THE SCIENTIFIC CREED OF A THEOLOGIAN

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BY

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PREFACE TO THE FIRST EDITION

The immediate reason for undertaking the present work, was the honour conferred upon me by the reception of the degree of Doctor of Divinity at the hands of the Protestant Theological Faculty of the University of Tübingen in the year 1897. I felt that I ought to show my gratitude by way of some literary production, but I could not embark upon the work this involved until I had not only retired from my official position, but also given up many other duties connected with it, and found time to follow up my reading of some of the more recent and important scientific works, for the study of which my profession had not allowed me the necessary leisure.

But this reason was accompanied by a much deeper motive. Throughout my life the boundaries of Natural Science and Theology and Philosophy have been a favourite subject of reflection. In the year 1876 when the full stress of the intellectual movement started by Darwin had reached its highest point, I published a book entitled: *The Theories of Darwin and Their Relation to Philosophy, Religion and Morality.* This was translated into English by G. A. Zimmerman, Ph.D., with an introduction by the Duke of Argyll, and published in America (Chicago; Jansen, MacClurg and Co., 1883).

It affords me no small satisfaction to see that not only do the upholders of religion more and more assume the same standpoint to which I at that time adhered, but that also in the past twenty-nine years Science has taken the very path which I then anticipated.

I am not aware of anything I have said in that book which I should now take back, except some of my statements on the relation of Science to the Biblical Record of Creation. At that time I had studied the Old Testament only for a brief period and I had allowed myself to be guided by August Dillmann's *Commentary on Genesis*. The method thus adopted I have subsequently abandoned.

The subject is indeed one of contemporary interest. Book after book has been published on these questions, but the standpoint I take up is still characteristic, inasmuch as I demand perfect freedom for Science, on the one hand, and on the other adhere to the truths of Christianity in their full extent. I have also endeavoured not to shun any problems, however knotty and difficult.

May this study not only aid readers on

either side to get the true bearings of the questions at issue, but also help many who may be troubled about the loud conflict between Science and Christianity, or Religion and Culture, to find rest for their minds!

RUDOLF SCHMID.

STUTTGART.

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INTRODUCTION

Any one who undertakes to publish a plea for an understanding between Science and Christianity, will perhaps help his readers to get their bearings best by first explaining as briefly and definitely as possible the standpoint which he takes up himself, and from which he pursues his inquiry. Well, the standpoint which during a long life I have always taken up, and with which I have always been well satisfied, is, briefly put, that of *absolute peace* between the two. Whether the two opposing factors, whose peaceable solution now demands our attention, be named Science and Theology, or more generally embraced under the terms Knowledge and Faith—a scientific and a religious view of life—Modern Culture and

Christian conviction—or (sharpest antithesis of all) Causality and Teleology—what is certain to my mind is the fact from which I have always set out, which has always led me to an absolutely harmonious solution, *viz.*, that the two factors *cannot* contradict one another, because Truth can only be One; indeed that contradictions first emerge where one or another of the two factors oversteps its proper bounds.

Note.—For readers who are less intimate with philosophical language, let me explain that the term "*Causality*" means a view of natural facts and occurrences which demands Cause and Effect, whereas "*Teleology*" means a view that demands End and Purpose (in Nature). That which from the point of view of Causality is Effect, becomes, from the point of view of Teleology, Purpose and Object; that which from the point of Causality is Cause, becomes, from the point of view of Teleology, Means to an End. The word

Causality comes from the Latin word "causa" ("cause," Greek "aitia"), the word Teleology from the Greek word "telos" (Latin "finis") "end," not from "teleios" "perfect," as is sometimes asserted. If we wish to use foreign synonyms, then we must oppose Causality to Finality or Ætiology to Teleology. But in this instance current custom has been stronger than logic. The opinion expressed by Spinoza in the Appendix to the first book of his *Ethics*, that the recognition of causal connections in Nature would eliminate the idea of purpose in Nature, has of late, especially through Ernst Häckel's popular scientific works, become a kind of household word; it is one of many signs which serve to show that disciples of Science themselves are not proof against catchwords and their bias. Any one who wishes to become more closely acquainted with this question should consult the excellent treatise "Der Kampf gegen den Zweck" ("The

Opposition to Design in Nature"), in the second volume of the *Kleinen Schriften* (Short Papers) *von Christoph Sigwart* (Akademische Buchhandlung von J. C. B. Mohr, 2te Auflage, 1889).

This solution certainly sounds simple enough, but as soon as it is applied in practice many difficulties start up. In the first place, *the boundary between Christianity and Science is very large.* It embraces, in fact, everything that falls within the sphere of natural knowledge. I can regard all the wealth of the universe as a whole or in detail, both from a scientific and from a religious point of view, and each will have its claim to be the Truth. But Truth can only be One. There cannot be anything at once true from a scientific point of view and at the same time false from a religious point of view, or *vice versa.* If I desire real satisfaction, I cannot be at heart a Christian and with my intellect an atheist. Nay, there *must* be

some adequate adjustment of the two points of view. To prove that such an adjustment is not only possible but also absolutely essential to the enrichment and extension of both standpoints, is the purpose of our present study.

A further difficulty in this adjustment lies in the fact that Christianity possesses documentary sources, namely *The Holy Scriptures*. Now, we might perhaps imagine that all possibilities of contradiction between the Bible and Science would be removed once for all by showing that the Bible neither is nor seeks to be a Handbook of Natural Science, but only claims to be the charter of our salvation. The statement of this truth, which is often forgotten but self-evident none the less, may help to check superficial controversy, but it is far from sufficient to allay the difficulties which are aroused by an attempt to understand the Scriptures in relation to the claims of Science. The Scriptures

in their present collected form, which has lasted for the past fifteen hundred years, have a still more distant origin which carries us back past another fifteen hundred years. In the very first chapters and the earliest records of the Bible we meet with two accounts of the Creation of the World, like some magnificent portal to the Story of God's Revelation to Man. The difference between the conception of the world which that far-off age possessed, as we see it reflected in the Bible records of Creation, and the conception by Modern Science, is immense ; but it would be hasty to infer that the Biblical record cannot now possess more than a mere antiquarian interest. The emphasis laid upon the absolute causality of the Creator in forming the world and all that is therein, is of fundamental religious interest, and lifts the Bible narrative far above those records of other contemporary nations which are in many ways so nearly

related to them. Nay more. Even in the details of the record—which, we are willing to admit, has been coloured by a conception of the world superseded by that of the present day—there are statements which must be reckoned as a permanent heritage of our religious knowledge. These include the assertion in the first Biblical narrative that Man was made in the image of God, and also, in the most pregnant of all allegories, the enigmatic utterance concerning the relation of Man and Woman and the essence, origin, and consequences of sin, in the second narrative. At what point, and in what manner are the indispensable and transitory, the kernel and the shell, to be separated, without a break between my religious and my scientific knowledge, or an injury done to the former by the latter? These are questions which also await a solution.

Our Faith further possesses a series of

facts which it cannot part with. Christianity is not a mere theory; it is not a view of the world or a number of moral and religious precepts; its foundation is based on a series of historical facts, especially on *the Person, Life, Death, and Resurrection of Jesus Christ.* Now all the facts of history fall within the province of scientific investigation, primarily of historical research and secondarily, it may be, of natural history; so that the further question arises: Do the historical facts on which our Christian Faith rests bear the test of such investigation? Will not our knowledge of these facts be affected by the results of such researches, and, if so, is not this modification an injury? Or is it really an enrichment of our religious inheritance?

The points of possible contact between Science and Religion must be put still more closely. Any one who takes Religion and Christianity in earnest, views his entire life

from the standpoint of *Divine Guidance.* Nay, a Christian goes further. He positively asserts: "*God is my Father and I am His child,*" and he maintains a habitual attitude of prayerful communion with his Heavenly Father. How does Science look at this conviction and habit? Does it compel the Christian to limit the hearing of prayer to a purely psychological and subjective effect, or does it allow him, in the ordinary course of Nature, to enjoy an objective answer to his prayers?

Finally, the chief cause of the breach between Science and Christianity must be alluded to, *viz., the overstepping of bounds.* Both scientists and theologians have indulged in this. *Theologians* overstep the limit when they think that they are in a position to restrict scientific investigation on the score of Biblical assertions, as, for instance, in prescribing the method scientists must pursue and the results at which they must arrive.

The whole of the Middle Ages with its theological dominion of the schools over the sciences is a great organic instance of such an error—which, with its theory of the verbal inspiration of the Holy Scriptures, a theory utterly exploded at any rate on Protestant territory, still casts its darkening and bewildering shadows far over the modern mind. Scientists overstep the limits when they put the results of their researches at the disposal of an anti-Christian view of the world, or when they think the axiom of Causality, according to which they prosecute their inquiries, excludes that category of Teleology which nevertheless meets them at every turn and which finds in the universe as a whole and in its manifold details so magnificent a proof. Once we refuse to overstep these limits, we shall find that the acceptance of a Christian or an anti-Christian view of the world is certainly not the result of scientific research, but an act of personal

choice,—and that just as the Christian view of the world satisfies the soul far better than does its rival, so also it presents far fewer difficulties.

CHAPTER I

CREATION AS A WHOLE, CONSIDERED FROM THE SCIENTIFIC AND THE RELIGIOUS POINT OF VIEW

BEFORE we consider any special department of Nature where collisions might arise between Science and Christianity, we must put ourselves in the position of the scientist and try to see things from his point of view: to see how the world as a whole and in detail appears to him, and how the Christian—or let us rather say, at this preliminary stage of our inquiry, how the religious man regards the world from the theistic standpoint.

We must make this last qualification, because we do not wish to deny religious feeling altogether to one who maintains an atheistic or pantheistic standpoint; but on the whole we must say we do not see any reason for discussing any further those

pious feelings for the mere universe which in a certain sense may claim to be a religion.

David Friedrich Strauss in his book on *The Old and the New Faith*, which once excited so much attention and even to-day is still the "gospel" of so many "pantheists" (compare Häckel, *The Riddle of the Universe*, p. 357), gives a flat denial to the question, "Are we still Christians?" but on the contrary answers the question, "Have we still a Religion?" by saying, "Yes or No, just as you understand it". We will not flatly contradict him, but we must contradict and refute his assertion as psychologically impossible, when he says, on the same page: "We claim the same reverence for our universe as the believers of the old school for their God". An atheist or pantheist can neither possess nor claim the same reverence for an impersonal universe that the believer, whether of the old or new school cherishes for his personal God, in whom, as theist or deist, he sees the Almighty Creator of Heaven and Earth, and in whom, as a Christian, he finds his Heavenly Father.[1]

[1] For those who are not acquainted with scientific phraseology, we add here that Deism is that view of the world which assumes that while God has created the world, after He created it He

In assigning so low a place to the religion of an atheist or pantheist, as compared with the religion of a Theist, we are corroborated by the eloquent witness of a scientist who has passed through every stage of the religious and the irreligious conception of the universe and finally fought his way back again to a Christian view of the world. I refer to the English scientist and scholar, George John Romanes, one of Darwin's intimate and younger friends, who made very valuable researches regarding the mental development of animals and men. Through all the stages of his atheistic, Theistic and Christian views, he never gave up the thought

let it go its own way independently; Theism assumes that the Creator remains immanent, always alive and present in the world He has made; Pantheism is that system according to which God and the world are *one;* Atheism, that which denies the Being of God. For Deism, God is a transcendent, *remote* Being, over against the world He has called into existence; Theism combines *transcendence* with *immanence*, *i.e.*, the presence of God *in* the Universe; Pantheism, with its union of God and the world, knows only *immanence.* Finally, a movement was set on foot in England by Huxley and Herbert Spencer which is called Agnosticism and implies that it is absolultey impossible to know the Final Cause of Existence; at any rate we are not to attribute Personality to God because such a thing is unintelligible without the limitation of a Non-Ego—an objection often echoed in Germany; the expression "the Supra-personality of God" is preferable.

of an origin of organisms through gradual Evolution. In his twenty-fifth year, he still occupied the position of a Christian Theist and from this standpoint gained the Burney Prize in the year 1873, on the subject of Christian Prayer and Natural Law. But whilst engaged in this, doubts began to trouble him, and these gained so much influence over him that in 1876 he wrote *A Candid Examination of Theism* from a thoroughly sceptical and in fact actually atheistic standpoint. This was published in 1878 under the pseudonym of "Physicus". In it he made the following touching confession, which is quoted by Bishop Gore, the editor of Romanes' posthumous work, *Thoughts on Religion* (Longmans & Co., London, 1895): "And now in conclusion I feel it is desirable to state that any antecedent bias with regard to Theism which I individually possess is unquestionably on the side of traditional beliefs. It is therefore with the utmost sorrow that I find myself compelled to accept the conclusions here worked out; and nothing would have induced me to publish them, save the strength of my conviction that it is the duty of every member of society to give his fellows the benefit of his labours for whatever

they may be worth. Just as I am convinced that truth must in the end be the most profitable for mankind, so I am persuaded that every individual endeavour to attain it, provided only that such endeavour is unbiassed and sincere, ought without hesitation to be made the common property of all men, no matter in what direction the results of its promulgation may appear to tend. And so far as the ruination of individual happiness is concerned, no one can have a more lively perception than myself of the possibly disastrous tendency of my work. So far as I am individually concerned, the result of this analysis has been to show that, whether I regard the problem of Theism on the lower plane of strictly relative probability or on the higher plane of purely formal considerations, it equally becomes my obvious duty to stifle all belief of the kind which I conceive to be the noblest, and to discipline my intellect with regard to this matter into an attitude of the purest scepticism. And for as much as I am far from being able to agree with those who affirm that the twilight doctrine of the 'new faith' is a desirable substitute for the waning splendour of 'the old,' I am not ashamed to confess that with

this virtual negation of God, the Universe to me has lost its soul of loveliness; and although from henceforth the precept to 'work while it is day' will doubtless but gain an intensified force from the terribly intensified meaning of the words that 'the night cometh when no man can work,' yet when at times I think, as think at times I must, of the appalling contrast between the hallowed glory of that creed which once was mine, and the lonely mystery of existence as now I find it—at such times I shall ever feel it impossible to avoid the sharpest pang of which my nature is susceptible."

Now if we begin with the general comparison indicated in the title of the present chapter, there are two principles determined for us. One has been already hinted at in the Introduction, *viz.*, that every phenomenon in the world may be regarded both from a scientific and a religious point of view, and is in fact regarded from either one or the other standpoint. The second principle consists in the consideration that it is just in this general sphere that the main conflict has raged most acutely, so acutely that many have been led to believe that the opposition between a

scientific and a religious or theistic view of the world is irreconcilable—in fact that the one excludes the other.

The way in which the scientific man regards the world in general and in detail, consists in this, that what he perceives he endeavours to explain from natural causes as far as possible. Now scientific research has achieved much on this path. If we cast our eyes over a single century—*e.g.*, the one just behind us—with what surprising clearness has scientific research in this comparatively short period opened up vast spheres of knowledge, of which mankind, until lately, had no idea whatsoever! In the first place, I call to mind the magnificent vista of the earth's history and inhabitants that has been opened up by Geology, and bringing year by year fresh surprises; then, the glimpse we have had into the structure of the universe and of the unity of matter and energy, thanks to Cosmic Physics and to the improvement of our instruments. Finally I must mention the arduous labours in connection with the problem of the origin of species and of mankind, in which Darwin has been our leader. The further research presses on, the more do

new problems arise for solution, only to make room in their turn for other problems. Nor will this advance in knowledge ever cease while the world lasts. It is the joy of all scientific men to appropriate what the Science of to-day has put into their hands; then, advancing past their forefathers, to toil on, hand in hand with their contemporaries, in the arduous pursuit after further knowledge. This is the view which the scientific man takes of the realm of creation.

Far otherwise is the view of the man who is religiously inclined. For him the whole universe is a revelation of the Divine Glory, the Work of the Living God, who created, sustains, guides and controls the world and all that therein is. Even those occurrences and phenomena, the natural causes of which he has learnt to know through Science, are not excluded from his religious standpoint by the knowledge of their causes and the laws of their action. For all this matter, all these energies, all these laws are in his eyes just as truly works of the same God Who created the whole universe and Who, by means of these energies and laws, upholds and governs all things great and small.[1]

Far from seeing his faith in the Creator injured by his increased knowledge of natural causes and of the laws of their operation, he recognises therein not only no divergence from his knowledge of God, but on the other hand a positive enrichment of that knowledge. Moreover, the religious man sees in everything that nature offers him by way of gifts and pleasure, only gifts of a Divine Goodness which he receives with thankfulness, while in all experiences of pain or hindrance he sees a training-school of Divine Wisdom and Love, which he accepts with submission.

If in this way of looking at things the highly-cultured and the less-educated, the learned and the ignorant, are at one, in so far as they are both religiously disposed, may we not find in this a proof that our presentation of the religious standpoint is a sound one? For religion ought to be a universal blessing, not a privilege for the talented alone, any more than a substitute for other joys, of which the uneducated are deprived.

This position of absolute peace between the scientific and the religious aspects of the world, which we hold, is so stoutly contradicted by some scientists that even those who hold a religious

view of the world are misled by this disagreement, lose faith in any harmony of both aspects, and charge Science with severing Nature from its Divine Originator. "Either natural origin and natural evolution, or else Creation! The one excludes the other!" Such is the cry one hears and has heard not only in popular lectures and debates, but also in scientific works for decades past and even in those of to-day. The popular scientific works by Ernst Häckel are quite a typical case in point. The title of the first of these works, *The Natural History of Creation*, was chosen with the direct object of presenting this account of natural origins as the only true view in opposition to the Biblical and Theistic conception. In the very first of the twenty-four lectures into which the book is divided, and over and over again throughout its pages, Häckel states his causal mechanical theory of the world—his so-called Monism—as the only authorised theory in opposition to the detestable Dualism of a teleological and theistic theory. The bluntness with which he dismisses the thought of a Creator of the world increases in the two popular scientific works, which followed. In his *Anthropogeny* he

says (p. 88): "The antiquated fable of the wise scheme whereby the Creator's hand ordered all things in wisdom and understanding, the empty phrase of a design in the structure of organisms, is completely refuted". "Either blind belief in a Creator or the scientific theory of evolution!" he cries. Of course, from this point of view, the feelings of gratitude toward the Creator as the Giver of every good gift disappear. He says again: "Human vanity and human pride, since the awakening of human consciousness, have got into the way of regarding Man as the peculiar object and end of all life on earth, as the central point of earth's being, for whose use and service all the other activities of nature have from the beginning been determined or predestinated by a wise Providence". This presumptuous anthropocentric[1] conceit is pronounced entirely untenable. Courtesy towards other people's ways of thinking is certainly not Häckel's strong point. This is the way in which he concludes his twenty-third lecture in the *Natural History of Creation*:— "Readiness to accept the theory of Evolution and the monistic philosophy founded upon it

[1] *I.e.*, making man the central point.

forms the best criterion of one's mental development". The pioneer in the history of the development of the individual embryo, Charles Ernest v. Baer had published in his eighty-fourth year a number of treatises which are of the greatest importance for the criticism of the teleological view and the Darwinistic theory of selection. They still attract much notice in our own day, but they are inconvenient for Häckel's theory. In his *Riddle of the Universe* (pp. 308-10; E. Tr., p. 95), he pays Von Baer the compliment of saying that he is suffering from old age, and that, owing to a mystical strain which has become more and more firmly implanted in him with increasing age, he can no longer follow the latest achievements of science. If Von Baer had survived to hear this reproach, he might have comforted himself with the thought of a Newton whose Christian convictions were excused, on the score of old age, by the upholders of an opposite view of the world. The above-mentioned work of Häckel, which appeared in 1899, represented the high-water mark of polemic against Theism and Christianity. The fourth and last section of the work and the conclusion of the third are

entirely devoted to this attack. Possibly the modest confession at the close, that as regards the innermost essence of Nature, we are, perhaps, to-day, as far off from the truth and as ignorant as were Anaximander and Empedocles, two thousand four hundred years ago, Spinoza and Newton two hundred years ago, and Kant and Goethe one hundred years ago—possibly this may seem conciliatory, but while such utterances might have justified the hope that both Christianity and Theism would be treated with at least some measure of reverence, this hope remains unfulfilled. The way in which the Person of Jesus Christ is handled must give the deepest pain to every Christian, and the lack of taste to which antipathy is liable, is shown by the way in which Häckel scoffs at Theism, not only in the *Riddle of the Universe* but also in earlier publications. It is not to be expected that every reader will find out for himself in such writings the point at which scientific research ends and metaphysical argument begins. The latter can be conducted by two different men from quite the same scientific discoveries, and yet attain to quite opposite results if both presuppose opposite con-

ceptions of the universe. With this however we will deal later. Meanwhile another perfectly reasonable suspicion may suggest itself; indeed it will possibly occur to any reader, *viz.*, that this whole polemic starts from a false conception of creation.

CHAPTER II

THE CONCEPTION OF CREATION AS RECORDED IN THE BIBLE

THE two alternatives of the polemic we have just been noticing are "Either natural origin and natural evolution, or Creation". If this dilemma referred only to the universe as a whole and simply meant that, according to one view, the universe owes its existence, both in shape and substance, to the Creative Will, Almighty Power, and Wisdom of God, while according to the other it came into being of itself—there would be no objection to such an antithesis. All it maintains is that these two views are irreconcilable and that each has its supporters.

But many of the controversialists, including supporters as well as opponents of the idea of Creation, are of opinion that Creation, according to a Christian and Biblical interpretation, involves the further assumption that the individual inhabi-

tants of that region of the universe with which we are best acquainted, because it is our own dwelling-place, namely, the plants, animals, and people of the earth, originally appeared in all their different kinds and species, being suddenly summoned from non-existence into existence. Such a theory, it is held, alone entitles their origin to be called creation. We are to picture the scene somewhat as the archangel Raphael describes the work of the sixth day in Haydn's glorious oratorio, "The Creation". "And God spake, 'Let the earth bring forth living creatures after their kind'. Immediately the earth opened its lap and at God's word bore creatures of every kind in perfect development and in almost infinite number. Here stood the lion roaring for joy, here the nimble tiger crouched; there the swift stag raised its antlers, and again the noble horse with flowing mane pranced and curvetted in its strength." Such a conception of the Creation, which as an imaginative picture draws upon the beautiful and purely monotheistic presentation of Creation in the Bible, will always maintain its right and exercise its fascination in the sphere of poetry and art, but to recognise in it an adequate pre-

sentation of the real order of events at the time of their occurrence and a serviceable foundation for any conception of Creation, is impossible except for one who is absolutely devoid of any knowledge of what scientific research has disclosed and just as devoid of any grasp of a correct Biblical idea of Creation which corresponds to the spirit as well as to the letter of the Scriptures.

