, in the deposits immediately preceding those in which the earliest remains of man are found. I do not think I am exceeding the limits of positive discovery in saying that absolutely no formation containing such remains is known to exist. Frequently, in conjunction with beds bearing relics of Palæolithic man, we find an underlying layer devoid of human relics, yet containing those of mammalia co-existent with him at a later period. Sometimes the remains of man occur only near the surface of a bed, while those of the co-existent mammalia occur equally throughout its entire thickness, showing that man had not appeared at that spot until late in the period of the bed's formation. But nowhere do we find the traces of a pre-existing semi-human race. No portion of a skeleton, such as might be ascribed to an animal of this nature, is present either preceding or co-temporary with Palæolithic man.

Of course any supposed trace, later than the first appearance of fully-developed man, would be only doubtful evidence, since it would be possible to attribute any such to personal deformity, or else to tribal deformity, such as that practised by the old Bretons, the Amyara, Flathead Indians, and other races; or to some peculiar habits of life led by a particular tribe, such as we know to be a possible medium of slightly altering the skeleton of man. Many such instances are noted in Prescott's *Natural History of Man*, and other anthropological works. I should perhaps notice the few supposed remains of man, or something like man, which are ascribed to a date earlier than that of the cave and river drift men. Of these, with the exception of two flakes found at Crayford and Erith, none have been satisfactorily proved to belong to undisturbed strata of the age assigned to them; and as regards these two exceptions, as no trace of bone has been discovered in connection with them, they are of no value to evolutionists.

With the accounts of Miocene man I need scarcely linger; they are too utterly wanting in anything like an accurate account of their discovery. As regards the supposed remains of Pliocene man, they, too, are gravely wanting in anything like strict scientific proof, and are disbelieved in by so many high authorities that at present they are practically worthless. I may, however, be allowed to point out that even those who claim for them their great antiquity assert also that they are the work of actual men.

Thus, if we put these accounts aside, as we safely may do, we find man as *well-developed* man appearing suddenly late in the Pleistocene period, without any trace of a predecessor. Here we are met by the answer that man is not a native of Europe or America, but of Southern Asia; and this is, as far as we know, true; indeed, both the study of prehistoric and of historic times points so clearly to this that there can hardly be a doubt of it in any mind, especially if we consider that the Biblical account also asserts it. Here arises the grave difficulty of choosing a site on which the first stages of evolution took place; to meet which problem Haeckel and his followers have supposed the existence of a tract of land, either islanded or connected with Southern Asia, and situated where is now the Indian Ocean, which they have named Lemuria. This is possible, but it is a theory which shows the weakness of the "evolution of man" more than perhaps any direct disproof could do. Neither

does it accord with what we know of Palæolithic man. The excavations of archæologists in Palestine and India display just the same sudden commencement of the human race as do those of Europe and America. Man is connected with the same fauna, and no trace of any evolution is visible. We know that during the first stone age man spread throughout Europe, Asia, America, and possibly even to the islands of the Pacific; which knowledge points, not only to this having been a long period, but to its having suffered no great geological changes, and this is amply proved to have been the case by other facts. Therefore it is not likely that "Lemuria" would have been submerged until the break between the Palæolithic and Neolithic ages.

Now from what we learn of the earliest races of men we find them to have been great and successful hunters, flesh eaters, and wanderers all over the earth; and we may fairly demand the same habits, though allowably less developed, from his prototype: therefore we cannot suppose the prototype to have been confined entirely to Lemuria. If Palæolithic man reached so far as North America, and throughout his wanderings was a carnivorous animal, with a knowledge of drawing, of making ornaments, and efficient weapons, &c., so according to the laws of evolution, must his prototype have spread over a considerable area (at least as far as India, Palestine, and Southern Europe), so must he have been, at any rate, partially carnivorous, and so should he have had implements. Thus, in these countries, we have a fair right to demand traces of our semi-simian ancestors; even should we allow Lemuria to have ever existed outside the brains of evolutionary theorists. But no such a type, that has stood the test of scientific analysis has ever been discovered, though sometimes attempts have been made to bring forward one; as for instance the famous Neanderthal skull. All the labours of archæologists throughout the world have failed to substantiate any sign of our great progenitor. The actual proof or disproof of Lemuria I must leave to geologists; but I have endeavoured to show that though its disproof would strengthen the hands of the believers in a special creation, yet its existence is not either fatal to them or sufficient to account for the total absence of any trace of semi-developed man in those parts of the world where we have a right to demand them, and that our right to demand them is justifiable on strictly logical, scientific grounds. This then is the answer to the first half of the question as it