We shall have occasion in our next chapter to speak at length of the results of Modern Science; at present we must examine the question of the conception of Creation as presented to us by the Bible.

The Bible opens with two accounts of Creation immediately following each other. The first, which in point of origin is the later account, commences with Genesis i. 1, and continues to the first half of the fourth verse in chapter ii. The second and much earlier account is to be found from chapter ii. 4 to the end of the chapter, running right on through chapters iii. and iv. as the story of the Fall and the First Generations of Mankind.

Now whoever is of opinion that reverence for the Scriptures compels him to understand these accounts as literal representations of what actually

occurred at Creation, and does not know anything of the light thrown by Science on the origin of organisms, must of necessity arrive at a conception of Creation which will lead him into conflict with Natural Science. The second and older account of Creation will be more than ever likely to bring him to this pass. He will imagine that God, the Almighty Creator of Heaven and Earth, did not first of all assume the form of man in Paradise, out of love to the first human pair, walking in the garden in the cool of the day, but that it was *on purpose* to create man that He took upon Him such a shape, formed Man from a lump of earth, and, into the nostrils of the figure thus formed, breathed the breath of life. He will imagine that the animals, apart from the higher soul possessed by Man, were created in a somewhat similar manner, because it is said of them that God made them out of the earth. He will have visions of how God took a rib from the sleeping man and of it formed a woman. In all this he will feel himself bound to visualise the actual events, and he will be tempted to consider that those who do not think as he does must be less religious because they are less subservient to the text of Scripture.

Unfortunately for such a standpoint no less an authority than Holy Scripture itself actually forbids us to take the two accounts of Creation as statements of what really happened. For the accounts are contradictory, both as regards the manner in which the different creatures were summoned into existence by the Creator and as regards the order of the various acts of creation. The pious Israelite who found to his hand these ancient records of the story of the earth and pieced them together, constructing thereby a magnificent portal for the Story of Salvation, he and the people who nourished themselves on both alike, must have found the worth and harmony of these narratives for their religious sense somewhere else than in their two very different accounts of the outward order of events.

Let us face this apparent contradiction!

The earlier but in point of age the later account (Gen. i.), sees Creation in all its details completed by the creative word of God: "God spake and it was done". The Creation is moreover brought to a state of perfection in six days of work, which seem to be arranged according to a double principle. One of these is that in the first half

of the week of Creation, *i.e.* during the three first days, the four elements of antiquity are called into being, fire, air, earth, and water; in these the separate beings are to move that live in these elements. On the first day, Light: on the second —by the division of the upper from the lower waters by means of the firmament: Water and Air—on the third, Dry Land covered by the world of plants. In the second half—the fourth, fifth and sixth days—the separate beings are created that move in those elements; on the fourth day, the Lights of Heaven: on the fifth, the Creatures of Water and Air: on the sixth, the Creatures of the Land and—Man. Man indeed is the Crown and End of Creation, the image of God, and Man is male and female. The other principle is that of the gradual preparation of the earth to be an adequate dwelling-place for Man. Next to these two principles comes a third, recognisable by the fact that the Six Divine Days of Creation were succeeded by the Seventh Day of Rest which God blessed and hallowed.

This Divine Week is an archetype and type for men who are made in the image of God (Gen. i. 26, 27). Man must also divide his human days

into weeks of seven days, of which the first six days are appointed for work, while the seventh is set apart for rest, and to this end is blessed and hallowed.

In the second and older narrative which begins with the second half of Genesis ii. 4, there is nothing said anywhere of a *creative* word of God. We read of God *making* or forming. This is very clearly described in the account of the creation of man and woman, and in the story of the Creation of the lower animals the process is also called a *forming*. Nor is there a trace to be found here of the division of Creation into six days or of a Creation Week of seven days, any more than in the Creation myths of those nations whose civilisation is connected with that of Israel. The Phœnician, *e.g.*, the Egyptian, and especially the Babylonian myths, in spite of several resemblances to both the first and second Biblical accounts, nowhere show any division of the different stages of creations into days of work. The only resemblance to the Biblical Week of Creation that one can possibly find, *i.e.* in the ancient Babylonian records, consists in the fact that the Babylonian account of Creation was written on seven tablets.

This suggestion I owe to Professor Gunkel. One might more feasibly speak of a single creative Day, in connection with the second account. It begins in Genesis ii. 4 with the words, "in the Day when the Lord made the heavens and the earth". The Hebrew particle of time here is literally translated, but we are ready to believe that this particle had come to mean a *period* of time, instead of implying that Creation took place in a single Day. Still the use of the singular shows at least that the account contained in Genesis i. 1 was not yet known to the author or else he would have used the plural particle and said as follows: "On the days," etc. The earth at the beginning of the narrative is already there; it has not yet rained and there is therefore as yet no vegetable world but only a surface of the earth watered by a "mist". (Gunkel in his Commentary on Genesis translates this difficult word by "stream".) But Man is not now as in the first account the end and aim of Creation; he is its beginning. In the first place, the Lord God forms Man out of the dust of the ground (so Kautzsch translates; Gunkel, "from the dust of the earth," "aus Staub aus dem Acker"; Luther, "from a

lump of earth," "aus einem Erdenkloss") and breathes into his nostrils the breath of life (Gen. ii. 7). God proceeds to plant a garden in Eden far to the East, where He places Man (verse 8). He then makes all kinds of fruit trees grow up out of the ground, while in the middle of the garden are the Tree of Life and the Tree of the Knowledge of Good and Evil (verse 9). In verses 10-14 the rivers of Eden are described, and in verse 15 the reason for which God put Man in the garden, namely, "to dress it and keep it". In verses 16 and 17, God gives Man permission to eat of all the trees of the garden as he pleases, but forbids him to eat of the Tree of the Knowledge of Good and Evil. According to verse 18, God decides to create a suitable helpmeet for him. He forms out of the earth the animals and birds, bringing them to Man that he may name them (verse 19). Man does this, but he does not find in the animals the helpmeet suitable for him. Then the Lord God makes a deep sleep fall upon him, takes a rib from his side, forms it into a Woman and brings her to Adam, and in Woman Man at last finds his suitable helpmeet (verses 21-24).

If we wish to be convinced of this difference

between the two accounts, we must certainly not employ the translations of the Scriptures that have been introduced into the Churches, neither Luther's, nor that of Allioli, nor the Vulgate. These were all made on the silent assumption, which was perfectly natural at the time when the translators lived, but is indubitably false, that there were not two accounts but a single, continuous, coherent record of Creation in which there could be no contradiction. In the interests of harmony, some violence was therefore done to the original text at the critical passages that betray the contradiction most clearly. Thus in the original text of Genesis ii. 18, the word translated by Luther and Allioli "Gehilfin," is a word of common gender, "a helpmeet"; in the Greek translation of the Septuagint it is "boethos," also of common gender, and in the Vulgate "adjutorium". In the two German translations, we find the word "Gehilfin" (helpmeet) as if here *only* the *woman* were meant, while according to the context *the animal world* was recognised first as his helpmeet, and then, when this proved unsuitable, Woman was made, to be recognised by Man as his perfect helpmeet. In the following

verse (verse 19) we read, "And out of the ground the Lord God formed every beast of the field and every fowl of the air," etc. The Vulgate has an ambiguous expression, "Formatis igitur Dominus Deus de humo cunctis animantibus terrae . . . adduxit ea ad Adam". Allioli here gives the correct sense, translating "also bildete Gott der Herr" "So the Lord God formed. . . ." But Luther in his translation shows quite clearly his harmonistic standpoint, which makes him in Genesis ii. keep to the order of Creation as it is related in the first chapter, and place Man as the last of God's creatures; hence he translates the words of the original, contrary to the meaning of the original text: "For when the Lord God had made every beast of the field," "Denn als Gott der Herr gemacht hatte allerlei Tiere auf dem Felde".

Any one who wishes to learn the actual wording of the narratives must read them either in the original Hebrew, or in the Greek translation, the so-called Septuagint, which had its origin before the completion of the Old Testament Canon, and which translates the two narratives exactly as they stand in the original and vivid Hebrew; despite

the differences in the accounts, the Septuagint puts them quite naïvely side by side, so that the difference between the two becomes absolutely clear. If any one has any difficulty in getting at these two sources he should read the two accounts in the translation of the Old Testament by Kautzsch (published by J. C. B. Mohr) where the contradiction of the two will at once become apparent.

The whole of the difficulty above described exists for German, not for English readers. The English reader has only in Genesis ii. 4, after the words "when they were created," to put a full stop instead of the comma. He will then find in the words "In the day that the Lord God made," etc., the beginning of the second and more ancient account of Creation. This agrees quite literally with the original text. Besides, in verses 18 and 20 the English version has the only correct word, "an help". In verse 19, also the construction entirely agrees with the original, "And out of the ground the Lord God formed every beast of the field" etc. This clearly shows the contradiction between the two accounts.

He who in the face of this contradiction is

convinced of the impossibility of regarding the two accounts as revelations of the real course of events, but who is still inclined to look for such a revelation in Holy Scripture, may perhaps attempt to sacrifice the second of the accounts, finding this revelation in the first narrative, that of Genesis i.

Several considerations seem to favour this attempt. The second, for all the absolutely incomparable beauty and *naïveté* of its portraiture, shows such a decided tendency to introduce God in the form of Man, such a decidedly mythical strain ("mythical," that is, in that deep sense according to which the noblest ideas are veiled in the form of pictorial representation and spontaneous poetry), that it must seem to the reader but a profanation of its beauty to drag this story down to the region of historical fact. What lends permanent value, even of a religious character, to this story is the exceptionally beautiful representation of the relation between Man and Woman, and, in the story of the Fall, which immediately follows, the exceedingly deep and true psychology, the ethical force, and the ethical purity of the description of Sin's origin, essence, and consequences. This

beauty illumines us with unclouded light so long as we read the story as myth or parable; it is not only dimmed but absolutely destroyed so soon as we imagine we must take it as a record of the actual occurrences. Such an idea must be scouted on all hands.

Very different is the first of the two accounts. In contrast to the second it is throughout a piece of reflection, although even it contains traces of mythical elements, such as are to be found in the description of Chaos. Its purpose, as Wellhausen in his *Prolegomena to the History of Israel* (p. 313) has already put it, is to describe the real course of events at the Creation, and this is done worthily —judged by our higher conceptions of God—and even in harmony with a more correct view of the occurrences than our ancestors possessed. When we read "God spake and it was done," we must not think that the narrator himself identified Divine with human speech; he simply wanted to express Omnipotence, just as at the present day we are unable to express the Creative Omnipotence of God more vividly than by saying in the words of Psalm xxxviii. 9, "He spake and it was done: He commanded and it stood fast". It is poss-

ible, in the recital of all these creative acts, that what really happened has been depicted in a more childlike and somewhat different manner from that which Natural Science has discovered or will yet discover for us; but, in all these expressions, the relative independence of natural causes is constantly recognised, and room is left for a more mature knowledge of the natural processes in question.

But it is especially the knowledge of the unity and the Creative Omnipotence of God that meets us in the first chapter—a chapter which is so noble and magnificent that it far surpasses all those myths of Creation outside the Bible, to which indeed this account bears some resemblance; it endows the Biblical record with permanent educative value not with a mere historical interest.

We are bound, therefore, to consider every attempt to find an objectively accurate description of the course of events in the account given in Genesis i., as a complete misinterpretation and misconstruction of the Bible's real value for mankind. The Bible is no handbook of Science; it does not pretend to be such. What reason is there that we should expect from God a supernatural

account of events in the universe of which no man could be eye-witness, of events too which do not bear in any way upon the knowledge of salvation, events and processes whose investigation He has left to Man's natural powers? Whether God made our world in a space of time that must be reckoned by millions of years, or in a few days, whether or no the plants were called into existence before the sun, moon, stars, and animals, as that record says they were—all this has nothing to do with the redemption that Christ has brought us. Whereas the assertion that God has left us free to investigate occurrences in the universe that took place previous to mankind or lay outside his domain, is confirmed both by the results of Science and by the idea of the world on which the Old Testament accounts are founded. Magnificent discoveries in the sphere of natural history have been achieved already by Science, and have immeasurably extended our ideas of the contents, history, and scope of the universe, while the conception that the Biblical account offers us is not in any way in advance of the views that the ancient peoples entertained. Even in the Bible the earth is the central point of the universe, and the firma-

ment, as the name in all the languages of antiquity shows, is a solid arch above which lie the upper waters that come down in the form of rain. Sun, moon, and stars are not celestial bodies but lights which move on the firmament and regulate time on earth. Every attempt to bring the series of the Days of Creation into exact accord with the results of geology must entirely break down. The plants were *not* called into existence before the heavenly bodies and were *not* perfect after their kind when the animal world appeared; on the contrary, the world of organisms presupposes the existence of the earth as a body revolving on its own axis round the sun, whilst plants and animals appeared alike in the so-called protist kingdom,[1] ascended side by side through very slow stages of evolution and processes of differentiation, and so reached their present state.

In only one fact do the Bible and Science agree, namely, that Man is the last and at the same time

[1] This is the name given to the lowest single-celled organisms which as yet do not bear the specific qualities by which plants and animals differ, and which yet are living things. The graceful and extremely diversified diatoms, for example, belong to this kingdom. The name "protist" is formed from the Greek word "prōtos" (first).

the highest creature known to us, when we survey the organic kingdom as a great whole. Whether certain individual and subordinate kinds of plants or animals have come into existence since the appearance of Man is an open question; it is as difficult a problem as that of "species" which was once looked upon as settled, but which the prevailing theories of evolution have now broken up.

A further appeal is made against the endeavour to find in Gen. i. a Divinely revealed presentation of the real course of events at the Creation, *viz.*, on the ground that according to this account the world from its commencement to the appearance of Man was called into being in *six days of twenty-four hours in length!* With this objection I cannot agree, on exegetical grounds. To my mind, the exegesis that sees in the Six Days of Creation and in the Seventh Day of Rest only *human* days, is entirely erroneous, although this is held in the excellent new commentaries on Genesis by Professors Gunkel and Holzinger. These days are, indeed, according to the mind of the narrator, days and nothing more; yet they are not human days but Divine Days which are as superior to

the days of Man who is made in the image of God, as the original is greater than its pattern.

Two reasons are to be found in the text of the narrative which incline me to this view. To begin with, these Days of Creation according to the clear meaning of the original had no night. The record describes the end of a Day of Creation each time in a somewhat similar recurring formula, which in a literal translation runs much as follows : "And it was Evening and it was Morning, First Day, Second Day, Third Day, Fourth Day, Fifth Day, the Sixth Day". With Man's days, evening follows the work of day, night follows evening, and morning night ; in the case of God's Days of Creation, Night is left out altogether, though, if the Divine Days had had a night, the narrator would have had ample occasion to have mentioned it. For he tells us just beforehand that God divided the Light from the Darkness, and called the Light Day and the Darkness Night. It almost seems to me as if the fear of changing the Divine Days into periods, in the attempts made by Professor Franz Delitzsch and others to form what is really a false harmony between the Bible and Science, had so clouded their eyes that

they preferred the most forced explanation of the words to their clear and obvious meaning. If the generally accepted view to-day is firmly established, *viz.*, that the account in Genesis belongs to the book of the priests which was compiled in the fifth century B.C., then the story must have come into existence at a time when all the writings of the prophets had become common property in Israel, and when such a knowledge of God was paramount as has found its classical expression in Psalm cxxxix. 12: "Yea, darkness hideth not from Thee; but the night shineth as the day: the darkness and the light are both alike to Thee". Such a conception of the Deity takes for granted that even if the Days of God were regarded by the author as ordinary days, yet as being Divine they could have no night.

Another proof that in the mind of the narrator the Days of Creation were regarded as Divine Days, different from and higher than the days of Man, lies in the circumstance that in the description of the Seventh Day as the Divine Day of Rest, the closing words: "And the Evening and the Morning were the Seventh Day" are wanting. Nothing is more natural than to suppose that no

end was recorded for the Seventh Day of this Divine Week of Creation because according to the idea of the author it had none; it is *still going on*.

This is the simplest and most obvious exegesis, in my judgment at any rate, of the passage. According to John v., the Jews had reproached Jesus with having broken the Sabbath, because on the Sabbath Day He had healed a man who had been ill for thirty-eight years, and in verse 17 Jesus tells these Jews, who on account of this "breach of the Sabbath" actually sought to kill Him, "My Father worketh hitherto and I work". This reply is only explicable if Jesus intended and was understood by His hearers to mean, "My Father worketh hitherto, although He has entered into His Sabbath Rest: so I also do the works of My Father on the Sabbath as well as on week-days". So the Epistle to the Hebrews in quoting the 95th Psalm refers expressly to Genesis ii. 1-3, and from this passage affirms that the Sabbath Rest of God is still in continuance (iv. 9), and is reserved for His People.

I dealt with this interpretation at more detail in the year 1887, in a special treatise on the Days

of Genesis, in the *Year-book of Protestant Theology*, thirteenth issue, vol. iv. (pp. 688-714). I have nothing to add now except that I have been subsequently convinced that the myths of Creation among other nations contain no trace of a division of the works of Creation into works of an ordinary day, and that the thought of a Divine Week of Creation with seven ordinary days seems to be entirely a product of the Israelitish mind. This idea may indeed have arisen long before the so-called Book of the Priests or even before the second account of Creation which underlies the Decalogue in Exodus xx. 1-17, where the commandment for the Sabbath contained in verse 11 is expressly referred to the example of the Divine Week of Creation. We have no textual reasons for seeing a later insertion in this verse.

Of course the author of that ancient form of the Decalogue which belonged to the period of myth-making, may have identified the Divine Days with earthly days, just as the author of the second account of Creation makes the Creator walk in the Garden in the cool of the day. But the author of the first and later story of Creation would have exalted that idea, clothed as it was in the guise

of myths, to a higher and purer level, seeing that the prophets had been for centuries accustomed to speak of a Day of the Lord as a Day of Salvation and of Judgment without meaning to identify it with an *earthly* day.

We Christians can calmly recognise this development in the knowledge of God without feeling ourselves bound to draw therefrom the conclusion that this idea of a great Divine Week of Creation, extending from the beginning to the end of the world, answers to *the objective reality*. Magnificent and thoughtful and vivid as this idea is, that a division of our earthly days into weeks with six week days and one day of rest was originally laid down as a foundation of all our natural life, yet we must not hesitate to say that the knowledge of the duration of time and of the order of events by means of which the present state of the world was brought about, has been handed over by God to scientific research. He has not reserved it for an alleged revelation, which should be in flat contradiction to the manifest results of that research.

Let us now return to the aim we set before us in this chapter, namely to prove that the Biblical Idea of Creation certainly does assume that the

theory of the Divine Creation and origin of the different objects in the world involves a belief that these were called into being without the intervention of natural causes.

The closer study of the two accounts has brought us to the negative proof that these in no way bind us to any definite conception of the manner in which God created the contents of the world. For in their conception of the mode of Creation, both accounts are so different that they are in this aspect quite irreconcilable. Whoever is of the opinion, an opinion which I myself do *not* hold, that in at least one of the two accounts he must discover a revelation of the real order of events at the Creation, can only have recourse to the first and later of the two accounts; and this is the very one which clearly presupposes the co-operation of natural causes in the Creation of the separate phenomena of the universe.

Now if we turn our eyes right away from the two accounts, and look for a moment at the other modes of expression and aspects that the Bible presents in describing the Creation, we shall come upon numerous examples which positively prove

that by all the writers of Scripture who speak of this creative activity, God is not only named the Creator of all that was created up to and including Man, but also the Creator of everything that comes into existence to-day or that will come into existence in the future, despite the fact that there are also natural causes to account for the existence of these later "Creations of God".

The individual Hebrew names God when he uses religious language; He calls on Him not simply as the Creator of Adam and Eve, but cries: "Thou art my Creator". The people of Israel are His Creation, the peoples yet unborn are created by Him: yea, everything is created by Him. To speak in the language of theology, the ideas of the Creation and the Preservation of the world become one in the consciousness of the Biblical writers. This is Luther's interpretation. In his *Exegetica opera latina* (Frankfurt, Erlang, fifth edition, p. 230) he observes: "With God, Creating and Preservation are one and the same (cp. Köstlin, *Luther's Theology*, second edition, ii., p. 98).

A few examples may suffice, though they could

be multiplied a hundredfold. I quote them in the order of the books from which they are taken. In Job xxxii. 22, xxxv. 10, xxxvi. 3, Elihu says to God, "Thou art my *Creator*". In Psalm cii. 19, "The people that shall be born" (*i.e.*, "shall be created") "shall praise the Lord". In Psalm civ. 30, "Thou sendest forth Thy Breath, they are *created*". "Remember now Thy Creator in the days of thy youth" (Eccl. xii. 1). "At that day shall a man look to *His Maker*" (Is. xvii. 7). "The Lord hath *created* a new thing in the earth" (Jer. xxxi. 22). "For Israel hath forgotten *His Maker*" (Hos. viii. 14). There is even a passage in the Psalms in which the unalterable reign of law over everything that happens in the universe, which is precisely what the opponents of the Biblical Idea of Creation exploit, is described as so willed and created by God (*cp.* Ps. cxlviii. 5, 6). "These" (that is the "heaven of heavens" and the waters above the heavens) "shall praise the name of the Lord," for He commanded and they were created. "He holds them for ever and ever; He ordains them so that they cannot go in another direction". Professor Kautzsch trans-

lates the sixth verse still more literally, and makes the sense thereby much clearer: "He hath also stablished them for ever and ever: He hath made a *decree* which they shall not pass". Can the immutability of the laws of Nature be more clearly expressed than it is here? Is not this an answer to the assertion that this immutability clashes both with the Scriptural view of Creation and with the idea of miracles? Such passages as this help to bring us nearer to the belief that the theory of an eternal duration of the world and its control by law is by no means excluded from the standpoint of Scripture, and that this does not exclude but rather includes a subsequent change and glorification of the world. "Of old hast Thou laid the foundation of the earth; and the heavens are the work of Thy Hands. They shall perish, but Thou shalt endure; yea, all of them shall wax old like a garment: as a vesture shalt thou change them, and they shall be changed. But Thou art the same and Thy years shall have no end" (Ps. cii. 25-27).