affects archæology, and to me it appears to be directly in opposition to evolution.

To the second part: "Was primitive man any nearer to a supposed semi-simian prototype than modern man is," we can, so far as I know, give an even more definite negative than to the first half. The splendid manner in which Professor Boyd-Dawkins has set forth the similarities between the Palæolithic cave men and the modern Esquimaux brings with it a proof that man was man in those days; but there are, I think, good grounds for assuming that the cave men were a vastly more intellectual people than are their Esquimaux descendants. If, for instance, we study carefully the works of art (engraved representations of animal and plant life) left by the cave men, together with similar ones made by modern Esquimaux, we cannot but be struck by the falling off of taste evinced in the latter; it is as marked as the difference between the art of the fourteenth and seventeenth centuries A.D., and not only is this so, but if we compare the artistic spirit of these old cave men with that of any existing savage race, we find the difference equally great. It is necessary to imagine a savage with the artistic feelings of a Landseer, to account for the production of such work as we find on many of their implements and relics. On pp. 238–9 of Professor Boyd-Dawkins' book, *Early Man in Britain*, are figured three arrow straighteners: one of Esquimaux, the others of cave-man workmanship; these, we are told, are so much alike as to be classed together were the real difference of their origins to be forgotten or unknown.

This is at once true and false; they are, indeed, made on the same plan, as also are ancient and modern Gothic and classic buildings, but—to anyone of artistic feeling or education—it will be equally evident that one is a miserable, stereotyped, and barbarous imitation of the other.

Take, again, a drawing of a reindeer done by a cave man and put it beside that of one executed by an Esquimaux: the same animal served as a model to both and was probably more constantly before the Esquimaux than the cave man, but how vast a difference is apparent in the minds of the two draughtsmen! In one we see an artist possessed of high and accurate powers of grasping his subject, in the other we see merely an unimaginative savage making a lifeless attempt to imitate something constantly before his eyes. These are but two examples out of many which might be

given as proofs of how vastly higher was the artistic talent of Palæolithic man than is that of his modern descendants. What, then, is the inference to be drawn from this? The study of history and anthropology shows us that art is the output of high intellectuality, and that an artistic nation is invariably more intellectual than is an inartistic one. If only these drawings remained, we could oppose evolution on the ground that primitive man was more artistic and therefore further removed from a simian type than is any known uncivilised nation. If the Palæolithic skull of Durutliy Cave is, as French archæologists claim, of the same type as those of Cro-Magnon, it is exactly that which we should expect to find belonging to a race of such high artistic feeling.

It has been held that Palæolithic man was more densely covered with hair than are the men of the present day; but this view is really based on the most shadowy grounds. To argue from a few incised lines on a rough sketch of a figure that that figure was hairy, when at the present time we know that it is not so; and when the lines themselves may in almost all, if not all cases, have a more natural interpretation as being rough attempts at shading, is both absurd and unscientific. Besides, too, the fact that Palæolithic man wore gloves similar to those of the Esquimaux (and from this we may pretty safely infer that he wore other clothes, equally similar) tends to show that he was little better protected by nature than are his descendants.