We think that we have hereby proved that Scripture in no way starts from the hypothesis

that the conception of the various contents of the universe as created by a Divine act excludes the working of natural causes; and that, on the contrary, the natural causes by which creatures are called into existence are recognised as such by the religious consciousness of the biblical writers, but are traced back by them to God's Will and Almighty Power. The opponents of the Biblical Idea of Creation only show, by the charges they bring against us, that they are ignorant of the spirit and language of the Bible—a condition which they certainly share with those defenders of the Biblical Idea who assert that the creation of the different objects in the world excludes the working of natural causes. We again have the unalloyed joy on the one hand of following Science and on the other of seeing in all the discoveries of Science an advance in our knowledge of the manner in which God created and sustains the world. Every fresh step in this advance will be a deepening of our knowledge of God, and we shall find that with the progress of our scientific knowledge our faith remains not only uninjured but essentially enriched and invigorated. Indeed this

Faith can harmonise with that religious view of Nature which meets us in the Bible and finds beautiful expression in the words of Psalm civ., 24: "O Lord, how manifold are Thy works, in wisdom hast Thou made them all; the earth is full of Thy Goodness". The words of Jesus in the Sermon on the Mount (Matt. vi. 26-30), speaking of the birds of the air and the lilies of the field, are the New Testament confirmation of this Old Testament view of Nature, while at the same time they give a practical turn to the exhortation to trust in God. Finally, the last book of the Bible, the Revelation of John, is a fit counterpart to the first chapter of the Bible. In chapter iv. 11, the representatives of redeemed mankind in heaven break forth into the song, "Thou art worthy, O Lord, to receive glory and honour and power: for Thou hast created all things, and for Thy pleasure they are and were created". And in chapter v. 13 the writer hears "every creature which is in Heaven and on the earth and under the earth and such as are in the sea and all that are in them," saying, "Blessing and honour and glory and power be unto Him

that sitteth upon the throne and unto the Lamb for ever and ever".

We will now endeavour to follow Science in her course, noting the echoes that she awakens in our religious consciousness.

CHAPTER III

RELIGION AND THE SCIENTIFIC RECORD OF CREATION

I. The Right of Hypothesis in Natural Science

We shall spare ourselves many subsequent repetitions if, at the very outset of our glance at the work of Science, we discuss *its right of hypothesis*, that is, its right of advancing theories upon hitherto undiscovered causes of certain phenomena, without these theories having been beforehand proved to be correct.

Science is often reproached with working far too much on mere hypotheses, and many people are of opinion that they can with this reproach speedily dispose of the frequently surprising results of scientific research or at least invalidate these results. This reproach is justified only in so far as it warns Science not to treat unproved hypotheses as if they were already proved, and not to posit

them as actual laws or facts before it is really known whether they are laws of immutable validity or indeed facts at all. But the reproach is unjustifiable when it is intended to forbid Science advancing hypotheses and working with them as a basis.

Hypotheses are absolutely indispensable for research in every branch of Science, and especially in Natural Science which more than any other perhaps is surrounded by unsolved problems. In the most extensive region of scientific research, the region of cosmic physics, there are some hypotheses of which the man of science is conscious that while they have been no more than mere hypotheses they have proved quite indispensable for his discoveries.

Such hypotheses are the existence of ether, of the atom, of the molecule.

No one can perceive these substances in any empirical way (that is "by experience"), and yet, without taking these for granted, the most important work and noblest triumphs of Science would be impossible.

Beyond a doubt the most important discoveries and advances in our knowledge would never have

been made at all if the pioneers in knowledge had not at first worked with hypotheses.

This might be proved at every step of progress in our knowledge of Nature, but it is enough to indicate the evidence of some examples which are evident even to amateurs in scientific research.

The Ptolemaic system of the Greek and Roman science was a hypothesis which assumed that the heavenly bodies revolved in the world of space just as they seem to do to the inhabitants of the earth.

According to this theory, the earth was the fixed and central point of the Universe.

This hypothesis was fairly adequate for calculating the movements of the heavenly bodies and the eclipses of sun and moon, and mathematical calculations of great accuracy were accomplished by the astronomers of antiquity; but the hypothesis could not *explain* these movements.

No doubt, when Copernicus (1473-1543) opposed the Ptolemaic system of the universe with that system which forms to-day the foundation of our knowledge of the universe, the latter, when it first rose before his mind, was also a mere hypothesis.

But this hypothesis held its ground. It furnished so admirable and satisfactory an explanation of all the motions which we perceive in the heavenly bodies, that this view of the universe, in spite of the opposition of the Church and of many enlightened men of science, such as Bacon of Verulam, far outstripped the dignity of a mere theory; it soon became a scientific axiom and postulate, a truth which in itself needed no further proof, because it was entirely capable of explaining all the phenomena that came in its way--phenomena which otherwise would have remained inexplicable.

Let us take another instance. When attention was first directed to fossils, they were thought to be freaks of Nature, accidental inorganic pictures in stone.

This was a hypothesis; but it proved useless and untenable, because the resemblance between the structure of the fossils and the structure of the living organisms was far too great to admit of the explanation that they were merely accidental. Then another hypothesis was taken up; it was assumed that fossils were relics and traces of animals and plants that had disappeared.

This hypothesis proved to be correct, but it fell

into disrepute and suspicion owing to the further hypothesis which proved untenable, namely, that the fossils were the relics and traces of the animal and plant world that had passed away with the Flood.

This sub-hypothesis came before the world in the beginning of the eighteenth century and assumed such a palpable shape that the Swiss scientist Scheuchzer believed that in the skeleton of a giant salamander which was found in the famous Middle Tertiary strata of Oningen on the Rhine, between Constance and Schaffhausen, he had discovered the skeleton of a man who had been drowned in the Flood; whereupon he wrote a learned treatise entitled *Homo Diluvii Testis*, "A Human Witness of the Flood".

When this untenable hypothesis was first given up and when people began to see in the fossil remains (supported by other results of Geology) the records of the history of a slow and gradual development of plants and animals, then the former hypothesis revived, namely, that the fossils were the remains of submerged plants and animals. This has become a postulate of Science which no one any longer doubts, and from this postulate,

which could only arise in the shape of a hypothesis, one gets a magnificent and wonderfully ordered world, endowed with many varieties of life, possessing a pre-adamite history which has developed through long periods of time and which reaches down to our own day. This conception is now the common property of almost all educated people. Every geological cabinet displays these wonders of Creation in astonishing variety and order.

By these surprising and yet indisputable results of science the scientific man finds himself confronted with a number of new questions. How is one to explain the origin of the living and organic? Or the origin of the different species of plants and animals up to Man? Or their differences, their resemblances? Or the chronological order of their appearance?

None of these questions has been settled by indisputable facts. If a scientific man desires to give an answer, or an approximate answer, to these questions, he must assume an hypothesis.

So long as one thinks that everything actually incomprehensible, or hitherto regarded as incomprehensible, shows a greater dependence upon God,

if it has been called into being by immediate creative activity apart from any intervening natural causes, so long will one be inclined in the interests of religion to forbid scientific research into original causes or to suspect Science of being irreligious. But whoever regards the universe (and this is our view) with all its energies and laws as a work of God who created, sustains and rules it—for such a man, when he is once really in earnest, the Divine causality will not be affected one hairbreadth by the discovery of the natural causes of a phenomenon, any more than if the phenomenon had no natural causes. For in the one case, as much as in the other, it is the work of God. A thoughtful student will always be careful of the use he makes of a hypothesis. He will abandon it if it be proved useless, or when it does not satisfy the facts which it takes for granted; but he will not allow such experiences to keep him from starting new hypotheses and examining them in the hope that they may serve to win a satisfactory explanation of the phenomena.

In his "Meditations of a Wanderer" ("Betrachtungen im Sinn der Wanderer"), in the second book of Wilhelm Meister's *Wanderjahren*, Goethe

has nobly expressed this right of hypothesis in these words: "Man must abide by the belief that the incomprehensible is comprehensible, or else he would cease to investigate".

II. Astronomy, Cosmic Physics, and Chemistry in Relation to Christianity

The appearance of the work *De Revolutionibus Orbium Coelestium* which Copernicus published in the year of his death, created a revolution in the ideas that educated persons entertained of the world and its contents. The greatness of this revolution one can hardly overestimate.

The volume was limited indeed to the earth and solar system, but people soon saw the weighty conclusions which were to be drawn from this new idea of the world; what had been discovered about the position of the sun and its planets, with their satellites, was extended to the whole starry world and all inhabited space, and this produced a perfectly new view of the world, vastly different from what had hitherto obtained.

According to the so-called geocentric view of Ptolemy of Alexandria (*circa* 140 B.C.), the earth

was the central point of the universe—the sun, moon and stars being lights in the firmament, the motions of which could be perceived and calculated, but the nature of which was entirely unknown. With all this ignorance about the nature, contents, and extent of the world of space, imagination had full liberty to conceive the heaven of religion, *i.e.* the sky above our heads, as the abode of the glory of God and as the distant goal of the Christian hope, as if it were a kind of upper, though still invisible, continuation of the firmament. There was also ample opportunity for portraying the glories of this heaven with all kinds of pictures drawn from the imagination. This Ptolemaic geocentric view of the world was now replaced by the Copernican heliocentric view, according to which the earth is only *one* of the planets that circle round the sun, while the sun and not the earth is the middle point of the Solar System, which is itself again but a small part of the universe; every fixed star is itself a sun, and space is of quite immeasurable extent.

Now for religious knowledge and religious ideas this revolution in the knowledge of the universe was of incalculable importance. This may perhaps

be best formulated in the briefest manner by stating a fact which for our religious faith is so important, namely, that the difference between the visible and invisible has been changed from what was a quantitative difference under the reign of the Ptolemaic system into what is a qualitative difference under the system of Copernicus. The earth with its inhabitants is not thereby brought nearer nor removed farther away from heaven than the farthest fixed star that can be reached with a telescope.

Slowly indeed but with an unceasing triumphal progress the new science of the universe made its way. Opposition from the side of Science was not wanting, as we have already mentioned in the case of Bacon of Verulam (p. 48). Even the Swedish Tycho de Brahé (1546-1601) opposed his own system to that of Copernicus, holding that the earth is the central point of the universe and the sun and moon revolve round it, while the planets again go round the sun. Still stronger was the opposition upon the part of the Churches, but strongest and most tenacious of all from the Roman Catholic Church. The writings of Copernicus from 1616 until 1757 stood on the index of

books forbidden in the Roman Church; Galileo (1564-1642) fell twice into the hands of the Inquisition, and his works were first removed from the forbidden list in 1835.

In spite of this the revolution in, and the increase of, natural science produced by the genius of Copernicus have long become the common property of the educated. Moreover the Christian Churches have appropriated it and acquiesced in the religious conclusions drawn from the new knowledge of the universe; they have introduced it into their theology, so that on this ground there is nothing more to be said concerning a conflict between Natural Science and Christianity, although Christian children must still pass and perhaps always pass through the Ptolemaic theory of the universe before they reach the Copernican.

I am not aware of any system of dogma that would not thankfully accept and utilise the revolution (introduced by the Copernican system of the universe) in our idea of visible and invisible being, *viz.*, from a quantitative into a qualitative difference, as an illumination, a deepening, and a strengthening of its religious knowledge, though our theological and still more our devotional

works, where they speak of the invisible world, could not surmount the difficulties that arise from the fact that we are totally unqualified to form any idea of existence apart from the categories of Time and Space—categories which belong to *this* world, while the other world is at present merely an object of faith and hope and not yet one of sight.

Thus in the sphere of the relations between Astronomy and Christianity we have to note a positive gain that Christianity owes to the increase of our scientific knowledge. Astronomy has helped us to the knowledge that the category of space (and time) stretches over the whole universe, that the extent of this sphere is absolutely incalculable, surpassing all our ideas of time and space, and that this vast region is, nevertheless, confined only to the visible, whereas the heaven which is revealed as the abode of the Glory of God, the seat from which God directs the universe in His Omnipotence, Omnipresence and Omniscience, and to which He takes His own after they have left this world, has no place in it at all. *Heaven* belongs to quite another and a supernatural category of existence, and our ideas of space, whether

they be large or small, are irrelevant in this connection. But this Heaven can *now* be very near or very far from every human being before he passes to the World Beyond, in whatever part of the present world of space he may be situated. This is shown us at once by the fact that every man, according to his moral and religious condition, can have Heaven or Hell within him. Moreover, there is the experience we have in private communion with God in prayer. Every prayer a man utters marks an ascension of his inner being to God; he is convinced that God from His Heaven, omnipresent in the whole universe, hears him; and the Founder of our religion has expressed this with incomparable beauty, by teaching us in the Lord's Prayer to address God with the words "Our Father which art in Heaven".

From yet another side our religious faith has reason to thank astronomy for what it has gained.

The Old Testament saint, with the total inadequate knowledge of the world possessed by that age, felt himself compelled to exclaim: "The heavens declare the glory of God and the firmament showeth His handywork" (Ps. xix. 2). Every advance we make in our knowledge of

the universe through astronomy extends our view of the glory of God and His Almighty Power, and the deeper and more comprehensive our view has become of the extent of the universe and the immeasurable host of the heavenly bodies in all stages of their development, the fuller is the sound of the song of praise which to-day rises from our lips.

In connection with this extension of our view there is finally a further gain to take into account, for which religious devotion and reflection are indebted to science. The contrast between the smallness of the space occupied by man and the loftiness of the mental powers of which he is accounted worthy by His Creator, cannot be recognised in its whole immeasurable extent save through the increase of our astronomical knowledge. Even under the ancient idea of the world the sense of his own littleness was present with Man, as he stood before the vastness of which he was accounted worthy. It forced from him the exclamation of the Old Testament saint: "When I consider Thy Heavens, the work of Thy fingers, the moon and the stars, which Thou hast ordained; what is man, that Thou art mindful of him? and

the Son of man, that Thou visitest him?" (Ps. viii. 3, 4). To what tiny dimensions does the whole earth shrink, with all its inhabitants and the individual most of all, when we direct our gaze, with the aid of astronomy, to the immeasurable universe with its countless heavenly bodies and from thence turn to our little earth, to its inhabitants, and last of all to our own selves! And yet this tiny little being called "Man" can rejoice in his ability to receive the Creator and Lord of the whole universe into his consciousness, and even to recognise him as his Heavenly Father, to love Him, and to have communion with Him.

Cosmic physics and chemistry offer to our religious knowledge and experience a service similar to that offered by astronomy, though in a more limited sense. For while this branch of science demonstrates the unity of all the laws, energies, and material of the universe and the heavenly bodies, including the earth, it thereby strengthens and completes our reasons for regarding the difference between the Visible and the Invisible World not as a quantitative but as a qualitative difference, providing fresh cause for adoring meditation on the Omnipotence and Glory of the Creator.

Up till now, the relation between Science and Christianity in this sphere is evidently quite a peaceful one. But as soon as cosmic physics extended with perfect justice the knowledge of the indestructibility both of energy and matter—which we had at first discovered by the investigation of the laws, energies and materials to be found on *the earth*—to the laws, energies and material of *the universe*, then, indeed, this science became the principal armoury from which the atheistic, materialistic, and pantheistic systems took weapons wherewithal to combat the Christian view of the world. For this reason we must examine cosmic physics and chemistry somewhat more closely.

The law of gravitation, the law of the indestructibility of matter, and the law of the indestructibility of energy are the three basal truths of which we shall treat.

The three laws of motion of the heavenly bodies discovered by Kepler (1571-1630) and the law of falling bodies discovered by Galileo before Kepler, suggested to the genius of Sir Isaac Newton the thought of finding the higher unity of both in gravitation as the universal characteristic of all matter, from the masses of the greatest of the

heavenly bodies down to the particles of dust in the air.

When we are told it was by seeing an apple fall from a tree that the thought of a universal law of gravitation throughout space flashed through the mind of the great scientist, this story illustrates better than anything else the greatness and the scope of the discovery. As regards this tale, Robert Mayer says in the fifth section of his *Dynamics of the Heavens*: "One of the most tremendous enigmas, the problem of the cause of the irregular course of the planets, Newton solved, and solved it, so it is said, by meditating on the fall of an apple. There is nothing improbable about this, for if one is convinced that between small and great there is not a qualitative but a quantitative difference, and if one refuses to heed the whisperings of an ever-vivid imagination and essays to trace the same laws throughout the least and the greatest processes of Nature, then is one on the right way to discover truth. This *universal* validity lies in the very essence of the laws of Nature; it is a touchstone for the correctness of human theories. We watch the fall of an apple, and discover that there is a law hidden at

the root of this phenomenon; instead of the earth put the sun, instead of the apple a planet, and—we have the key to the mechanics of the heavens in our hands!"

The second point in the historical succession of the new science in the sphere of physics and chemistry was the *Indestructibility of Matter*, which we owe to the French chemist Lavoisier (1743-94). This fact has become the foundation of all our modern chemistry, and the enormous strides both in knowledge and technical achievement which we owe to this axiom are the best proof of its accuracy.

The familiar meteorites or aerolites, small bodies that rush through space and every now and then fall on the earth, contain pure elements, to the number of about twenty, which occur also on the earth. No sooner were *meteorites* first chemically examined, which was not until the beginning of last century, than it became necessary to draw conclusions about the similarity between the matter of which the universe is composed and that of the earth. But the Spectrum Analysis which Robert William Bunsen and Kirchhoff (1861) brought jointly before the public in their work, *Chemical Analysis through Spectral Observations*, and made

the common property of science, was the first thing to bring the chemical elements of the great heavenly bodies, *i.e.* of the sun and fixed stars, within our knowledge. Thereafter one could begin to speak of a cosmic chemistry. This has raised the absolute identity of the matter of the universe and of the earth to an indisputable certainty, although, of course, the possibility is not excluded that the spectrum may still reveal in one or other of the heavenly bodies elements which have not as yet been proved to exist on the earth.

In the year 1842, that is, nineteen years before the introduction of the Spectrum Analysis, a new and epoch-making discovery came to light, namely the knowledge of the Indestructibility of Energy—a discovery worthy to rank alongside of Lavoisier's Indestructibility of Matter. There were no less than six men who independently reached this discovery, the Germans, Robert Mayer, Holtzmann, and Helmholtz, the Frenchman Hirn, the Englishman Joule, and the Dane Colding; but Robert Mayer (1814-78) had the honour of stepping first before the public with his discovery, and of stating the vastness of its significance for the whole range of cosmic physics. The first announcement

appeared in the small treatise (scarcely ten pages in length) entitled "Remarks Concerning the Energies of Inanimate Nature," which Robert Mayer published in the *Annals of Chemistry and Pharmacy* (Wöhler and Liebig) in May, 1842. The second appeared in his *Contributions to the Dynamics of the Heavens in Popular Form.* Both treatises were reprinted in R. Mayer's *Mechanics of Heat.* The first-named at its appearance was scarcely noticed, and when it was noticed it met with only aversion and ridicule. Its contents have long since been recognised as one of the greatest discoveries that has ever enriched the human mind, directing technical work into perfectly new and successful paths. The whole of electrotechnics, for example, rests ultimately on Mayer's discovery.

This discovery is in its prime elements, as is the case with all truth, exceedingly simple; in fact, now that it has been made and is generally known, it reminds one, as Mayer himself has somewhere said, of Columbus's egg. It consists in the proof that not only matter but also energy is absolutely indestructible, and that these two energies, heat and motion (probably all physical

energies, *i.e.*, the formerly so-called imponderables, light, electricity, and magnetism, with the forces of chemical processes of combination) vary mutually according to a constant, measurable relation, which can be put into numbers and formulæ. This relation (numerically 424 metres, to which Mayer raised it from the originally accepted number 365, raised afterwards to 425) is as follows: The heating of a given weight of water at 1° Celsius (Centigrade) is just the same achievement as the raising of a similar weight of any quantity of matter to a perpendicular height of 424 metres. Or *vice versâ*, a weight that from a perpendicular height of 424 metres, quickly or slowly, vertically falls, rolls, or is impelled downwards, produces, mechanically speaking, as much heat as is required to raise the same weight of water 1° C. This relation is called the *Mechanical Equivalent of Heat*, and this is for Mayer the Archimedean point from which he draws the most astonishing and for the most part convincing conclusions regarding the movements of the heavenly bodies, the heat of the sun and its causes and effects, inorganic motions and occurrences, such as tide and earthquake, currents of air and

water, and the relationship of physical processes in the body to those of mechanical energy.

Thus we see that universal and unvarying validity of the laws of Nature throughout time and space, indestructibility of matter, and indestructibility of energy, are the chief principles by which Cosmic Physics and Chemistry gain their great theoretical and practical success; nor is there any doubt that they are the very strongest weapons which are used by the atheistic, materialistic, and pantheistic systems, or, as (since Häckel's time) they are rather called, the *monistic* systems—in their warfare against the Christian view as a contemptible Dualism. Have they a right to use these? The answer to this question leads us, as do the systems themselves, far beyond the region of science and deep into the world of metaphysics. Hence we shall take leave to answer this question at the point at which we ourselves have to leave the region of science, step into the realm of metaphysics, and speak of the different theories of the world. At the present stage of our inquiry, when we are still dealing with pure natural science, it is sufficient to point to the fact that the very pioneers to whom we owe the whole present-day

increase of our knowledge of the world, were almost without exception Christians by conviction. According to Dennert, Lavoisier certainly was indifferent about religion, but it is generally known, with regard to Copernicus, Galileo, Kepler, Newton, and Robert Mayer, that they were Christians. In the year of Mayer's death (1878) I published a small treatise on his Christian standpoint, which proves this from his writings and letters.

Any one who desires to know not only the religion of leading scientific men, but of scientific men as a whole, will find a thorough and, for religion, a surprisingly favourable answer in the little work of Dr. Dennert, *The Religion of Scientific Men* (Berlin, 1901, sixth edition).

I have no need to go further into the Kant-Laplace hypothesis of the origin of our solar system, which assumes the solar system to have arisen from a revolving cosmic mass of vapour in distant ages and from its products, as well as again from other revolving fragments, since I have already stated the religious and Biblical Idea of Creation and have demonstrated that this in no way excludes the origin of the individual contents of the universe by means of intermediate causes. For

the hypothesis does not extend to the question of the origin of the whole universe, but confines itself to the origin of our present-day solar system and finally to the origin of fixed stars which resemble the solar system. Thus it does not conflict with our religious thought and experience. That it has only the rank of an hypothesis arises from the fact that while for a long time it enjoyed an almost universal acceptance as valid, yet, on the ground of observations made by spectral analysis, other hypotheses have been set up in opposition, as for instance that of the English astronomer Lockyer (born in 1836). Hence, in the region of astronomy, in spite of the tremendous upheavals and advances which these sciences have introduced into our conception of the world, and in spite of the ancient and Biblical idea of the universe having been actually replaced by the modern, we can see how nevertheless all is at peace between Science and Christianity. Nay more, we may hold that while the modern conception of the universe has replaced that of the ancients, so far from having thereby marred the achievements that have been won in the name of religion, achievements which mankind has gained under the sway

of the ancient idea of the universe, it has really only enhanced and clarified them.

III. The Realm of Organisms on the Earth—Charles Darwin and His Successors

Returning now from the universe to our earth, and inquiring into the origin and development of the realm of organisms and living creatures, we feel as if we were leaving the firm ground of assured principles and axioms to set foot on the uncertain ground of hypotheses.

We shall find that all questions on this subject are in a very nebulous state. And yet we must now say "tua res agitur"—the matter turns on what immediately touches you, for mankind with its wealth of mental and spiritual life and its extensive history pertains on its physical side to this realm of organisms.

Nevertheless all knowledge in this sphere is not uncertain. Tremendous strides have to be noted in our permanent knowledge, and the work being done by men of science is more indefatigable than ever.

Until about a hundred years ago science had not as yet approached at all closely the question

of *the origin of different species of plants and animals.* It contented itself with the fact of their existence, and their maintenance by further reproduction, but confined itself to the investigation of their structure and manner of life, and spent all its keenness of intellect on classification.

Much less, had any one ventured to solve the problem of *the first appearance of Man.* *The origin of life* itself was only drawn into the circle of scientific research in so far as it raised the question whether lower organic forms did not still spring from the inorganic. This method of generation was called "generatio æquivoca" or "spontanea," and there was a strong disposition to assume such a method of generation. This hypothesis has long been abandoned, since all experiments concerning the origin of organisms, even of the very lowest, traced them back to germs already in existence.

Several causes combined to keep scientists in this state of ignorance. The most effective of all was perhaps the doctrine of the Immutability of Species, which the Swedish scientist Linnæus (1707-78) had brought to a victorious issue.

The question of their origin was thought to be

solved by the biblical accounts of Creation, according to which God had made plants and animals in their own order and man from the dust of the earth. Since the biblical idea of the Divine Creation had not been closely examined, and since the general opinion was pretty much that this idea excluded the operation of intermediate causes in the creation of the different creatures, every close investigation into the causes of the origin of the different species seemed to imply an assault both on the authority of Holy Scripture and on Christian belief.

But a number of very successful discoveries gradually made it absolutely imperative for scientific research to examine more closely than before the question of the origin of the different species of plants and animals, and of the origin of man.

In the first place, we must mention the results of geology and palæontology (the science of pre-adamite organisms on earth) and the geographical distribution of plants and animals, together with those of comparative anatomy. In the second place there were the researches made into the embryonic evolutionary history of the individual types, and the discovery of cells as the original

unit in all plants and animals. These branches of pure science all blossomed during the past century.

It was geology and palæontology especially that opened up a world of unimagined wealth, with a history of pre-adamite plants and animals, long ago submerged, which went back for countless millenniums. Ever since Sir Charles Lyell (1797-1875), the English geologist, discovered and taught that forces still operative on earth are the key to past changes, it has been found that thousands and millions of years must have elapsed ere man came upon the scene. This gave ample scope for the imagination to account for the coming and passing of the different species of plants and animals. The temporal succession of the strata which contain organic remains shows on the whole a distinct ascent from the lower to the higher, and an ever more marked approach to the level of present-day organisms on earth, until finally Man steps into existence as the end and crown of the earthly creation. The science of the geographical distribution of plants and animals, which is still in its infancy, has proved further that the mainland and the islands of the earth

are divided into distinct regions, each of which has its peculiar vegetable and animal forms, and that the very fauna and flora which are peculiar to a given region have geological predecessors far back in the Tertiary Period. These latter are frequently larger than their existing representatives.

It was *comparative anatomy*, however, which discovered that all organisms, beginning with those whose remains are found in the oldest formations and ending with extant plants and animals, not only represent, as a whole, an ascent from a lower to a higher structure, but that the structures of the organisms in existence at the present day are akin to those of the species that have vanished, and that in the whole animal and vegetable kingdom there is a wide universal unity of classification to which plants and animals now extinct belong as much as do those now in existence. As a case in point, to show that the Unity of Classification is correct, we are at liberty to take the fact that there are so-called permanent types of species which have been preserved from the oldest formations in which they are found, up to the present, entirely or nearly unchanged, *e.g.*, among the invertebrate animals the bivalvular

lingula and *terebratula* with the cephalopod *nautilus*, among vertebrates the fish *ceratodus* and the reptile *hatteria*.

It was the *Homology of Organs*, above all, that was brought to light by comparative anatomy; and this urged the scientific mind to seek for an explanation of the phenomenon. By the Homology of Organs we understand the fact that within one and the same class all the organs, especially those in the permanent and constituent parts in the skeleton, are fashioned according to one and the same type, and vary in accordance with this type throughout their most widely divergent modifications. This is especially true of the spine, where Goethe and Oken recognised long ago in the skull a modified *vertebra*. So too, for example, the hands and feet of a man, the hands of a monkey, the paws of a beast of prey, the hoof of a horse, the feet of an ox, the fore-limbs of a mole, the fins of a whale, and the wings of a bat down to the smallest bones, all correspond to each other. They can all be registered with the same letters; they are "homologous" to the smallest particular. The perception of this suggested to scientists like Cuvier, C. E. v. Baer, Agassiz, and

Richard Owen, the idea of types in the organic kingdom and of an archetype in the highest class maintained under all modifications and representing a plan realised in ever higher differentiations and ever more highly organic developed modifications, until, in the case of plants, among the most highly organic *dikotyledon* plants having two seed-lobes, in the case of the animal world, among *mammals*, and, lastly, in the case of mankind, it has found its highest and at the same time its most strongly modified expression. Hence, despite his aversion to the theory of the Descent of Man, Agassiz owned: "Man is the goal to which the whole animal creation has striven, from the first appearance of the oldest palæozoic fishes"; and Richard Owen, who agreed with the theory of Descent, observed: "Man, from the beginning of organisms, was present as an ideal on earth".

From yet another side came attempts to explain the origin of the different species of plants and animals and also of man, by means of the descent of higher forms from lower, with the possibility that this descent was completed by a gradual evolution. Such were the researches into the embryonic evolution of animals, and such

were the analogous researches of botanists. It would take us too far, were I to attempt to give a survey of these highly interesting studies. Any one who wishes to become better acquainted with the subject will find a useful account in the introduction to the *Handbook of the Comparative and Experimental Evolution Theory of Vertebrates*, edited by Dr. Oskar Hertwig (Jena, 1901). Weismann in his *Lectures on the Theory of Descent* and Reinke in his *Die Welt als Tat* ("The World as Reality") also give a helpful survey. Only the pioneers and founders of the modern theory of Evolution can be named here: Pander (1794-1865), and his still more important friend and fellow in research, Charles Ernest von Baer. Ere ever Schleiden had proved the cell to be the germ-unit of all plants (in 1838) and Schwann (in 1839) had proved it the origin of all animals up to the most completely developed organism, the foundation of all modern biological research had been laid by these two men, who paved the way for the whole modern theory of Evolution. Pander in 1817 wrote his *Contributions to the History of the Evolution of the Chicken in the Egg*, and Von Baer between the years 1828-37 published his

work, *Observations and Reflections on the History of the Evolution of Animals.* Of the latter work, Huxley says that it contains the deepest and soundest philosophy of zoology and biology that has ever been given to the world, while Källiker says: "Von Baer's works may be mentioned both for the wealth and excellence of their facts and for the thoroughness and scope of their general remarks, as the best that the embryological literature of any age and nation has to show". Herr v. Baer in this work already treats of the so-called *biogenetical* law (the law of the origin of living beings) which subsequently under Häckel's guidance was destined to play so great a part in the hands of the followers of Darwin. Since it seems as if men of science were after all inclined to confine the application of this law to the limitations which Von Baer had given it, we will pause to touch upon this matter for a little. The biogenetical law, in the form in which the comparative anatomist John Frederick Meckel (1781-1833) formulated it, runs thus: "The embryo of higher animals passes through the extant forms of the lower animals, and the evolution of the individual animals follows the same laws as those of

the whole range of animals". Von Baer discusses the question in his *History of Evolution* (vol. i., pp. 199-294), refutes the first part of the assertion, and limits the resemblance between the steps of the embryonic development and the extant forms of the lower animals to this, that the individual development is an advance from a more general form to an individual (p. 255), or that the evolutionary history of the individual is the history of the growth of its individuality in every respect (p. 263). He lays emphasis wholly on the separate development of the chief types in the animal world. Among these he distinguishes four, the peripheristic or radiated type, the geniculated or longitudinal, the massy or mollusc, and the vertebrate type.

Thus, about the middle of the previous century, the idea of explaining the origin of the whole systematic order of the organic world by means of a *Descent*, and possibly by a *Development* of the higher forms from lower and closely related forms, was in the air. At last, with the appearance of Charles Darwin's *Origin of Species*, on 24th Nov., 1859, matters came to a head.

His idea certainly had its forerunners, of whom

however little notice was taken. Erasmus Darwin, the grandfather of Charles, suggested in his *Zoonomia* (1794) that species came into existence by descent and evolution. Etienne Geoffroy St. Hilaire in 1795 arrived at the same conclusion, but published it first in the year 1828, and was thereby in 1830 drawn into the contest, immortalised by Goethe, which was waged in the Academy at Paris with Cuvier. In this he was defeated. The next upholder of the idea is Treviranus in his *Biology or Philosophy of Living Nature*, which appeared in 1802; then came the most noteworthy of them all—the Frenchman Lamarck (1744-1829), who published his views first in 1801, and expanded them further in his *Philosophique Zoologique* (1809) and in his *Natural History of Invertebrata* (1815). He too remained unnoticed until his name was rescued from oblivion during the great movement initiated by Darwin, when he won high esteem in the so-called "Neo-Lamarckianism". In the year 1844 there appeared in England an anonymous book, brilliantly written, entitled *Vestiges of the Natural History of Creation.* The author was unknown till his death, in 1871. He was the Edinburgh publisher and author, Robert

Chambers. The book excited a great deal of interest, and before the appearance of the works of Darwin went through ten editions. Darwin, in the historical sketches which precede his book on the *Origin of Species*, ascribes to him the merit of having paved the way for the acceptance of the new teaching in England. Moreover the Frenchmen Naudin and Lecoq should also be named, and lastly the German Schaaffhausen, who in the year 1855 advocated a continuous evolution of organic forms on earth, and, after the appearance of Darwin, entered with much zeal into the problems of the Descent of Man.

Those whose lot it was to live through the sixties and seventies of the past century can never forget the intellectual stir caused by the appearance of Darwin's book on the *Origin of Species*. It was at once patent to any one that the origin of the human species in animal soil must be the consequence of the new teaching, although Darwin's book on the *Descent of Man* only appeared in 1871. The stir was inevitable. The new views and ideas to which Darwin gave the chief impetus were bound to stir men's minds to their very depths, on scientific, philosophic, and above all

on religious grounds. Until now there had lain a great darkness over the question of the origin of the human race, on which there fell only one strong ray of light, namely, that from the first two chapters of the Bible narrative, which tells us that at the end of the animal creation God made man in His Own Image and fashioned him from the dust of the earth. Now suddenly, for reasons which seemed to become more and more obvious, man was supposed to have a long succession of animal ancestors—and to have been called into existence from one of these.

It would lead us far beyond the limits of our present study, even were it possible, if I were to attempt so much as a partial survey of the flood of literature which the appearance of Darwin's work called forth. Still less do I wish to give a purview of the laborious and detailed studies in every region of plant and animal life, which the British naturalist brought to the notice of all the civilised nations of Europe and America, from his far-famed country estate in Down.

On the other hand, however, I think it due to those readers who have only indefinite ideas of the theory of Darwin and his followers, to briefly

recapitulate its main features and to indicate the direction of its subsequent developments.

Darwin did *not* occupy himself with the *Origin of Life and Living Creatures on the Earth.* He began his researches where he had to presuppose the existence on our planet of living creatures in their simplest forms, and in the last sentence of his work on the *Origin of Species* he takes for granted that life with all its energies was originally breathed by the Creator into one or two forms. Even in the *Descent of Man* (vol. i., p. 30) he designates questions such as those concerning the origin of life or the development of mental capacity in the lowest organisms, as problems for a distant future—doubting if they could ever be solved by man. The question of the origin of life, which is so nearly related to Darwin's theory—was, after the appearance of the *Origin of Species*, raised and treated in the most thorough manner by Ernst Häckel, one of Darwin's most decided supporters in Germany. Professor Häckel treats this question in the first of his popular scientific books, his *Natural History of Creation* (*Natürliche Schöpfungsgeschichte*), in the thirteenth lecture, and he returns to the same subject in

his last work, *The Wonders of Life* (*Lebenswunder*). In both he declares that the question of the origin of life is finally solved by the modern theory of Evolution. Häckel starts from the fact that there are still in existence to-day low forms of animalculæ, as, for example, the *Monera*, which were discovered by him, which cannot be reckoned to possess even cells. (They are represented very clearly on the title-page of his *Natural History of Creation*.) In these primitive animalculæ neither the organic matter nor the organic shape nor the organic movement have anything that does not belong to the inorganic also. The organic matter called Plasma or Protoplasm is said to be a highly albuminous carbon compound, which, one must suppose, could arise in a purely mechanical way like all chemical compounds. This supposition is of course, to begin with, only an hypothesis, and the researches of Reinke and others have not exactly corroborated it. The latter have proved that protoplasm is a mixture of numerous chemical compounds, of which albumen is only a part. The organic form constitutes no difficulty to the mechanical theory. This is to be admitted as soon as organic motion is forthcoming, for the

organic form is a product of the organic motion. Yet until now no one has succeeded in proving even the possibility that the movement of organic animalculæ may have arisen in a purely mechanical way from the movement of the inorganic. Häckel says that organic motion is in the last instance to be referred to the qualities of carbon. He discusses this more closely in the third edition of his *Natural History of Creation* (p. 298), as follows: "In reality, the peculiar chemical and physical qualities of carbon and especially the fluidity and the facility of decomposition of the most elaborate albuminous carbon compounds are the sole and mechanical causes of the specific phenomena of motion, by which the organic is distinguished from the inorganic, and which in the usual sense of the word are termed Life." Now Häckel grants that this is only an hypothesis. Yet Fechner's researches (1801-87) seem to bear heavily against this hypothesis, and as far as I know they have not as yet been contradicted. (See his *Contributions to the Creative and Evolutionary History of Organisms*. Leipzig, 1873.) According to him the critical difference between the inorganic and the organic consists

in the method of motion. The molecular portions of the organic animalculæ move in consequence of an impulse that is renewed from within to without, in a revolving direction; but this is not the case with the molecular portions of inorganic bodies. How this new rotatory movement has come into existence remains at present an enigma.

Men of science who, like August Weismann, are firmly convinced that life can be explained as arising from inorganic matter and motion, and who therefore combat the old idea of a special physical energy, are at one here. Viewing the movement originated by Darwin they exclaim: "The great enigma has been solved in our day—the enigma of how the fittest can arise without the co-operation of determining purposive energies" (Weismann, *Lectures on the Theory of Descent*, Jena, Fischer, 1902; 2nd ed. 1905, vol. ii., p. 441). And yet the same author (vol. i. "The Theory of Germinal Plasma," Lectures 17 and 18) grants that we are completely ignorant of the most elementary phases in the origin of life. He says that the germinal plasma (*Keim plasma*), *i.e.*, the hereditary substance of the germ cell, is not a loosely connected combina-

tion of matter, but a structure, a piece of architecture, in which definite positions are assigned to different parts. The forces which assign these positions—which he designates as *vital or elective affinities*—are those which cling to the bearers of life, the "Biophora," in contrast to the inorganic molecular particles; they are inner forces of which we know nothing more than that they do work—but of which we have as yet no more detailed or immediate knowledge. This confession of ignorance must logically take away the chief ground for the polemic against the existence of a special life-energy; it leaves the question still an open one. In fact recently there has been no lack of support for the standpoint; take, for instance, Bunge, and Driesch in his later works—although he had formerly supported the mechanical theory of the existence of life. Helmholtz and Lord Kelvin have advanced the hypothesis that organic germs were hurled to the earth by *Meteorstones* from other celestial bodies. Yet this bold and highly improbable hypothesis would not solve the question of the origin of life; it would only remove it farther away to other worlds, and thereby render it indeed for ever insoluble.

Let us now return to Darwin's theory. In order to explain the development of higher species from lower by natural means, he sets out from two facts. The one is the fact that all individuals of one and the same kind, together with all their specific resemblances, show, notwithstanding, individual differences—that is, *the law of individuality or variability*. The other fact is this, that every individual has a tendency to transmit all its qualities to posterity, not only the character of its species, but also its individual character: this is *the law of heredity*.

He now considers man's method in the artificial breeding of the varieties of domestic animals and garden plants. The breeder or grower simply takes those individual types of a class that have individual qualities which he wishes to retain and develop in a further direction; he excludes from further reproduction those individual types which do not possess the required characteristics or possess them only in an inferior degree; he continues in the same way with the next generation, and, by the continual operation of the two laws above named, he will, after a few generations, have grown a variety in which the individual

characteristics have become fixed and common to all.

It is now of importance to observe whether nature in its natural selection does not unconsciously act according to the same principles and attain to the same results as man does with his artificial, deliberate selection; and whether it does not indeed attain results which finally explain the origin of all organisms, even the highest and most permanent, from one primitive form or a few simple primitive forms, according to the principle of natural selection.

Darwin finds this question answered in the affirmative, and he arrives at this answer by means of the following conclusions.

The whole animal and vegetable world produces infinitely more germs of life than can possibly exist, and so in the world of organisms there is a continual struggle for existence going on. Every individual must force its entrance into the conditions of its existence against a number of other individual types both of its own and of other species.

Those individuals will be more likely to be victorious, which possess individual characters

that are more favourable for the continuance of the individual than are those of the other types. These characters are reproduced in the next generation, when there will again be individuals that have a character favourable for the maintenance of the individual in a yet higher degree, or that add to this advantageous quality yet further individual qualities which in the struggle for existence favour the individual type from another side. This is natural selection through the survival of the fittest in the struggle for existence.

Altered conditions of life and environment, and the adaptation of organisms to the new relations in shape, colour, nourishment, and habits of life, are the principal causes of those individual changes, the accumulation of which through many generations has so great an effect.

If we have only sufficiently great periods of time behind us to allow us to imagine every step of evolution as exceedingly small and almost unnoticeable, natural selection offers us not indeed an exclusive but certainly a preponderating means of explaining the evolution of the whole animal and vegetable world from one or at

most a few of the simplest primitive forms. In his work on the *Origin of Species* and in that on the *Variation of Animals and Plants* in the circumstances of domesticity, he casually names *sexual selection* also as an important factor in natural selection. In his work on *The Descent of Man*, however, he treats of sexual selection in such detail that he has even put it into the title of his book. He ascribes to this a pre-eminent significance in producing beauty of shape, colour and tone, as well as in developing energy and intelligence. Moreover he places the transition from the animal and human entirely under the law of gradual evolution and the dominion of natural selection. It is especially social life and the habits and instincts of society, through the elevation and ennobling of which have arisen all the intellectual, moral, and religious qualities that make man what he is.

Darwin had to imagine a material foundation in order to explain the complicated facts of heredity, reaction, the reproduction of lost members, and such like. For this purpose, he suggested in his book on Variations, "The Hypothesis of Pangenesis". He supposes that the cells of

which every organism consists, give off particles of infinitesimal dimensions which circulate freely through the whole body, and which by dividing multiply themselves and can subsequently be developed into cells resembling those from which they germinate. He names these particles "little germ cells" or "little germs," "gemmules". He supposes that these germs in their slumbering condition have a mutual elective affinity to one another which brings about their union, either in the form of buds or of sexual elements, the two chief means of reproduction with higher organisms.

This theory, which recalls the hypothesis of "panspermatismus" that Buffon had already introduced in his *Universal Natural History* (1749), found little response, chiefly because it was not capable of proof. On the other hand, it became the mother of similar other theories, against which however the same reproach can be urged. They are of no importance for our inquiry, because in their case no religious principle is at stake.

On page 79 we said that about the middle of the past century the thought of explaining the origin of organisms by a descent from higher

forms, which again sprang from closely related lower forms, was already in the air. We must now add, after describing Darwin's theory, that even the idea of natural selection was already current. Before Darwin's work had appeared, Alfred Russell Wallace (born 1822), during his travels in South America, and especially in the Malay Archipelago, had independently of Darwin come to exactly the same idea of natural selection; but he waived any rivalry with Darwin for the honour of priority in the discovery, because Darwin had worked quietly at these ideas longer than he himself had, and had begun also to collect materials by way of proof.

Wallace, however, made "Man" an exception to this method of origin, because he recognised in all that makes man what he is, not only a quantitative but a qualitative difference from the animal world. He put man higher. In other respects, as distinguished from Darwin—and from many Darwinians who are more Darwinian than their master—he held firmly to the exclusive reign of the principle of selection in the evolution of the animal and vegetable kingdom, while Darwin himself, overwhelmed by the preponderance of facts showing

that the origin of many important organs was not to be explained by natural selection, limited the dominion of the principle of selection. He says in his *Descent of Man* (part i., chap. 2): "In the earlier editions of my *Origin of Species* I perhaps attributed too much to the action of natural selection or the survival of the fittest. . . . I did not formerly consider sufficiently the existence of structures, which, as far as we can at present judge, are neither beneficial nor injurious; and this I believe to have been one of the greatest oversights as yet detected in my work. . . . An unexplained residuum of change must be left to the assumed uniform action of these unknown agencies, which occasionally induce strongly marked and abrupt deviations of structure in our domestic productions."