Thus, so far as we at present know, the theory of special creation is that which archæology tends to confirm. There is an answer which is sometimes brought forward to meet this part of the question; *viz.*, that the space of time between now and Palæolithic times is so short that no difference can therein be expected to have taken place in the human structure. But this would throw back the time of man's evolution to so vast a date, and to a time when we have every reason to suppose the world was utterly unfit for human occupation, that it is practically untenable. Also if, as I have endeavoured to show is the case, Palæolithic man was of a high type—and from the absolute similarity of his implements we are justified in supposing this to have been the case throughout the whole of his distribution—we may argue that, as since then he has deteriorated so much as to be now represented by the modern Australians, Bushmen, and Terra del Fuegians, or even more intimately by the Esquimaux, the time which has been sufficient for so con-

siderable a degeneration, as has in all these instances taken place, should also have been long enough to allow of a very appreciable amount of evolution. Such, however, has not taken place, so that we need give no great heed to this argument. That our knowledge is as yet but fragmentary all will own; but that, such as it is, it all tends to disprove the theory of evolution, is a conclusion which will, I think, be more and more forcibly impressed upon all students of archæology.

The CHAIRMAN (D. HOWARD, Esq., D.L., F.C.S.)—We have, in this paper at any rate, a portion of the other side of the shield, and one that is exceedingly interesting. Of course we are always met with difficulty between the discussion of negative and positive evidence. A friend of mine only yesterday was saying to me that he believed he ought to be the owner of large estates. I am not learned in the law of real property, but I tried to make him understand that it was not necessary for the present owners to disprove that he was the heir, but for him to prove that he was. I am sure I may convey your thanks to the author of this paper and also to the Rev. R. F. McLeod, who has so ably read it. We shall now be glad to hear any remarks.

Professor J. LOGAN LOBLEY, F.G.S.—In the first place I would remind the meeting of the truthfulness of the remark made by your Chairman, as to the care which we ought to exercise when we speak about this word *Evolution*, which is abundantly exemplified, I think, by the second paper that has been read. The term *evolution*, as used by the author of the first paper, certainly did not, to my mind, suggest the idea of self-evolution—of matter having inherent qualities that are inherent in them apart from the fiat of a Designer, and therefore I was much struck by the observation of one of the speakers to the effect that, if evolution is to be conceded we must dispense with the presence of an Almighty Creator. That has never occurred to my mind at all. We must always recognise the constant presence—the over-ruling control, supervision and sustentation—of an Almighty Creator, whether we hold the

doctrine of evolution or not. The clock works that have been used as an illustration will go for a certain time, but the clock will stop eventually if there be not some one to wind it up. We must remember that laws are only laws as long as they are continued in their operations by the Divine Creator of those laws, and therefore we can by no means dispense with the presence of the Infinite Creator simply because we assent to the general idea of evolution. The same speaker seemed to think that the evolution theory was discovered or formulated by Darwin. Now Darwin is by no means the author of the evolution idea. Lamarck long ago formulated the idea as it applied to organisms. Evolutionism, in the wider sense of the term, is due to Herbert Spencer. Darwinism and Evolutionism should not be used interchangeably. Darwin was not the author of evolution, but of an hypothesis to explain the *modus operandi* of evolution which we may disallow, without discarding the idea of evolution. So far from speaking of an evolution *theory*, it seems to me that the author of the first paper takes it for granted that evolution is a *fact*. We may use the term *evolution* in one sense or another, as the Chairman has said but we cannot get away from the fact of development. Every student of Palæontology knows that there has been development of organization. We do not find the remains of Mammalia in the Cambrian rocks, not any until we reach to the Triassic. We cannot find the remains of birds or even reptiles in the Silurian, or of fish in the Cambrian. But all these are in the Mesozoic rocks. Although evolution may be denied, we cannot get away from the fact of the development of life forms, and to Darwin and Wallace is due the credit of having formulated the theory that development has been brought about by natural selection.