Now, in seeking to indicate the various *directions* in which Darwin's theory has subsequently been developed, we again find ourselves confronted with fairly numerous hypotheses. Darwin's theory stands before us as an entirely fixed unity which may be summed up thus: The various species of organic existences prior to the appearance of man arose by descent from one another in gradual evolution, the chief cause of

this development being natural selection through the survival of the fittest in the struggle for existence. To the *closely knit unity* of this theory, next to its wealth of data, we must ascribe its exceptional and rapid success. Yet as soon as one tries to form any idea of what transpired at the origin of the first individuals of a new species, it will be found that this theory contains in itself *three theories*, which abstractly or concretely must be kept separate. Each of these theories requires its special proof, and these proofs again carry very unequal weight in their power of persuasion.

The most universal theory, which will maintain its ascendency when others have partly or entirely become untenable, is the theory of the origin of species by means of descent. The second theory is that of the origin of species by means of descent along the line of *perfectly gradual evolution.* This theory will possibly divide the field with the theory of a spasmodic descent of species. Its supporters give this spasmodic descent different names. Oswald Heer names it, "Reconstruction of Species"; Källiker, "heterogeneous production"; Korschinsky, "heterogenesis"; Hartmann,

"heterogenism"; Heinrich Baumgärtner, "mutation of types by means of germ-metamorphosis"; Hugo de Vries, "mutation". The third theory which in the case of Darwin forms the foundation alike for the theory of descent and for that of evolution, is the *theory of the evolution of species by natural selection in the struggle for existence.*

The question now emerges: "Have we found in natural selection the motive power of all evolution, or has it failed to justify itself at all, or must it divide its authority with other known or unknown causes of evolution?"

All three theories are certainly as yet mere hypotheses, and they must, according to their nature, remain so, for they all occupy themselves with the explanation of occurrences which took place before the appearance of man; many of them can be traced back innumerable millenniums prior to his appearance, and are, therefore, incapable of direct observation.

And they are hypotheses which differ greatly in their value.

The most general theory, which may still carry weight when the two other theories, that of evolution and that of natural selection, fall to the

ground, is the theory of the origin of the higher species from closely related lower species by means of descent. This theory has fairly taken root. Indeed, one might say that it has become the general postulate of all scientific research into the origin of species. It has a right to this commanding position, for it is founded on a series of undeniable facts, and on conclusions derived therefrom, whose convincingness is apparent.

The facts are culled from the spheres of geology, palæontology, the geological distribution of plants and animals, as well as from comparative anatomy and from the evolutionary history of animal and vegetable types; they have been formulated on pages 73 f.

The conclusions to which these facts shut us up are the following: Geology and palæontology show us innumerable millenniums in which the animal and vegetable world has developed in an ascending scale from its lowest forms up to the appearance of man. They show us at the same time in a thousand ways that, apart from the continually recurring appearance of new forms of organisms, essentially the same forces which are effective to-day have held sway through all these periods.

Comparative anatomy shows us the systematic connection of all these organisms with extant plants and animals, reaching up to man himself. Finally, the history of evolution shows us that everything, even the most highly developed individual in the animal and vegetable kingdom, has come into existence by a gradual evolution from the simple impregnated cell up to the perfect organism.

If we wished now to assume that the first individuals of a new species had been always called into existence from the inorganic, apart from any genealogical connection with the nearest related type of the preceding species, we should destroy everything—and that is a great deal—that the new species had in common with the preceding as regards its organisation. We should imply that the Creator or Nature, or by whatever name we designate the power which calls the new species into existence, ignored all that this power had already summoned into being out of what approximated to the new species, and that it always began afresh.

Still greater would be the difficulty of giving up the idea of descent, when we admit the following consideration.

Experience shows us that individuals of one species, with the exception of the single-celled and the lowest existences of all, never come into being in their developed form but by an embryonic evolution. According to all analogy, this must also have been the case with the first individual of a species. But where would such an embryo have had its protecting and nourishing covering except in the uterus of a closely related lower species? This is true of all the higher organic species up to man.

The theory of descent has thus in fact become the general basis of all scientific research into the origin of species. I know of but one scientist who rejects the theory of descent, I mean the zoologist Albert Fleischmann, in his book *The Theory of Descent, or Popular Lectures on the Rise and Fall of a Scientific Hypothesis* (Leipzig, Georgi, 1900) and in his subsequent work, *The Darwinian Theory*, which appeared in 1903 and was issued by the same firm. But as he not only seems absolutely to identify the idea of descent with the idea of gradual evolution, but also proceeds to adduce reasons which tell against the origin of a species by natural selection, as reasons contrary

to the origin of a species by gradual descent, it is not probable that he either has or ever will have many followers.

As soon as we accept the theory of descent, however, a whole host of questions arise which clamour for some reply.

We begin with that class of questions for which natural science owes us an answer. Must we conceive the first appearance of organic existences in such a way as that only a single organic germ at some time and place came into existence, from which has sprung up the whole world of organisms, plants and animals? Or did many germs come into existence simultaneously? Were these germs similar or dissimilar? And were these the beginning of many similar or dissimilar genealogical trees? Must we assume that a spontaneous generation of the organic from the inorganic took place only once upon a time, or that in the long prehistoric age of the Earth, repeated generations of this kind took place? How is the origin of sensibility and free motion to be explained? Or the first appearance of self-consciousness and free self-determination, *i.e.*, the first appearance of man with the entire wealth of human intelligence

which has developed from his primitive origins? The genealogy of proto-cells, which the botanist of Marburg, Albert Wigand (1821-86), has stated, we must also reckon among the questions raised and directly answered by an hypothesis, but by an hypothesis which is devoid of all proof. This he does in his work, *The Genealogy of the Protocells, as the Solution of the Problem of Descent, or the Origin of Species without Natural Selection* (Vieweg, Brunswick, 1872). Wigand refers the descent of organic existences not to the succession of species but to the succession of original cells. He regards them all as living in water. The most primitive cells contain only the characteristics of the general organic world, of the animal and vegetable kingdoms in their common elements. From these original cells were produced by cellular distribution the original cells of the animal and vegetable kingdoms; from the original cells of both kingdoms those of the principal types; from these again those of the classes; from these lastly the orders; from these the families; from these in turn the genera, and from these finally the proto-cells of the species. It was only after the original proto-cells of the species were produced that these

developed into the perfect representatives of species, which then continued to be reproduced in a way with which we are all familiar.

We will answer all the above-mentioned questions as Emil du Bois Reymond had to answer them: "Ignoramus," "We don't know," and perhaps "Ignorabimus," "We shall never know".

Another set of questions which the theory of descent involves is more easily answered, or rather allows of far greater varieties of possible answers. Every one of these possible answers has found some scientific adherents, and the contradiction or adjustment of these different possibilities is equivalent to the history of the Darwinian theory up to the present day. The questions are: "Must we think of the descent of species in such a way that the higher species were developed very gradually from those immediately below them, by exceedingly small and almost invisible transitions, as is invariably the case with individual variations,—so that the theory of descent and of evolution would be identical? Or did the higher order of species appear spasmodically in the region of the closely related lower order? Or did gradual evolution and spasmodic progress

succeed each other by turn? And whenever a new species arose by gradual evolution, what was the motive power of this evolution? Was it natural selection, or were there other forces concerned, and—if so—what? Or was it natural selection in combination or permutation with other forces? Finally, where natural selection held sway, was the individual variation, from which natural selection always takes its start, undetermined or strictly determinate?

The conception which has found widest acceptance, in answering the above-mentioned questions, not only among scientists but also among the uninitiated, is the idea that the theories of descent and of evolution are identical, and that the theory of the origin of species by means of descent from each other means nothing else than that the species have originated from each other in immeasurably long periods of time by means of gradual evolution. This evolution is conjectured to have happened so gradually that the difference between two generations is hardly noticeable, while in the course of millions of years it has extended over the whole vast realm of organisms, extinct as well as extant. It is interesting to see over what vast

spaces of time the imagination thus claims to sweep. Häckel tells us, in the very first note to his *Riddle of the Universe*, that the time during which there has been organic life on the earth may lie between the minimum number of 100,000,000 years and the maximum of 1,400,000,000 years. The minimum number would be divided into geological periods thus: 1. Archäozoical (*Primordial*), the period of the skull-less animals, 52,000,000 years. 2. Palæozoic (*Primary*), the period of fishes, 34,000,000 years. 3. Mesozoic (*Secondary*), the period of reptiles, 11,000,000 years. 4. Canozoic (*Tertiary*), the period of the mammals, 3,000,000 years. 5. Anthropozoic (*Quaternary*), at least 100,000 years = 0·1,000,000. Let us imagine this era as a day of twenty-four hours, as his pupil Henry Schmidt has done, and we get for the Primordial Period twelve hours and thirty minutes, for the Primary Period eight hours and five minutes, for the Secondary Period two hours and thirty-eight minutes, for the Tertiary Period forty-three minutes, for the Quaternary two minutes, while the 6,000 years of man's civilisation, the so-called "World History" would occupy but the space of five seconds.

Many circumstances contribute to popularise very widely the idea that the theories of Descent and of Evolution are identical.

In the first place it was, as we have seen, the unbroken *unity* in which Darwin himself advanced his theory, which procured for it a welcome. According to this theory Descent and Evolution are essentially the same, and the motive power of evolution is *natural selection in the struggle for existence.* Darwin himself grants one important modification, a modification not granted by all his adherents—*viz.*, that there are several changes as yet unexplained; perhaps also a greater modification, *viz.* the possible need of assuming an operation similar to the operation of those unknown influences which in domestic propagation bring to light sharply defined and sudden departures from the type.

But perhaps in a still higher degree it was in the interest of the system called *Monism*, advanced and eagerly preached by Häckel, to hail a theory that banished the idea of purpose from Natural Science and undertook to replace it by the exclusive reign of a mechanically operative Causality. Consequently almost all who reject a theistic con-

ception of the world—with the exception of Rudolf Virchow (1821-1903), who has always urged a prudent caution—rallied enthusiastically round this theory of evolution, as the freshest and firmest support and basis of their pantheism, atheism, or materialism, as the various shades of what is now called monism were described. Not only Häckel but all adherents of this monism outdo each other in their praises of this achievement in science. I may reasonably pass over the strong language of Ludwig Büchner, the most popular supporter of pure materialism; but even monists, who still leave religion a corner somewhere, are never tired of praising Causality for its banishment of teleology, *i.e.* the theory of purpose or tendency in Nature. I mentioned above, on page 86, Weismann's exclamation, "Our age has solved the great problem, of how the fittest can come into being without the co-operation of forces that have any aim in view". In his *Theory of Descent* (vol. i., p. 63) he remarks: "The philosophic significance of natural selection lies in its exhibition of a principle that has no aim in view and yet brings about what is fitted to some end". In volume i., page 264, similar words are also to be found.

The Jena zoologist, Ziegler, takes his stand on the same ground. In his lecture on the present position of the theory of descent in zoology, delivered on 26th September, 1901, before the Hamburg Association of Scientists and Doctors (Jena, G. Fischer, 1902), page 18, he starts with a sentence from Häckel's *Natural History of Creation*. "When Darwin established the theory of natural selection by means of the struggle for existence, he discovered not only the most important cause of organic formation and recasting, but also the final answer to one of the greatest philosophical problems, namely, the question: How can adaptations, fitted to some end, arise mechanically, without purposive causes?" Even the Amsterdam botanist, Hugo de Vries, who by his *Theory of Mutation* (Leipzig, Veit & Co., 1901), made an opening for the long-neglected theory of a partially spasmodic descent of species (*cf.* p. 102), by noting such mutations in the plants of the *Oenothera Lamarckiana*, says in section 1, par. 26: "The supreme value of the Darwinian Theory of Selection obviously lies in its reference of adaptability in the world to purely natural causes, without recourse to any teleological

theory. It is to this that the theory of descent owes its universal acceptance at the present day."

It is evident to every one that the assertion that the discovery of natural causes excludes the working of forces tending or striving to a purpose, passes beyond the region of Natural Science far into that of philosophy. We do not entirely blame this encroachment into the philosophical and more especially into the metaphysical sphere. Every scientist needs a coherent theory of the universe, and as Natural Science is not sufficient of itself to form such a theory, he has to call philosophy to his aid. Moreover we hold that philosophy to be the more fertile which rests, as is the case with our modern works of philosophy, on scientific observations, rather than a philosophy which constructs Nature out of metaphysical principles, as was that of Schelling, Steffens and Hegel, and recently also of Karl Planck. But as peace between Science and Christianity reigns in the sphere of pure Natural Science, war really beginning when we enter the domain of philosophy, we must not examine more closely at present this denial of the existence of forces that

have an aim; our present business is to survey the progress of Darwinian research.

The order of succession in our account of these theories leads us now from the theory of descent to the theory of evolution. This has a number of facts to adduce on its behalf, but they all indicate the possibility, even the probability, that gradual evolution and spasmodic appearance of new qualities are alternate. When the question arises whether the world of organisms has one or more genealogical trees, the theory leaves us, as we have already shown, entirely in the lurch.

It is *ontogeny*, above all, the theory of the origin of individuals by gradual evolution, which is favourable to the theory of evolution. The higher organisms all arise by an entirely gradual evolution in almost unnoticeable transitions from the impregnated egg, which represents a single cell, up to the completed organism, or—in the vegetable kingdom—from single-celled seed-kernels to the perfect plant. But even in the life-story of the embryo there is a varied succession of more and less productive periods, so that if the knowledge of "ontogeny" were to be regarded as the

key to our knowledge of "phylogeny," *i.e.* the origin of the whole stem of any species, order, or class, much will point to the probability that gradual development in a species, kind, etc., alternates with the abrupt appearance of new qualities.

This probability has been made a certainty by the discoveries of palæontology. Several creatures in the past ages of the world have such a wealth of species and show so many forms of transition, that they suggest a transition into each other by an entirely gradual evolution—*e.g.* the ammonites and several snakes, the countless species of the "helix," the famous "valvata," or the "planorbis" from Steinheim near Heidenheim. But in the overwhelming majority of cases, such gradual transitions of species are not to be found. Several families, *e.g.*, the "trilobites," a kind of "crustacean" of the old Silurian and Devonian periods, appear suddenly only to vanish. Moreover, while extremely close successions of fossil mammals, such as the forerunners of the horse, prove a descent of one species from another quite irrefragibly, they are nevertheless far from proving any perfectly gradual evolution; they

seem rather to point to spasmodic approximations to the present day form of a horse.

Even were the origin of the entire organic world to be referred to a single genealogical tree by means of a perfectly gradual evolution, Natural Science is still far from providing a clue to this region of facts, although hypotheses in this sphere have been rampant and still are so to-day. It is to be noted, especially, that transitions of whole classes or whole types from one to the other have hardly been found anywhere. Häckel's attempt, *e.g.* to make the invertebrates come into existence from the tunicaries by way of evolution from an ascidian larva to the lowest order of fish, the amphioxus, which he regards as the original mammal, is now pretty generally abandoned. In reality the discovery of the kidney in the amphioxus by Boveri made a genetic bridge between it and the *articulata* (August Pauly). And indeed, more recently, facts have been brought to light by Oskar Jäckel in Berlin, which suggest the land rather than the old idea of the sea as the mother of all living things, and raise the question whether the more highly developed sea-creatures, from the fish upwards, did not betake

themselves once upon a time from the land to the water. In short, in this and similar questions, owing to the increasing wealth of material at our command, we are more than ever inquirers and still very far removed from the goal of discovery.

If we turn now to the theory which formed for Darwin himself the chief ground of his conception of descent and evolution, *viz.* the theory of natural selection, we find also that, while it is not without support from facts in the course of Nature, the range of these facts is much narrower than that of the theory of evolution. How simply the protective colour of many animals that take the colour of their surroundings is explained by the theory of natural selection; how simply also the striking features of many blossoms in form, colour, and smell, by which they attract insects and make possible, by crossing, the more favourable fructifying of plants for reproduction! How simply does this theory explain the graceful mimicry *i.e.* the protective resemblance of certain kinds of animals in form and colour to branches and leaves of the plants on which they feed, or to kindred animals among whom they

live, which cannot be eaten by other animals and therefore are exposed to no peril!

Moreover many differences in kindred species, connected with the position and climate of their habitat, may be explained by natural selection. Yet here too it must combine with, even when it has not to succumb to Lamarck's theory of the adjustment of organs by their use or disuse, unless Weismann's hazardous theory of the non-hereditability of acquired qualities is to be accounted correct.

These limits perhaps exhaust the applicability of the principle of natural selection. The lines of progress in the organic world, which are not to be explained alone by natural selection, are much vaster and of greater import. There are, comparatively speaking, very numerous and systematic characteristics of species and of some of the higher orders, which are of no use whatever to the individual member. These cannot possibly have been summoned into existence by selection alone. Other lines of progress in organisation are again of the greatest use to individuals, but not until they attain a highly developed and effective stage, *e.g.* the extremities of the vertebrates, which, in

their first and small beginnings could only hinder the individual. Finally the free cross-breeding of individuals must always have continued to hinder the further development of species, especially as they reproduced themselves in diverging directions.

Hence, soon after the appearance of Darwin, criticism became more and more persistent in declaring natural selection to be inadequate for solving the origin of species. The most important of these critiques is that of K. E. von Baer's treatise on Darwin's teaching in his *Studies in the Sphere of Natural Science* (St. Petersburg, Schmitzdorff, 1876), together with three volumes by Albert Wigand, *Darwinism and the Scientific Researches of Newton and Cuvier* (Brunswick, Vieweg, 1874, 1875, 1877).

At first, however, the inadequacy of the theory of natural selection led to modifications which were intended not so much to supplement the operation of selection by means of other agencies as to heighten its significance. Thus, Moriz Wagner (1813-87) advanced the theory of *Isolation by Migration* and applied it especially to the origin of man. The Englishmen, Romanes and Gulick,

tried to develop this theory further, founding on their observation of many peculiar species to be discovered in far-off islands. It was especially Gulick who discovered, by his observations on one of the Sandwich Islands, variations in the reproduction of snails found there, and based upon that his theory of physiological selection. He set this as a new factor by the side of the previously discovered factors of *natural selection combined with isolation.*

It was soon found that Darwin's theory of natural selection, and Lamarck's theory of the continuous evolution of organisms by the use or disuse of organs, in adaptation to their environment, were to a certain extent contradictory. Like his contemporary, Herbert Spencer, Darwin had innocently accepted the operation of both principles. August Weismann, on the other hand, denied the capacity of transmitting inherited qualities, and thus rejected the explanation of Lamarck. Hence arose the group of Neo-Darwinians, who, more Darwinian than Darwin himself, explain natural selection as the exclusive principle of the reproduction of species, and also the group of Neo-Lamarckians, who, while ad-

mitting a co-operation of natural selection, find the causes of the higher evolution of organisms in Lamarck's rather than in Darwin's principles.

At the head of the Neo-Darwinians stands August Weismann. As the theory of selection between mature individuals does not explain the progress of a species, he transfers the power of selection to the germ, attributing this selection to the quantitative differences in the nourishment of the germinal particles—which are well-organised life-bearers or *Biophora*, and which he designates *Determinants*, because they *determine* the development of the organs. He calls this, germinal selection; then he proceeds to postulate a personal selection among the varying individuals that have thus arisen. By the united co-operation of the original germinal selection and the personal selection which follows it, the evolution of the organic world on an ascending scale is held to be possible. In spite of all the practical knowledge and acuteness of the originator of the germinal selection theory, it is very doubtful, however, if a hypothesis so elaborate—the basis of which, namely, *germinal selection*, rests on hypotheses which ever evade observation, and the dominant aim of which is

the elimination of purposive causes—has any fruitful future for science.

As an eminent supporter of the Neo-Lamarckians, we may name the Viennese botanist Richard von Wettstein. In his lecture at the Carlsbad Natural Science Congress (26th Sept., 1902) on *Neo-Lamarckism and its Relation to Darwinism* (Jena, Fischer, 1902), he upheld the idea that it was quite impossible to explain the formation of all new forms in one and the same manner, and that therefore both the Lamarckian and the Darwinian attempts at explanation had equal justification. But for the explanation of the gradual rise in organisation, the Darwinian principle of selection seemed to him insufficient. What was required was the direct adaptation of organisms to their environment, as is taught in Lamarckism. What is perhaps the most important stage in the evolution of the vegetable world, the transition of the "algæ" to the fern and shave-grass, developing through moss, becomes intelligible to us only when we accept the gradual adaptation to land-life of plants adopted for water, *during this stage of evolution.* Thus it is that modern research into the lower stages of the pre-adamite *vegetable world*

makes a transition of plants from water to dry land probable, while, as we saw above, scientists are to be found to-day who are inclined to think that in the case of mammals there must have been in earlier times a transition of the more highly developed *animals* from dry land to water. Thus everywhere we encounter speculation—nowhere do we set foot on certainty.

Finally, in our account of Darwin's teaching, we come to the fundamental point of his theory of selection, to the fact that all individuals of a species vary, to what is called individual variability.

Here we see ourselves confronted with the question whether this variability is to be regarded as accidental and aimless, or as in part definitely determined.

Darwin himself, at the conclusion of his work on the *Variation of Animals and Plants*, expressed himself as inclined to regard this variability as aimless, but concluded his argument with the following words: "On the other hand an Omnipotent and Omniscient Creator orders and fore-sees everything. This brings us face to face with a difficulty just as insoluble as that of Free-will or Predestination."

Of course all those scientists to whom the special value of Darwin's teaching lies in his elimination of the operation of determining causes from the universe, are in favour of the theory of an *aimless variability*. Similarly all those scientists who admit the operation of purposive causality in nature, advocate a variability which is determinate and in accord with an upward development of life. K. E. von Baer deserves special mention as an upholder of the theory of tendency and purpose in the organic world. Moreover the botanist Nägeli (1817-91) assumes a definitely determined power of variation, which, according to a definite standard, is striving after fulfilment. Therefore, in contrast to the *Selection theory*, he calls his theory that of *Direct Production*, and finds the inner causes for this definitely directed variability in the molecular forces immanent in the particular substance.

Among the present-day supporters of a definitely determined variation, we must first of all mention the botanist Reinke of Kiel, whose epoch-making book, *The World as Reality*, appeared in 1899 (Berlin, Paetel). Just as twenty or thirty years ago Wiegand's book on Darwinism was

the first great, compact, and successful attack on Darwin's *Theory of Natural Selection*, the influence of which was then greatly over-estimated, so to-day Reinke's work stands out as a turning-point, which again paves the way for a frank recognition by Natural Science of operative teleological forces, and opposes that attempt to eliminate the spiritual element from Nature, which as *The Mechanical Conception of the Universe* still holds sway over so many minds. Reinke starts with the comparison of an organism to a machine. In a machine, those physical and chemical energies which operate in matter, only achieve the purpose which the machine has to serve when they are controlled and guided by an intelligent power Similarly a living organism is only adapted to its ends by its physical and chemical energies being under the control and direction of an intelligent power. These intelligent energies in organisms he calls: "Dominants". On page 452 ff. he says: "I distinguish in Nature *intelligent forces* as the ruling, and energetic forces as the subordinate, agencies. The world consists of 'Energies' and 'Dominants'. Physics is concerned solely with 'energies,' Physiology with

'energies' and 'dominants,' Mental science only with 'dominants' and what they produce. In the union of 'dominants' with 'energies,' we discover a *spiritual element in Nature.* My scientific creed culminates in this conception." On page 440, he observes: "Plants and animals are organised according to the circumstances in which they are situated, and herein we must recognise intelligence. Hence I have explained that intelligence in the sense of a Universal Reason must be the cause of organic adaptation."

A further and important symptom of the revolution now proceeding in the conceptions of the universe held by scientists, is to be found in a lecture delivered by the Munich zoologist, Dr. August Pauly, on the 15th of March, 1902; the subject is *Truth and Falsehood in Darwin's Teaching* (Munich, Reinhardt, 1902). He starts with the idea that the causal feature, on which Darwin's *Theory of Selection* is built, cannot account for adaptability, and yet adaptability is the character of all organic productions in three ways: (1) in physiological functions, (2) in the anatomical structure of organisms, and (3) in the actions of animals and men. Now adaptability

attains its end only by means of discrimination, that is, by means of intellect. It is only a discriminating principle that can, in a definite set of circumstances, solve any problem. In the principle of discrimination,—as opposed to accident, which cannot accomplish anything and yet *ex hypothesi* has to accomplish everything—we have a potency that seems adequate to every emergency, if only we can succeed in proving its sway in the two spheres that are withdrawn for the most part from the immediate influence of our intellect, *viz.* in the physiological functions and in the anatomical construction of organisms. Pauly now tries to lead this proof, choosing certain crucial examples: *e.g.*, especially the act of seeing in the physiological department, and, in the anatomical structure of organisms, the marvellously designed "tectology" of the *Fibro-spongiæ*, as illustrated by Meyer and Culmann. The delicate fibres that fill up the interstices of their bony structure are not irregularly thrown together, but are adapted to pull and pressure with a perfection such as human technique cannot in the remotest degree attain in its building operations. The result is that the skeleton is made as lightly and firmly as possible, and indeed

with a homogeneity of structure which cannot be acquired by natural selection; it shows a direct and original purpose in the structure. The logical sequence of thought leads us still further to recognise a discriminating activity, that is a psychological or psycho-physical principle, not only in the functions and anatomy of organisms, but also in a sphere outside the organic, *viz.* in the inorganic, since in atoms and molecules perception and discrimination could not arise unless the former had in themselves the previous conditions necessary for such. Hence Pauly closes with these words: "Darwin's answer to the question concerning the origin of adaptability made the order of the universe a plaything of chance; an analysis of the principle of discrimination will refer it to a progressive order of physics, in which the laws of psychology clash with those of reason. That is the picture we have of our future philosophy."

It is highly gratifying to see that scientists ike Reinke and Pauly, enriched with the results of the most recent researches in the sphere of biology, turn back, for all their increased knowledge, to recognise so emphatically a teleological principle working in Nature. For this,

Karl E. von Baer had paved the way. He had already in 1834 (*Addresses and Essays*, vol. i., p. 71, St. Petersburg, 1864), spoken his mind on the subject. "The earth," said he, "is only the seed-bed on which the mental inheritance of man shoots and spreads, and the history of Nature is only the history of the continuous victory of mind over matter. This is the root idea of creation, for the pleasure, nay, for the *furtherance* of which she causes individuals and generations to vanish, and raises the present upon the scaffolding of an immeasurable past." Thirty-two years later, in his treatise: "On Design in the Processes of Nature" (*Addresses*, etc., vol. ii., p. 105, St. Petersburg, 1873), he professes exactly the same views, and again ten years later in his treatise: "On Tendency and Purpose, especially in Organic Bodies" (*Addresses*, vol. ii., pages 228 f.), he sums up his view of tendency and purpose in Nature with these words: "Harmony in Nature, *i.e.*, regular and reciprocal relationship in Nature, is explained according to our view by its aims and by its laws considered as means to the attainment of the same. To pursue an object, aim, or purpose, and to select the adequate means, this we call

reason. . . . If this application of the word 'reason' is correct, we must finally affirm either that all Nature works reasonably, or that she is the emanation of Reason, or—if we think of the original basis of all activity as bound up with our own Nature—that all Nature is reasonable."

We have now come to the end of our survey of the history of the Darwinian theories, only to find ourselves confronted by the fact—which is certainly unparalleled in the history of science—that a scientist and discoverer led his fellow-scientists on to a perfectly new track, where they willingly followed him, but that the firmest foundation which he thought he had found for this new track, has proved itself inadequate. It is Darwin's lasting merit to have helped to bring to light the idea of an origin of the higher species by descent from closely related lower species, and to have made this the starting-point for all research within this sphere. On the other hand the theory with which Darwin tried to explain, primarily, the evolution of the lower species into higher, *viz.*, the theory of natural selection, plays only a subordinate part, in the judgment of most men of science—with the exception of the Neo-Darwinians—and is unable

to explain what is most significant in the appearance of new and more highly developed species and forms. Furthermore, the question whether a gradual evolution or a spasmodic progress called the higher species into existence, is still an open one, and the probabilities are that both methods operate in turn. But as for the causes of each new advance, whether an entirely new species was brought into being from time to time, or whether only capacities already in use but hitherto unemployed were recovered, and, if so, by what impulse they were recovered—all this lies still veiled for us in impenetrable darkness.

IV. The Appearance of Man

We have already had repeated occasion to show that the possibility, and in fact the probability, bordering upon certainty, of an animal descent for humanity, has to be considered purely as a matter of inference. But for us the question is of such importance that we shall treat it in a special section.

It is a question which has naturally stirred people's minds in the deepest possible manner ever since the first attempts were made to ap-

proach the history of creation from the side of science. But hitherto the questions have outnumbered the answers. Neither concerning the bodily and mental character of the first men, nor concerning their descent, nor concerning the age of the human family or their original home, have we any reliable information; all we have is more or less well-founded conjecture.

That man as regards his physical nature is related to the animal world and represents the uppermost and highest stage in the order of mammals, and that even the life of the human soul has its preparatory stage in the soul of animals, is a fact which has long been recognised. But since men began, on Darwin's initiative, to explain the relationships of organisms by descent of the one from the other, the question of a descent of mankind from the animal world has pushed its way into scientific discussion. Very many reasons have been found for thinking such a descent probable.

We have already, on page 98, referred to the fact that one cannot avoid the supposition that the first individuals of higher species came into existence not in fully developed form but through

an embryonic development, and that these embryos cannot have had their protecting and nourishing mantle except in the womb of one of the most nearly related of the lower species. Moreover the embryonic evolution of the present-day human individual is very closely related to the embryonic evolution of the higher mammals. Further the numerous rudimentary organs in man are organs which in the higher animal world to-day are still active. The manifold resemblance of the human body to the body of the more highly developed apes—which on account of this resemblance are called anthropoid, *i.e.* apes resembling man—has rendered it probable that man has a parent common with these; whilst the great difference between them makes it again probable that he is no direct descendant from one of these anthropoids, but comes from a common parent from which the anthropoid apes have branched off as a lower offspring on the animal plane, whereas man has progressed in a higher evolution, bearing within him the self-conscious mental life.

There are in existence to-day four kinds of anthropoid apes.

Two are to be found in Asia, the gibbon, and the orang-utan (not as one often sees it written "orang-utang" orang-utan means "woodman"; "orang-utang" would mean something different and absurd); two in Africa, the gorilla and the chimpanzee; none in the New World. The gorilla, in spite of his comparatively short arms, is the furthest from man, the chimpanzee the nearest.

Professor Branco, of Berlin, on whose authority I make these statements, has discussed the question of the descent of man with special thoroughness in his treatise on the teeth found in the Swabian pea-ore, which resemble human teeth (*The Annual Journal of the National Scientific Society*, Würtemberg, pp. 1-144, 1898), together with his Hohenheim programme on the teeth of mammals, which has also appeared as a special work (Schweizerbart, Stuttgart, 1898). The bodily difference between man and the ape is seen not only in the greater capacity and more numerous convolutions of the human brain, and in the shape of the skull, but especially in the formation of the extremities. The ape is a four-handed creature, man a two-handed. The skeleton of the human

foot is so different from the skeleton of the hand on the hinder extremity of the ape that it is impossible for the hand to have evolved into a foot; we must presuppose another origin for the upright human gait, together with the free use of both hands. K. E. von Baer has laid special stress on this in his treatise on Darwin's theory.

Similarly with the mental life of Man compared with that of the animals, especially with that of the higher animals; there is no lack of an extensive relationship, but the difference is still more serious.

The mental life of animals, especially of the higher animals, has an exceptional amount in common with that of man. Not only are the sensations of appetite and aversion and the impulses of desire and avoidance common to both, but animals possess also, in a high degree, memory, understanding, and reflection. Moreover the qualities and emotions that demand ethical treatment, are frequently common to both men and animals; we have merely to mention on the one hand dependence and love, gentleness, sociability and readiness to help, and on the other, envy, hate, unsociableness, anger and fear. These and similar

qualities of the soul, good as well as bad, are often so distributed in the animal world that each of them has its special characteristic reproduced in an animal, and it is from the observation of this that the animal fables and the animal epic of Reynard the Fox have arisen.

So great is the relationship between the mental life of man and animals that even what separates man from animals, *viz.*, his self-conscious and freely determining spirit, rests upon a certain condition and basis in the very inner life common to the animals and man. Rudolf Otto in his valuable book, *Naturalistic and Religious Views of the World* (p. 260; Tübingen, Mohr, 1904), calls this inner life the raw material of the spirit. He says (p. 259): "Psychical capacities are in themselves simply raw products. In the possibility of raising them to the level of mind, and of turning the raw-product to its proper use, lies the absolute difference and impassable gulf between man and animal."

This far-reaching relationship between the mind of man and that of the animals has become a critical matter for scientific research. Most naturalists pass by with astonishing ease what specifically

separates the life of the human spirit from the animal and first makes man, man; yet this new phenomenon, which emerges first with the appearance of man, strikes the eye of the ordinary observer as clearly as the eye of the naturalist. This new phenomenon is, according to its essential form, the appearance of *self-consciousness* as distinguished from mere consciousness, and the appearance of *free self-determination* as distinct from mere arbitrariness; according to its content, for which its form is only the vessel, this new phenomenon in the case of the human individual is the *personality* with all its varied life of the soul and spirit, rising even to prayer and to communion with God. In the case of humanity as a whole, it represents the entire history of the world and human progress. As Otto says, very truly (p. 260): "Different as is the psychical equipment in the various stages of animal existence, yet common to it everywhere is its dependence on what is given it by Nature. An animal species may be a million years old. Yet it has no history. It is and it remains the same product of Nature, it is devoid of history." This new phenomenon appears in every single human individual

in a perfectly gradual evolution, in the course of transitions, hardly or absolutely unnoticeable, from the impregnated single-celled egg in the womb up to the awakening of self-consciousness in the growing child. And it is also probable that the human race itself has come into existence by such a gradual evolution. But while this evolution may have gone on through such long periods of time, nevertheless man has become what he is by the awakening of *self-consciousness* and *free self-determination.* Those beings in whom self-consciousness and consciousness of *free self-determination* first awoke, were the first of mankind to exist; the existences preceding them were only the initial stages of mankind. With Primitive Man, something specifically new came into being, something indeed which was not only new but of a higher order, a perfectly new and incomparably superior world of being. It was a form of existence, as new and superior to what had preceded it, as, at an earlier stage, had been the first appearance of the organic in the sphere of the inorganic, of the living among the extinct, of the conscious among the unconscious. The elements of that inorganic world had to be so constituted

that they could provide soil for the appearance of the organic, *i.e.* of the animal and vegetable world, and this explains all the vain attempts, which we have already outlined, to deduce the organic from the inorganic, the living from the dead. Similarly, the living and organic, in the animal world, had so to be constituted that mankind might come into existence in that sphere, and from this indisputable fact we can understand the equally vain attempts to explain the origin of man from the animal world.

We find in the writings of most scientists who have occupied themselves with the relationship of animals and men, that what is specifically human is handled with exceptional carelessness. Darwin has written a work on the Descent of man, *but the origin of self-consciousness, individuality, abstraction, general conceptions, etc., he dismisses in a single page* (German edition, vol. i., p. 52 ff.). The moral feeling he treats in greater detail, devoting the whole of the third chapter to it. He deduces it from the social instincts connected with a highly developed intelligence, and says in his concluding chapter that the fact that man is the only being whom one can with certainty name as

moral, forms the greatest of all differences between men and animals. But in that highly developed intelligence which lifts the moral feeling up to responsible *self-determination*, we have finally to recognise *self-consciousness* as an indispensable condition, and we have the right to demand a further explanation of the origin of self-consciousness.

Häckel expounds in his writings, in much more detail, the life of the soul. In his *Riddle of the Universe*, the psychological part, or discussion on the life of the soul, occupies the whole of the fourth part of the work; but we look in vain for any recognition or even for any description of the difference between the souls of men and of animals. This is inevitable, for he denies the distinction, recognising it only as *quantitative* not *qualitative*. Everything specifically human he finds in the soul-life of the animals as well. Thus on page 144 (Eng. Tr., p. 44) he says, "the higher vertebrates, especially those mammals most nearly related to man, have just as good a title to 'reason' as man himself, and within the animal world we can also trace a long series of steps in the gradual evolution of reason just as we can with man".

Moreover the great problem of the freedom of will is solved once for all by him and solved negatively. "There is no free-will," says Häckel. He does not seem to distinguish in the least between *consciousness* and *self-consciousness:* at any rate, at the point where he discusses the idea of consciousness (p. 198, Eng. Tr., p. 61), he breaks consciousness up into two main divisions, *world-consciousness* and *self-consciousness*, and moreover, *e.g.* (p. 214, Eng. Tr., p. 66), in the ontogeny of consciousness, he makes consciousness and self-consciousness one and the same thing. In his latest work *The Wonders of Life* (Kröner, Stuttgart, 1904) we still find him supporting the same position. In his *Riddle of the Universe* (p. 357, Eng. Tr., p. 71 f.) he called the life of the spirit a portion of the physiology of the brain. In *The Wonders of Life* he says (p. 98, Eng. Tr., p. 36 f.), "Biology (taken in its widest sense!) is only a special branch of zoology, to which on account of its exceptional significance we assign a special place. Accordingly, all sciences that have to do with man and the activities of his soul, especially the so-called mental sciences, are, if we follow the higher monistic standpoint, to be considered special

branches of zoology, and consequently to be classed among the natural sciences". He continues (p. 380): "The human spirit is a function of the phronema"—the phronema being the thinking organ in the brain, the grey substance of the brain-cortex.

Happily there has been no lack, on the side of scientists, of stout opposition to this monism, which, everywhere in Nature and especially in the sphere of psychology, confounds the condition and ground of the higher life with its origin, and thereby lowers the worth of the higher forms which thus come into existence.

One writer, who takes an equally eminent position as scientist and philosopher, the physiologist and psychologist Wilhelm Wundt of Leipzig (born 1832), is a truly typical example of this healthy and in fact highly necessary reaction on the part of science. In the year 1863 he published through Leopold Voss in Leipzig some lectures on the soul of animals and human beings, in which he still adhered to this standpoint of psychological monism, and boasted (on p. 8 of this lecture) that the *Law of the Conservation of Energy* in the domain of psychology was expounded there for the first time.

By doing so he contradicted tacitly the first discoverer of this law, Robert Mayer. The latter, in his Innsbruck Lecture on the necessary inferences to be drawn from the mechanics of heat, expressly excluded the psychological domain from this law of the conservation of energy, declaring it to be a vulgar error, if one sought to identify two activities which run parallel with each other, *viz.*, the brain-activity and the mental functions of the individual.

In a second edition twenty-nine years later, Wundt (1892) declares the standpoint of the first edition to be a sin of his youth which weighed upon him like a debt till he atoned for it by this second revised edition. Here he takes up the entire standpoint of "psycho-physical parallelism," defending the higher and autonomous value of mental life and mental evolution, as independent of all physical processes of the brain.

The most thorough studies of the relation between the human soul and that of animals may be found in the two works, already mentioned, by the Englishman Romanes, which I have before me in a German translation, *viz. Mental Development in the Animal Kingdom* (authorised German

edition, Leipzig, Ernst Günther, 1883) and *The Mental Development of Man* (same publisher, 1893).

If we ask finally what information geology and palæontology give us concerning the age of the human family and the character of its oldest remains, we are indeed not without guiding stars to lighten our darkness, but we are very far from possessing absolute knowledge on the question.

That man came into existence in the geological Tertiary Period, as many geologists think they have already discovered, is indeed probable, but up till now it has not been proved as an indisputable fact. Yet in any case, in the Diluvial Period, which followed immediately on the Tertiary Period, we come upon very numerous and quite indisputable traces of human existence in Europe, and thereby the age of the human family is put back many thousands of years more than the *four thousand* years before Christ, which the Bible narratives assign it.

The Diluvial Period must have lasted a very long time—a fact proved by the traces of extensive glacialisation on the northern portion of the earth, which scientists have lately been obliged to take as four periods with three intervals. The

latest presentation of this has been given us by Moritz Hörnes in his work *Diluvial Man in Europe* (Friedr. Vieweg & Son, Brunswick). Each of these three intervals has not only left numerous traces of a wealth of "mammalia" but also indisputable traces of *human existence* in the form of remains of skeletons and countless numbers of human implements made of stones or bones and other materials, so that one can speak even of a development of European civilisation in these intervals. All three intervals, to judge from the material from which these implements are made, belong to the older *Stone Age.* The later Stone Age, as well as the Bronze and Iron Ages, are of subsequent date.

The first of these intervals is the time of the flourishing of the cave-bear. It had still a comparatively warm climate—as is shown by the appearance of the thin-skinned elephants and rhinoceri in distinction to the shaggy fauna of the second intervening Glacial Age. From this period we have great rough-hewn almond-shaped stone implements, and again little darts and tools, on which, however, no trace of any art has yet been found; we have also the highly

important human skull and skeleton remains, which show the full human type in the size and shape of the hollow of the skull, and, in addition to that, peculiarities of shape that remind one of characteristics in the skeleton of the modern anthropoid ape. The most famous skeleton remains of this kind are the skull found in the Neanderthal near Düsseldorf and the skeletons from Krapina near Agram in Croatia. The marks that recall the skull of the anthropoid apes are decided protuberances above the eye-brows and a large protuberance at the back of the head. This is most marked in the skull found in the Neanderthal. Virchow was inclined to take this skull as a diseased formation, as the skull of a man who had had *rachitis* in his youth and gout in his old age; but after a number of analogous skulls were found, this opinion was given up. In the case of the muscular appendages of the skull from Krapina, Klaatsch proved that the capacity for mastication possessed by the men of that period was, in comparison to their capacity of speech, rather more developed than that of human beings at the present day. The second intervening Glacial Period had a colder climate than the

first, as is shown by the appearance of the hairy mammoth with its thick shaggy skin, and the shaggy rhinoceros. It is the hey-day of the mammoth, and of the wild horse which somewhat resembled the horse of to-day. While the human remains of this period, among which those belonging to Spy and Engis in Belgium ought to be named, remind us somewhat less of those lower forms, yet the implements of this period are distinguished by drawings and cuttings in bone and ivory, and also by really striking drawings of animals on the walls of the caves. Finally, in the third and colder intervening Glacial Period, the typical Reindeer Age, the outline drawings on bones, especially on antlers of the reindeer, and the artistic carvings, attain a yet higher pitch of excellence, while the human skulls of this period, called by the French "the race of Crô Magnon," are in no way inferior to the skulls of human beings of to-day.

Up till now there have been no indisputable forms discovered bridging animals and men. The famous *pithecanthropus erectus*, which the Dutch doctor Dubois discovered in September, 1897, on the island of Java, in a superpliocene or sub-

quaternary stratum, that is on the upper boundary of the tertiary formations, is indeed held by some scientists to be a form between man and the anthropoid ape, but the majority of other scientists disagree. Nor is it at all a reliable witness, as its three parts were found at distances from each other—which does not exclude the possibility that they belonged to different individuals. The fragments were, one skeleton of an upper thigh, two cheek-teeth, and a skull. The skeleton of the upper thigh belonged to a being of upright gait. The cheek-teeth remind one partly of the teeth of the anthropoid ape and partly of human teeth. The skull very closely resembles the gibbon's skull, an anthropoid ape that still exists in Java; but it is much larger, as large in fact as a human skull. Consequently, as has been said above, some scientists who have examined it consider it a midway form between ape and man. Others think it the skull of a human being; but the majority regard it as the skull of a gibbon, which shows by its size that there also, as in many regions of the earth throughout the fauna of the Tertiary and Diluvial Ages, there were forerunners of present day mammals which de-

cidedly surpassed in size the corresponding modern inhabitants of the same region.

Thus it remains an open question for us as to when and with what powers the human race first came into existence. And the question as to what part of the earth was their first home, is still further from a decision. Häckel falls back on a hypothetical submerged continent in the Indian Ocean connected with Asia and Africa, which, following the Englishman Slater, he calls Lemuria. But all this is nothing else than an ingenious hypothesis, which must still wait for confirmation or contradiction.