There is another point in this paper that I should like to say a word about. The author says, "But this would throw back the time of man's evolution to so vast a date and to a time when we have every reason to suppose the world was utterly unfit for human occupation, that it is practically untenable." I want to know on what evidence it is asserted that "the world was utterly unfit for human occupation" at any time during the Tertiary period—and I will not exclude the so-called Glacial epoch. We find existing forms of life in rocks far earlier even than Tertiary deposits. We find the same forms of life as existed in the Jurassic period, now living in abundance in the Australasian seas,

and, more than that, we have the same forms of life as existed in the Cambrian period, in multitudes, in the China seas. Now, if living forms of life could flourish in the Cambrian period must not the general cosmic climatal conditions of the earth have been the same as now? There are also the ripple marks as well as rain pittings on the sandstones of Cambrian age to show that the sun rose and set, the tides rose and fell, the rain descended and the winds blew as at present, and therefore that the same general cosmic conditions existed even in Cambrian times as now obtain. Why therefore is it stated that the earth was not fit for human occupation by man previous to, say, Pliocene times? The paper deals with the evolution of man from a semi-Simian type. Of that it may be admitted there is perhaps no evidence, and although the imperfection of the geological record is usually cited as a reason for palæontological links being missing, it does not seem to me to be altogether adequate, but, on the other hand, the general development of vegetable and animal types of life, *apart from the evolution of man from the lower animals*, is not merely a theory, but a known fact to all palæontologists and to every student of geology.

Rev. Mr. CHERRILL.—What is intended by these "cave men"? They are the only men of those remote periods mentioned in the paper, and they are said to be the ancestors of the Esquimaux, and to have degenerated; but is this an exact statement?*

The CHAIRMAN.—It is interesting to note that as far as we can go back we find men were intelligent, and showed a very decided sense of intelligence, and that the evidence that is required of a missing link is missing. The triumph of Professor Mendeleef's theory of the laws of chemistry was when one of the missing links, in the form of a certain metal, was discovered, and I think we may assume that the semi-Simian ancestry of man is not to be accepted until evidence is produced of the existence of forms. It seems to me that the evidence points that way, and that

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* Professor W. Boyd Dawkins, F.R.S., writes in regard to this remark, "Mr. Walkey is right in his quotation of my view as to the Esquimaux."—ED.

certainly these early pictures referred to are amongst the most interesting discoveries, and how they succeeded in representing nature so vividly, which the average Esquimaux could not equal.

The meeting was then adjourned.

COMMUNICATION RECEIVED

ON THE FOREGOING PAPER.

Mr. PHILIP VERNON SMITH, M.A., LL.D., writes:—

The two papers read this evening are interesting complements the one to the other. My friend, Mr. Bompas, has adduced cogent reasoning to prove that what may be called, from the human standpoint, natural evolution, is accomplished by design. May not another argument in favour of this conclusion be deduced from what, on the other hand, may be called artificial evolution? Besides that which has taken place without man's intervention, or without direct purpose on his part, what changes both in *flora* and in *fauna* have been effected by *his* deliberate design? New varieties of garden flowers, fruits and vegetables have been evolved, or existing species have been developed and brought to perfection. Among the domestic animals, dogs, horses, cattle, sheep, pigs and poultry, similar improvements have, by care and attention, been effected in their physical form and faculties. Can we believe that man has done this by design, and that the Supreme Will and Intelligence, on the other hand, left to chance and accident the more marvellous feats of Evolution—if to Evolution they be due—with which the natural world abounds?

Mr. Bompas has well distinguished between vegetable or unconscious life, animal or conscious life, and man's intellectual life. It is interesting, however, to observe the evolutionary results which the higher of these lives produces upon the lower, no less than the lower upon the higher. The reciprocal action of vegetable life on animal life, and *vice versâ*, has been referred to by Mr. Bompas. Not less noticeable is the metaphysical effect produced on domestic animals by the intellectual

life of man. All of them, and more particularly the horse, the elephant, and the dog, evolve, from their intercourse with man, a degree of sagacity and intelligence, to which, in their wild state, they are strangers. This intellectual evolution is, in part, designed so far as man is concerned. But in part it is undesigned; as when a dog learns to understand the ways and even the conversation of his masters to a greater extent than he has been intentionally taught. So far, however, as it is undesigned by man, it is part of that general Divine design in the Universe, which has ordained that the higher forms of life shall influence the lower, and that mind shall act upon matter in ways which we cannot fathom or explain.