V. What is the Attitude of the Christian Religion to Biological and Anthropological Research?

If we now pass to the question, What is the attitude of Christianity to the natural history of Creation?—which we have hitherto treated in outline—we find this question already answered in the sphere of astronomy, cosmic physics, and chemistry, and answered peacefully as regards science and religion. But in the sphere of biology and anthropology the contradictions that emerge

between the scientific and religious interests touch one another at a far greater number of points, and often in really sharp fashion, so that it seems better to describe first, in this sphere, the results and the present-day position of scientific research, and then to devote a special section to the question of their attitude with regard to Christianity.

As matters now stand, in consequence of recent progress in natural science, a number of views which hitherto seemed to belong to the province of the Christian view of the world, have been seriously shifted.

In the first place we note the theory of *the age of the earth and of its inhabitants, i.e. the human race.* The results of science are here opposed to the real or alleged words of the Bible. These incontrovertible results attribute to the existence of the earth, to the existence of animal and plant life, and especially to the existence of the human race, a very much greater age than is to be found in Holy Scripture. It is indeed impossible in face of these results of science to maintain the opposite utterances of the Bible. But the abandonment of this standpoint, which could only be upheld in any case on the ground of the untenable

assumption of a literal inspiration of Holy Scripture, is for Christianity no loss. It is a gain. For this abandonment limits the character of the revelation of Holy Scripture to what is valuable for the religious feeling, and especially to what relates to our redemption through Christ, a limitation which preserves us in turn from a collision between Faith and Science, which would be unbearable and could only end in certain disaster to Faith. Our mind cannot endure any double book-keeping, according to which something could be at once scientifically true and religiously false, or *vice versa*. Only through the unity of truth does our religious as well as our scientific conscience find harmony and peace.

Moreover, a probability, almost amounting to truth, points to the fact that the higher species of organic existences, including man, have come into being by descent from the lower species. If this probability were raised to the stage of certainty, a stage which it has already attained to-day in the minds of the majority of scientists, one would simply have to say of this knowledge what one has to say of every forward step in our knowledge of Nature, *viz.* that it yields us only a new and

deeper view of the manner and method of the Divine Creation, a view which would be no hindrance to, but rather an enrichment of, our religious ideas.

A further achievement of Natural Science is the discovery that evolution in the origin of organisms and of the human race plays a *rôle* hitherto undreamt of. It is indeed the case that there is in the present day much enthusiasm and mad ecstasy over the idea of all things and qualities originating by means of a perfectly gradual evolution, and, so far as science is thus inclined to lay much greater stress on the lower from which the higher was evolved, than on the higher which has arisen from the lower, it is on a track that leads down instead of up, inasmuch as such a method rejects religion and Christianity. The theories described above (p. 140 f.), *viz.*, that the activities of the human spirit are identical with the movements of the molecules of the brain, theories which do not see in these motions only the ground, support, and instrument of activities of the brain—belong to this inclined plane which slopes downwards. The religious aspect of the world simply cannot accept them. Happily they

are just as unacceptable to a science which looks deeper—as we showed above in the case of the protest which no less a person than Robert Mayer, the first discoverer of the Conservation of Energy, raised against "the vulgar error" of identifying the activities of the brain with the mental functions of the individual.

But eccentricities and erroneous theories cannot hinder us from recognising the fact that evolution in the origin of things really plays a part which formerly had not been suspected. Now we might refuse to raise or answer the question as to how Christianity is related to the theory of an origin of things and of existence itself by means of a perfectly gradual evolution, on the plea that this theory of the origin of species and of man has only the character of a more or less probable hypothesis, that it must probably share its supremacy with the theory of sudden new formations which spasmodically appear, and that it seems precipitate to estimate the religious value of mere hypotheses. But such a refusal would not be wise. It might arouse the suspicion that it was the interest of religion to combat generally the theory of evolution. Now, while the theory of evolution,

as far as regards either the origin of genera and species, or purely prehuman occurrences which are withdrawn from immediate observation, is indeed a mere hypothesis, with regard to the origin of plant, animal, and human life, it is no hypothesis; it rests on a fact which is repeated a thousandfold before our eyes, and compels us to take a more friendly attitude than several are inclined to take, even towards what was till now a mere hypothesis. This is the fact, *viz.* that every single human individual, like all plurocellular individuals in the animal and vegetable kingdom, comes into being by perfectly gradual evolution. Even the coming of the Redeemer is not an exception to this rule. The human individual begins his existence after generation as an impregnated single-celled egg. This is developed in the uterus by perfectly gradual transitions until it is ripe for birth. Moreover this moment of ripeness is not an absolutely fixed one; there are premature births and delayed births without fatal results. Then the growth and the evolution of the newly-born also constitute a process of perfectly gradual evolution. We know the new qualities of the child who has developed to

the full growth of a man, once these new qualities are there, but seldom or never can we put our finger on the precise moment when they came into existence: they came by a gradual evolution. It does not occur to us to judge the worth of a human individual according to what it *was* in an earlier stage of its evolution; we estimate its value by what it *has become*. Individuals have their own worth, and their qualities and achievements are of value, whether they appear suddenly or gradually. In face of this fact, that all human individuals come into existence by evolution, we must also reckon with the possibility that the human race itself arose by gradual evolution, nor have we any right to check the search for fresh light in this direction. Whether the new life that came into existence by this presumed method of gradual evolution, came from existing germinal conditions whose operation was dormant till then, and then was released through new physical combinations unknown to us, or whether the new factor appeared each time as a fresh impetus from the invisible world to the visible, is certainly a question still unsolved. Probably it will remain insoluble. But its solution is unimportant to

religion. For, on the religious view, everything that happens is so entirely under Divine Guidance that it is all the same whether God already put into the beginning of all things the potentiality of what they were to become, or whether He put the new thing each time afresh into His World by a new start. Moreover, the further probability that the upward evolution took place partly in quite gradual, and well-nigh imperceptible transitions, and partly in sudden, spasmodic, and upward transitions, in no way conflicts with our religious consciousness.

We meet with a similar uncertainty in the work of those scientists who refer all that comes into being to the beginnings and original elements of all existence, by maintaining that the very atoms are animate. This idea suffers from being intrinsically obscure. If it simply denotes their capacity of furnishing the material condition and ground for animate existences with their psychical and mental functions, it is not only harmless for religion but indeed a postulate for any scheme of thought which aims at a uniform view of the universe. But one must not forget that the idea of an animate atom has only a somewhat remote connection

with what we understand, from our own knowledge of the soul and soul-life, as animate being. The idea of the animation of atoms will in this event be essentially limited; we can merely attribute to them a multifarious energy which involves attracting and repelling powers of a very definite character. For only atoms, so equipped, can furnish a bodily foundation for soul-life. But of conscious or self-conscious *perception*, *thought*, or *will*, we cannot as yet speak. On the other hand, if the assertion that the atoms are animate, means that the whole soul-life of the animal world arose from them by purely causal evolution, and that from this again by purely causal evolution the whole mental life of humanity evolved, then this idea of animation has a far-reaching significance, which, as we have said above, we cannot accept. It goes far beyond the limitation described above. And in so doing it brings only confusion instead of clearness. For thus what was strictly an hypothesis regarding the final problems of the universe, and an hypothesis conscious of its own limitations, is transmogrified into an unbridled flight of fancy. And as such it cannot but be denied by the religious interest.

The supposition of the animation of atoms was, according to Lange (*History of Materialism*, second ed., vol. i., p. 313), first advanced by the Frenchman Robinet in his *Book of Nature* (1761). But the idea met with little consideration for a century, until in recent times it began to play a *rôle* in philosophic speculation. This supposition, especially when advanced in the far-reaching sense which we reject as fantastic, is the necessary consequence of a modern and widespread pantheistic view, called by Häckel *monistic*, which *forbids* any idea of *aim* or *purpose* in the world. Such a monistic view substitutes, for a teleological evolution of the world with definite aim, a purely causal one, which by the exclusive action of cause and effect attains to what turns out, after it has come to pass, to be fitted for some end, although this was never *willed* at all. The unswerving adherence to law, by which the forces of the world work, must compel our minds, we are told, to accept this "elimination of *teleology*," as one often hears people say, and to accept, by way of compensation, the exclusive reign of *causality*. In spite of the authority of Spinoza, to whom, so far as I know, this thought, already culled from

Empedocles, owes its full equipment, I venture to say that I do not understand how, within the range of human life, the unalterable dominion of the laws of Nature, which operate of necessity, can be held to compel us to reject the operation of teleological causes, *i.e.* the establishment and attainment of aims in the universe. For man indeed acts entirely *teleologically*, and his *teleological* actions are not only in absolute harmony with that *causal* necessity, with which the powers of Nature work, but presuppose Nature's unalterable necessity and subjection to law. Man sets up his own aims and attains them by the materials and energies of Nature, not *in spite of* the necessity and subjection to law with which these powers work, but *by means of* this very necessity and subjection to law. He can use the materials and powers of Nature for the attainment of his purpose and aim, only because he is acquainted with them, because he understands the laws of their working, because he knows that these work by unalterable necessity, and because he can suspend their operation, or cause them to cease at his pleasure.

This is especially true of what man constructs,

from the simplest lever used by a stone-breaker, or the simplest spade and wheel-barrow of the peasant, up to wireless telegraphy and all the astonishing achievements in every sphere of modern technique, whereby forces of Nature, which operate of sheer necessity, are employed, with truly colossal results, in the service of human aims. An attractive presentation of this thought is to be found in an English book, *The Reign of Law*, which was written in the year 1866 by the late Duke of Argyll. It went through many editions and was much read, especially in America. In his subsequent works, *The Unity of Nature* and *The Philosophy of Belief*, he delights to recapitulate the same theme.

Now a view which denies the operation of any teleological forces in the world is at most compatible with a pantheistic belief, and with one of extremely attenuated proportions; but it is in direct contradiction to a deistic and much more to a theistic view of the world, and of course also to Christianity. Furthermore it contains difficulties, compared with which the most difficult problems of the Christian view are mere trifles.

The inorganic world is set in such a wonder-

ful harmony of all the materials and energies of the universe, that it is impossible to think of it apart from a determining Intelligence and Almighty Power, unless one soothes oneself with the thought already expressed by the Greek philosopher Empedocles (490-430 B.C.), and repeated by Lange in his *History of Materialism*, that what is fitted to a purpose must be present in preponderance, because its essence is to maintain itself when what is not fitted to a purpose has long since passed away. That the heavenly bodies move exactly as they do, that matter in the universe is just as it is, that the air, water, and earth of our planet possess that constitution in virtue of which they are able to form the basis of organic life culminating in man endowed with mind and soul, but that all this, instead of being *willed*, has only *become* so without a determining will, without any all-ruling Intelligence or Almighty Power—this surely is an insuperable difficulty to the mind.

And this difficulty becomes still more formidable when we take into consideration the organic world, and especially man with his mental life of purpose and aim. That the plants and animals are

organisms composed with exceptional fitness for their own ends, and that man is the highest of all organisms on earth, has long been generally known; but the palæontological discoveries of the last century have changed this rather *ideal* knowledge into a very *practical* one. They have proved that this lofty position of man has a previous history extending over innumerable millenniums, during which organic life arose on the earth with simple beginnings and unfolded itself in ever higher and higher organisms, till the appearance of man with his wealth of mental and psychical life. Now to suppose that this gradual ascent with its progressive mastery and occupation of matter by the *mental* and *psychical*, until the final emergence of the mental in man, is not something planned and willed by a higher intelligence, but only something that has simply happened through the category of cause and effect; to suppose that while intelligent, self-conscious, and responsible beings such as men are, should exist on earth, the last and supreme cause of all existence, even of the existence of man, should lack all the very attributes which are highest in man and stamp man as the head

of creation on the earth, *viz.* the attributes of self-consciousness, intelligence, will and love—to suppose this, I say, involves insuperable difficulties. David Frederick Strauss in his *Old and New Faith* has given a truly classical expression to this difficulty when he says (second ed., p. 143): "The world is for us no longer founded *by* the Highest Reason but founded *on* the highest reason. Certainly we must add to the cause what lies in the effect; what comes out must certainly have also been within. But it is only the limitation, of our human intelligence that causes us to draw these distinctions; the universe is indeed cause and effect, outward and inward, at one and the same time."

Now, according to this view of the world, which rejects any purposive energy, what is the course of the world? Until a few centuries ago there was only one answer given to this question. "The world revolves, from everlasting to everlasting." On this view, human individuals were simply annihilated when they had finished their course on earth. Moreover mankind was to be simply annihilated without leaving a single trace, when the earth collided with the sun. New

creations come and pass, and the world goes on in ceaseless revolution. But recently this idea has been challenged by another: *viz.* that the course of the universe tends finally to an *entropy*, *i.e.*, an equable diffusion of the energy of heat through the universe, whereby that energy would become inoperative, and all life would cease.

It is patent that both these ideas of the course of Nature do little to satisfy our intelligence, still less our needs of the soul and the demands of our religion. It is therefore no wonder that pessimism holds sway over so many minds, harking back partly to the pessimist Schopenhauer (1788-1860), and in part finding new expression in a thinker so keen and so well versed in natural science as Eduard von Hartmann. No one can demonstrate better than he the operation of teleological energies, that is to say, of energies that make for an end, but the view which he arrives at makes the world come into existence by a mischance and pass again into nothingness. The unconscious, bright world-substance, under the mysterious constraint of its equally unconscious will, has at one time committed the error of creating a world, and now,

with the instinct of an unconscious teleology, it leads this world on in an evolution which is melancholy and yet, relatively speaking, its best course, till, grown to ripeness, the world drops once more into nothingness, and thereby the absolute is at rest. Now these are vast difficulties to thought, compared with which the difficulties of a Christian view of the world are trifling.

Passing from the atheistic or pantheistic view of the world to the definitely religious view, based on a Personal, All-Powerful, All-Wise, and Holy God, who created the world and is leading it to a goal of perfection, we have first to state the difference between the deistic and theistic conception of the world (*cf.* pp. 2, 3).

According to the deistic view, which arose in the seventeenth and eighteenth centuries in England, God so made the world that it pursued its further course according to purely immanent laws, and no longer had any need of special Divine Guidance. God remains transcendent over against the world after the creation, though the fact of a moral order of the world, the demands of the moral law, and the wonderful disposition of the world, remind man of His Existence, demanding wonder and

worship. This view has never been generally accepted, but it is still a standpoint with which many are content. That it is insufficient for the Christian view is clear, inasmuch as personal communion with a Personal and accessible God is the vital breath of the Christian's life.

The theistic view, which originated on the soil of Judaism, sees in God the transcendent Creator of the world, Who remains always immanent in His world and by His Personal Omnipresence conducts it to its goal. This conception is at the same time the presupposition of Christianity. But the Christian view of the world takes a still more concrete form. In the Supreme Intelligence, in the Almighty Power, and in the Holy God, Who demands holiness from His reasonable creatures, it further recognises the God of Love, Who in Jesus Christ His Son reconciles sinful man to Himself, giving them the right to look on God as their Father and to know themselves as children of God who may live in eternal communion with Him in that divine kingdom which exists both on earth and in heaven. This communion by prayer with the Heavenly Father, which is based on Christ's redemptive work and Word, forms

for the Christian a coherent sum of experiences, which are for him, at least, just as real as his experiences of the world, but far surpassing the latter in worth. They soothe and satisfy the deepest longings of his heart. In this communion with his Heavenly Father, founded upon Christ, the Christian also possesses above all the pledge of eternal life for himself, and of the final perfecting of mankind in the kingdom of God. He may be, and may remain, much in the dark as to *how* this perfecting of the individual, or of all humanity, is to be achieved; yet the fact remains so firm that he can close his eyes peacefully in death and, like his Saviour, commit his spirit into the hands of his Heavenly Father.

The Christian view of the world has, like any other, its *intellectual difficulties.* To begin with, it does not get above those limitations which condition all human thought and pertain to the various views of the world, limitations, *i.e.* which prevent us from thinking of space and time as either limited or unlimited. Then, the Christian view of the world presents special difficulties, peculiar to itself. That the Almighty God, Who is Love, created a world in which sin and

evil play so great a part, and in which, above all, the relation between the moral conduct of man and his happiness or unhappiness on earth often shows such glaring discrepancies, is a riddle at which humanity, in its passion for God, has laboured from the time of the composition of the Book of Job and of the Psalms (xxxvii. and lxxiii.) down to the present day. This riddle has not become easier through the discoveries of Science; it has become harder. For Science has discovered that not only death but also murder reaches back far beyond the beginning of the human race, that it is as old as the animal world itself, and that all the elemental catastrophes which to-day visit so many lives and often bring destruction accompanied by the greatest torture, are as old as organic life on earth. Such a perception of what apparently contradicts reason and is at the same time cruel, inflicts a sore test on the belief that Almighty God is Love. Yet this discord is not more perplexing than much else that is perplexing in the world; *all points to the fact that God wishes not only to be revealed but also to be hidden, because He will not compel recognition of Himself by indisputable logical and mathe-*

matical proofs, desiring rather to win grateful love and free devotion from men who have experienced so much of His redeeming Love in their own lives that, for all the apparent contradictions of reason, contradictions which they are not able to solve, they refuse to mistrust His Absolute Goodness. The actual experience that there is for us the forgiveness of sins, and that all suffering, whether immediately due to sin or not, has an educative effect on a pious soul, and that it is the struggle against evil in the world which summons man to exert all his noblest powers and to unfold all his social virtues, this shows us the way in which we can trustfully hand over the solution of this and of life's other problems to the Almighty Power, Wisdom, and Love of Our Heavenly Father, hoping for a blessed consummation of humanity in which we ourselves shall share.

With this inward hope of a personal eternal life, we next confront a further special difficulty of the Christian view of the world. For this hope must face the fact that psychical and mental life is bound up on earth with the body and its organism, and that this body dies with us. This difficulty may be met from two sides. One is the

Christian hope, assured by Christ's Resurrection, that after the death of this body a glorified body is bestowed on us, in which sin, death, and pain are for ever overcome. Whether man sleeps between Death and the Resurrection, or directly after Death enters upon the Resurrection in a conscious, continuous, heavenly, and embodied state, may be left, on account of the veil that hangs between this world and the next, an open question —to be answered perhaps, rightly, in the latter way. The second ground on which the hope of eternal life may be raised to a certainty, is our conception of God. God is not, in the eye of the Christian, what Häckel blasphemously calls a gaseous vertebrate, but a *Spirit, i.e.* He has not the limitations of embodiment and yet He is the Supreme Intelligence, the Almighty One, the Holy One, and —Love. It is only logical for our minds to attribute to such an Originator and Founder of all existence the power to give eternal life, in spite of their earthly death, to men whom He has declared to be His children. "God is not a God of the dead, but a God of the living" says Jesus (Matt. xxii. 32, Mark xii. 27, Luke xx. 38).

Our idea of God lifts us also across the last

and greatest of the difficulties with which the Christian view of the world finds itself confronted, *viz.* the difficulty of believing that God is leading the world to a goal of *perfection*. Never does man feel himself smaller than when he occupies himself with this thought: "What are we, compared with all the millions and billions of heavenly bodies that fill space and move on their predestined course? A mere speck. What do we know of all the beings that may dwell in these heavenly bodies? Nothing, absolutely nothing." Yet we must trust Him who created the world, trust that He has some purpose concerning it, and that He can lead it to this goal. At this juncture also we must repeat: *the fact* of this consummation is a reality, though the *how* is hidden from our view. And if we set over against this thought of an aim for the world, the two other thoughts which are all that are left to us when the idea of such an aim is denied, *viz.* the thoughts of an endless gyration and of a final entropy of the world, it is not difficult to say which thought is the more satisfactory.

But this *advantage* is not the only one that the Christian view of the world has over others; there are others that go hand in hand with it.

Above all there is the certainty of an eternal communion with God that satisfies the human spirit, and even guarantees a bliss for which none of the other views can make any amends.

Then the Christian view of the world alone gives that rest and restraint which we need in our thoughts concerning the further evolution of organisms on earth. The discovery that the different organisms have originated along a steady progress to higher and higher stages of evolution, has suggested to naturalistic theories of the world the idea that while Man has represented up till now the highest grade of organisms on earth, there is no reason for supposing it impossible that yet higher grades of existence than man on the earth might be developed. The Christian view of the world rejects this thought as fantastic. According to the Christian conception, the spiritualisation of Nature, the continuous evolution of organisms, the elevation of animate natural existences to existences endowed with spirit,—this has reached its summit with the appearance of man as a self-conscious being capable of the *Idea of God*, of responsibility, and of free-will. Mankind, which through the calamity of sin had got out of its

true groove, has by the coming and the redemptive work of Jesus Christ been redeemed from this calamity and its consequences, and, in addition to the temporary and passing life that it has to lead down here, has been endowed with life eternal as a gift of God. This is certainly a mighty and pregnant advance; it is, indeed, as the Bible expresses it, a New Birth and a New Creation, but it is a further development within mankind itself, and a further development which has started with the coming of Christ and the acceptance of His Redemption. It begins with those who receive the Redemption being received into the Kingdom of God as children of God, finds its continuation in the next world, and its completion in the New Creation of Heaven and Earth. Anything higher than being a child of God and having eternal life is quite unthinkable.

Henry Drummond (1851-97), the Scotchman, expressed very attractively this conception of Christianity as a new creation on the basis of mankind, in his book, *Natural Law in the Spiritual World* (London, Hodder & Stoughton, 1883). It has passed through many editions and under the title *Das Naturgesetz in der Geisteswelt* has been

translated into German and widely circulated. Drummond only invites criticism here and there, as *e.g.* when in his transference of natural laws to the spiritual world he follows too blindly the problematical ideas of Herbert Spencer; for example, he applies too naïvely the latter's unacceptable definition of the idea of Life (Life as the perpetual adjustment of inner relations to outward conditions). But on the whole his book is full of fine conceptions.

When I glance over the views of the world already described, I do not cherish the vain hope that my portrayal of the advantages which the Christian view of the world possesses over its rivals (advantages, the truth of which I am perfectly convinced of) can win over to the Christian standpoint any reader who holds to another view. For each view has its difficulties; each rests far more on Faith than on Knowledge. It was not without good and vital reason that David Friedrich Strauss gave his book the title, not of *The Old Faith and the New Knowledge* but of *The Old and the New Faith.* Whether one closes with this or that view of the world, depends on the bent of his mind and the decision of his will, not on the keenness of

his logic or the amount of his knowledge. But I venture in all modesty to cherish another hope. At the present day, there is no lack of individuals who have been laid hold of by the liberating and blessed power of Christianity and gladly admitted its influence; on whom, however, the loud and reiterated cries of the advocates of a naturalistic view of the world make some impression, suggesting that to-day a Christian view of the world is no longer compatible with culture and science. To such readers I hope to be able to extend a friendly hand, and to strengthen them in the conviction that the Christian view of the world can at every point cope with its rivals, and *in no way compels its adherents to abandon culture and science.* Especially in what concerns the highest form of culture, *the training of the heart*, humble submission to a Holy and Personal God, Who is the Creator and Ruler of the world and at the same time an All-Pitying Love, is a more effectual means of culture than a Promethean self-glorification. As for joy in Nature, his share of it is greater who admires in Nature the work of a Creator, and enjoys its *real* and *ideal* gifts with gratefulness to the Heavenly Giver, than his

who can only admire in it a universe resting on itself.

I venture finally to express a further hope. If this study of mine is read by some who take their stand with perfect confidence on the Christian view of the world, but who, by reason of the attacks of many present-day scientists on Christianity, have themselves begun to suspect science, I hope to have persuaded such readers that views which are opposed to religion imply some transgression of the limits of science, and pertain no longer to the sphere of science but to the sphere of metaphysics and philosophy; science itself is thoroughly compatible with religion,—nay more, the results of science actually enrich our sense of religion, and offer to the religious outlook upon Nature only new and elevating points of view. The greater the number is of those who combine a thoroughly Christian conviction with an open eye for Nature and the researches of natural science, the fewer will become the voices that assert the incompatibility of Christianity with culture and science.

It is an exceptional pleasure to me to see not only how much literature, but also how

much valuable literature, is nowadays published on the question of the relation between science and Christianity, not merely literature occasioned by such attacks on the Christian view of the world as have come from Häckel and recently from Ladenburg in his Cassel lecture, but books arising spontaneously. It would be impossible to give a complete list of these publications, nor would this lie within the range of my volume; yet I would mention, on the scientific side, Reinke, Pauly, and Dennert; on the philosophic side, Eucken, Paulsen, Adickes, Julius Baumann, and Portig (The Universal Law of the Application of Energy); and on the theological side, Otto, Braasch, Loofs, Reischle, Kautzsch, Adolf Müller, Titius, Kirn, Zöckler, and Steude. Roman Catholic theologians have also expressed themselves favourably to the theory of descent and evolution, *e.g.*, the Jesuit Erich Wasmann in his book, *Modern Biology and the Theory of Evolution* (Freiburg, Herder, second ed., 1904). The magazine *Faith and Knowledge*, edited by Dennert, and published by Kielmann (Stuttgart), is, as the title indicates, entirely devoted to the defence and deepening of the Christian idea of the world.

CHAPTER IV

PROVIDENCE, PRAYER, AND MIRACLES

FAITH in a *Divine Providence, in answers to prayer, and in miracles*, is indeed an inalienable factor in the Christian view of the world. We shall devote a particular section to this, because its range borders on science with especial closeness.

1. That *God's Providence* rules over the world down to its very smallest details, that in both the small and the great requirements of life God leads men like a Father, especially those who know themselves to be children of God through Christ, and that He gives them the conscious experience of this Fatherly guidance in their earthly lot,—this is a self-evident factor in the Christian view of the world. Jesus Christ, on Whom this view is founded, Himself lived in this Faith and proclaimed it.

The whole of that section in the "Sermon on the Mount" which was directed against the anxious

spirit of care (Matthew vi. 25-34) is the *locus classicus* for this faith, and we reproduce as it stands: "Therefore I say unto you: Take no thought for your life, what ye shall eat or what ye shall drink; nor yet for your body what ye shall put on. Is not the life more than meat and the body than raiment? Behold the fowls of the air; for they sow not, neither do they reap, nor gather into barns; yet your Heavenly Father feedeth them. Are ye not much better than they? Which of you by taking thought can add one cubit unto his stature? And why take ye thought for raiment? Consider the lilies of the field, how they grow; they toil not, neither do they spin; And yet I say unto you, That even Solomon in all his glory was not arrayed like one of these. Wherefore if God so clothe the grass of the field which to-day is and to-morrow is cast into the oven, shall He not much more clothe you, O ye of little faith? Wherefore take no thought saying: What shall we eat? or, What shall we drink? or, Wherewithal shall we be clothed? (For after all these things do the Gentiles seek;) for your Heavenly Father knoweth that ye have need of all these things. But seek ye first the kingdom of God and His righteousness and

all these things shall be added unto you. Take therefore no thought for the morrow, for the morrow shall take thought for the things of itself. Sufficient unto the day is the evil thereof." The *locus classicus* for the conviction that God attends at all times, even in times of danger, to the least wants of His children, is in Matthew x. 29-31. It runs thus: "Are not two sparrows sold for a farthing? and one of them shall not fall on the ground without your Father. But the very hairs of your head are all numbered. Fear ye not therefore, ye are of more value than many sparrows." Nor is Jesus disconcerted by the mysteries of Providence, whether they are unhappy natural dispositions, or violent deeds of men inflicted on comparatively innocent people, or destructive elemental forces. He simply draws from these events wholesome moral and religious consequences, rejects uncharitable inferences, and refrains from mentioning the mysterious background that remains. He quietly leaves the solution of the mystery to His Heavenly Father. Thus He says, in John ix. 1 ff., of the man born blind: "Neither did this man sin, nor his parents: but that the works of God should be made manifest in him".

In Luke xiii. 1-5 He says of the Galileans who had been killed by Pilate during their sacrifices: "Suppose ye that these Galileans were sinners above all the Galileans, because they suffered such things? I tell you, Nay: but, except ye repent ye shall all likewise perish." And of the eighteen men at Jerusalem who lost their lives by a tower falling on them, He said just the same.

The Christian faith in Providence has its difficulties. Let us add, it is bound to have them. We must repeat here what we have already referred to (p. 165), that, according to all we can see, God wishes not only to be a *revealed* but at the same time a *hidden* God, because He wishes to treat us as free creatures. He will not compel recognition of Himself by proofs which are logically and mathematically unassailable; what He desires is to win grateful love with voluntary homage from men who experience such effects of Redeeming Love on themselves that they cannot any longer doubt God on account of those mysteries of His Sovereignty which they are unable to solve here below, so vast and wide is their experience of all that He gives them and of the possessions in which they feel themselves blest.

Any one who chooses to give up belief in a Divine Providence can do so, and can support his decision with reasons. To begin with, he may refer to what we have called "*the mystery of Providence*". He may say: "What I see does not constitute for me any mystery of Providence; it simply proves that there is no Divine Providence". Moreover, he may add: "What you call evident dispensations of Divine Providence are mere events, the natural connections of which are known; consequently they are not occurrences that have been designed by a determining Agent". He may say so, but he only raises greater difficulties than are presented by belief in Providence.

To mention in the first place a difficulty which is shared by belief in Providence—it is hazardous to speak of occurrences and to say we are aware of their natural connection. Every occurrence has not only one cause, but, in addition to some chief cause, numerous additional causes that combine in groups which are continually changing in the way of help, hindrance, or modification. Who can disentangle these groups and find out the entire sum of all the chief and the additional causes? The thing is impossible, for new material

and new forces are always being discovered in the world. How many may be as yet undiscovered and yet be already operative! However, we pass over this difficulty, or rather this impossibility of analysing exhaustively the natural concurrence of any event. It besets all reflection on this question of concurrence, whether one adopts an *affirmative* or a negative position upon belief in Providence.

Much graver is the difficulty for the opponent of belief in Providence, if he founds his opposition on the further assertion, that to know the natural concurrence of an event proves that this event was not intended by a determining originator. This leads us back again to the same elimination of teleology by causality which, in the preceding section (pp. 157 f.), we mentioned, only to reject it as incompatible with a vital religious view of the world. And more. In face of the extraordinary adaptation in great things as well as in small, which confronts us in the world (whence in the language of the classics it got the name *cosmos* or *mundus*, *i.e.* "good order"), this idea meets with far greater difficulties than the Christian view presents to its supporters, for Christianity sees in a

world thus fitted for a certain purpose and inhabited by intelligent human beings, the work of almighty power and of supreme intelligence in a Living God. In fact, this difficulty, in the present state of scientific knowledge, amounts to an insoluble problem. For the single principle, which hitherto has been set up by science in order to explain the origin of adaptation without the operation of purposive causes in the origin and wonderfully purposive structure of organisms, I mean natural selection or the survival of the fittest in the struggle for existence—this has proved itself thoroughly inadequate for the purpose.

Over against these difficulties, those offered by belief in Providence are decidedly smaller. But it also has difficulties of its own. In especial let us note that which we have mentioned already as a mystery for faith in Providence; I mean, unhappy dispositions of life, an unfavourable environment for the moral and religious development, human acts of violence toward comparatively innocent people, destructive natural elements, and in short the whole army of evil with its vast and unfair billeting.

Such mysteries remain mysteries; but, to

reassure men of a perfectly satisfactory solution from the side of God, and of their own future insight into that solution, the Christian conception can command not merely this world but—what is most essential here—the world to come. The awakening of life's energy, and especially of voluntary self-sacrificing acts of love, which are called forth by all the evils and especially by the calamitous catastrophes, indicate how we are to reconcile this mystery with faith in a God who is Love, and, like Jesus, leave its solution contentedly to Our Heavenly Father. In opposition to these mysteries, there are such numerous and obvious proofs of a Divine Providence, both in the history of mankind, with the moral order of the world that runs through it, and in the life-story of the individual, which the Christian can take as reminders of the Divine Guidance in his own life, that he can be quite at rest about what remains still mysterious to him.

A second difficulty which confronts Christian faith in Providence runs parallel in the opposite direction to the difficulty which we have just described as lying in the way of the opponent of belief in Providence. But again we can say, the

Christian's difficulty is less than his opponent's. The upholder of faith in Providence also sees himself in the midst of a world where everything, so far as he can perceive it and so far as it is not controlled by the actions of man's determining personality, goes on its way by the necessity of causal forces subject to law. He lives under the conviction that all these occurrences are directed by Supreme Intelligence, Almighty Power, Holiness, and Love, to the salvation of mankind, and yet he nowhere sees the place where, and the way whereby, this Supreme Determining Power takes hold of the course of Nature. His experience is similar to ours when we cast a glance at Reinke's "dominants". "They are there, they are at work, but how and where is a mystery to us." It is similar to our feelings as we look at the primeval history of the earth and its inhabitants. We see periods and places where undoubtedly something absolutely new, something specially purposive and aspiring, something that paves the way for a higher evolution, enters into the course of the world; we see *the origin of life*, then the *origin of consciousness*, and finally *the origin of self-consciousness* with the whole

mental life of humanity striving after its goal. But these occurrences always elude our scientific observation. Well, we might content ourselves with knowing that no one, not even Darwin, has succeeded in proving that what is fitted to a purpose, as we see that existing and occurring in such sublime proportions throughout the world, can arise or occur without a determining reason. Still further. We might quiet ourselves much more effectively with this other fact of experience, *viz.* that, for one who knows he is a child of God, the government of the world and the Providence of God are equally true, whether he can or cannot disentangle the threads which proceed from God and weave together the web of the world's course.

Such is, in fact, the standpoint of the Christian. Such must be his standpoint; because the level of his religion does not depend upon his degree of acquaintance with affairs of the universe, but only on the degree to which he is shut in with God.

Whoever handles the question of faith in Providence in a scientific spirit, must be on the lookout to see whether occurrences do not meet him in the sphere of Nature which offer at least some analogy

to a Divine determining intervention in the course of Nature, not to one which contradicts the operations of natural energies controlled by law, but to one which harmonises with this operation of these energies and avails itself of them. We find such occurrences in the fact that man, together with the higher animal world at the psychical stage preliminary to human mental life, continually interferes in the course of Nature, without annulling that control by Nature according to which natural forces are effective. Every voluntary movement of the body, whether in consequence of a resolve or not, is for us an unsolved, perhaps an ever insoluble, mystery—although to our consciousness it is no longer a mystery, because it can be performed by a man without any reflection at all. The "ego" in man is something immaterial. It inhabits the material body as its organ, and depends on the life of this body, but as the *ego*, as the centre of this human personality, it is immaterial. This immaterial "ego" moves the limbs at pleasure in this way or that, just as the *ego* desires; it needs for every fresh movement fresh nerves and muscles, but, for all that, it does not require to have the least knowledge of

anatomy or physiology. No one knows how to account for the way in which the "ego" acts, so as to call into action now these nerves and muscles, now those. None knows how the motion willed by the "ego" is effected. Yet there it is. So far as the movements of the human members can be directed by the human mind to certain ends, mankind, despite the restrictions imposed on its powers by certain impassable barriers, has truly achieved wonders in subduing and cultivating Nature, in converting materials, energies, and laws, into what should serve humanity in matters of technique and industry; nor is there any visible end to the advances that may be made in this process of subduing Nature to the purposes of men. Man does all this without breaking the laws of Nature; nay, he does it just because he knows the materials and energies which he subdues to his service, just because he can rely on them working according to law, just because he gives to their operation the direction he desires. This justifies the conclusion that if man, who is a creature of God, can make Nature serviceable to his aims, without understanding the manner and method of his action, how much more will the

Creator of Nature and her laws be able to guide the same according to His Will, even without showing us the place at which His Guiding Hand comes into action!

Our religious conviction calls man the image of God. That in this also we are scientifically accurate, may be seen by a glance at the theory of knowledge. Our perceptions, as well as the categories according to which we think, are all of subjective origin, even where they are occasioned by what is objective. But the fact that, with these subjective perceptions and with these subjective laws of thought, in the midst of which we employ our perceptions, we work on Nature itself in so truly wonderful a manner, and make it serve our own aims, is for us an indisputable proof that our subjective reason is essentially related to the objective reason which rules throughout the universe.

In closing this discussion on faith in Providence, I wish to direct attention to two publications on this question which are well worth reading: (1) *Aids to an Appreciation of the Christian Belief in Providence*, by Dr. Willibald Beyschlag (Halle, Eugen Strien, 1888), (2) *Belief in Pro-*

vidence and Natural Science, a Lecture, by Dr. Otto Kirn (Gr. Lichterfelde, Berlin; Edwin Runge, 1903).

2. The question of answers to prayers has been already answered by our discussion on faith in Providence, and answered in the affirmative. He who rejects belief in Providence will grant to prayer at the most only a subjective, sedative effect upon the mind of the petitioner. But he who takes his stand on faith in Providence will not only see in this calming influence an answer on the part of the Living God, but will also be persuaded—a persuasion which will be confirmed by experience—that God, as the result of his prayer, works upon the activity and passivity of his fellow-men,—though in such a way, of course, that He does not take from them the freedom of their own decision: they can obey this operation of God upon them or not, as they please. He will also connect with this the further conviction that God, in consequence of his prayer, makes certain things happen in the course of the world which would not have happened if he had not prayed. Moreover, the answering of prayer is so emphatically and repeatedly assured to us by the Founder of the Christian Religion, that the conviction of

our prayers being heard is indeed an indispensable factor in a Christian view of the world.

It is of course to be understood that Christianity does not favour selfish, short-sighted entreaty to God for earthly things. The fundamental principle is the saying of Jesus in which He promises that all prayers offered to God in His Name will be heard. In John xvi. 23, He says: "Verily, verily, I say unto you, Whatsoever ye shall ask the Father in My Name, I will do it". But prayer in the Name of Jesus involves not only the conviction that the exalted Jesus intercedes for us with His Heavenly Father to hear our prayers as if they were His own, but also that we pray in the spirit and mind of Jesus. And we know the spirit of Jesus's prayers, not only from the prayer which He Himself has taught us, the Lord's Prayer, but also from His teaching on prayer and from His own prayers.

When directed to the moral and religious state of our hearts and the character of our deeds, He makes no limitation to the hearing of our prayers, but says in Luke xi. 13: "If ye then, *being evil*, know how to give good gifts unto your children; how much more shall your Father, which is in

Heaven, give the Holy Spirit to them that ask Him." Moreover, with regard to the final destiny of His disciples He makes in His prayer no limitation, but says in John xvii. 24: "Father, I will that those which Thou hast given Me, be with Me where I am, that they may behold My Glory which Thou hast given Me". But as regards His own fate, He prays in the agony in Gethsemane (Matt. xxvi. 39): "O My Father, if it be possible, let this cup pass from Me: nevertheless not as I will, but as Thou wilt". In the Lord's Prayer we find, with regard to what is earthly, this concession granted to us, *viz.* that, according to the fourth petition, during the time we have to live on earth, we may pray every day for what is necessary for life, and that our petitions will be granted. While, according to the *seventh* petition, we may not only experience a future redemption from every evil in a state of perfection, and ask for the attainment of this aim, but, with the assurance of being heard, may even now ask that God take away and keep from us what is harmful to our inner man, so that, in consequence of this prayer, we may be persuaded that those experiences which in ordinary parlance are called *evils*, and

which cause us pain if they cross our path, are no longer an evil for us but a beneficent means in our education.

Finally, we must pronounce it an aberration of religious fanaticism and a despising of the Divine natural gifts and helpful intervention of our fellow-men, if, in the assurance of our prayers being heard, we were to imagine we could dispense with medical aid and natural remedies.

3. We shall have to treat the question of miracles in a more exhaustive fashion, because, in consequence of the vast strides made by natural science and the knowledge of how immutable and subject to law are the operations of natural forces, the idea of miracle has altered. It has been defined in ways that ignore its religious meaning, and only express the alleged conflict between faith in occurrences of Nature that are subject to law, and faith in miracles; whereas the religious significance of miracles is the chief thing in their conception, compared with which all other considerations are secondary.

That a conception of miracles which ignores the religious interest has become the rule, is easy to prove. I turn up, *e.g.*, Meyer's small cyclopædic

dictionary and read thus: "miracle, according to the dogmatic conception, is an event that runs contrary to the laws of Nature, whereby God interrupts the order of the universe. That miracles are demonstrable is denied by science." Any one who has thought himself into the idea of miracles held by a religiously minded man, will find in this definition of a miracle almost as many inaccuracies as it contains words. How can a religiously minded man for a moment entertain the idea that God could ever interrupt the order of the universe? Surely this order of the universe itself comes from God, Who is a God of order. Where the religious man sees anything new, he sees not an interruption but a development of the order of the universe in the line of realising that end to which God is leading mankind.

Then as for the question whether an event is contrary to the laws of Nature or not, the uneducated religious man does not trouble himself about it; he is only concerned with the question as to whether the event indicates God's Sovereignty or not; whereas the educated believer, in the case of an event which he terms a miracle, and which he cannot explain from

the general context of Nature, would first try to be sure whether this event really took place. Such an event, *e.g.*, as, to choose the most striking of all examples in story, that contained in Joshua x., the sun and moon standing still during Joshua's battle against the Amorites, he will see fit to deny for many reasons. At the same time he will be perfectly able to understand psychologically how such a narrative could arise. Such an event would certainly have been an "interruption of the order of the universe," nor could one think of a more radical *bouleversement*. But where he has reason to assume from the narrative of a miracle that it has really happened, he will then draw the conclusion that a new force, unknown to him and perhaps unknown to all mankind, has come into operation and entered into the course of Nature. But he cannot admit that this new force, of which he has hitherto been unaware, should contradict those laws of Nature of which he is aware, because, according to his conviction, God is the Originator of all the laws of Nature and will not call anything into existence that is contrary to His own order. Finally, no science can start by denying that an event

which we call a miracle can have actually happened; it can only, with all the aids of historical research, examine the question whether it has happened.

For our religious thought and feeling everything is a miracle that indicates the sovereignty of a living God, or that guarantees one who either performs or experiences miracles as a person commissioned by God. Thus to the religious man the entire universe as a whole and in its details is a miracle. The creation of the human race in particular and the leading of them to become children of God by the preparation for and sending of Jesus Christ as redeemer, is to the religious man one great, unique, harmonious miracle, which unfolds itself in the chief epochs of the story of salvation by single miracles, and finally issues in one great central miracle by the Coming, Person, and Work of Jesus Christ. Similarly the Divine Guidance of his life is to the religious man a combination of miracles, even where he sees before him the natural causes of the events; for these events are a miracle to him.

With this all-inclusive significance of the idea of miracles,—which, however, does not at all ex-

clude the grouping of miracles in varying degrees of value, or an inquiry whether separate miracles that are related really happened,—we stand on entirely the same ground as that on which we have to discover the amended conception of miracles, *viz.* on the ground of Holy Scripture.

The entire Old Testament is full of utterances in which all the works and deeds of God in Nature and history, especially in the history of Israel, are called miracles.

Even the individual man is a miracle of God (Ps. cxxxix. 14): "I will praise Thee; for I am fearfully and wonderfully made: marvellous are Thy works; and that my soul knoweth right well". The 107th Psalm is especially instructive for the idea that even such ways of God as we are able to understand in their natural context, are called miracles. It begins with this fundamental theme: "O give thanks unto the Lord for He is good, for His mercy endureth for ever". Then, in turn, travellers are first brought before our view, who wander in the desert and must suffer hunger and thirst, but at their request are led again by God to the right road. Then we have prisoners, who at their request are set at liberty again by

God; then sick people, who after crying to God are healed; and finally sea-farers, who are threatened with loss of life by storm, but at their request find the ocean calm and so can reach their haven. Each time it is said of each of these groups in a similarly recurring form: "Let them praise the Lord for His goodness and for His wonderful works to the children of men".

I said above, in my definition of the religious conception of miracles, that it in no way excludes a grouping of miracles according to their respective values. We shall now go further and admit that the religious conception of miracles comprises in itself such a classification of miracles. For if the religious man calls everything in the world, in mass as well as in detail, a miracle of God, then miracles in the narrower sense of the word, *i.e.* the events or acts that diverge from ordinary occurrences, and through the very novelty of their features, draw special attention to the sovereignty of God in aims that He has in store for mankind —follow for him as a matter of course. These miracles, in the narrower sense of the term, coincide with what in ordinary parlance are called miracles, except that the religious man who thinks

scientifically will not admit that these miracles in any way run contrary to the laws of Nature. We will prove this later on in the discussion of miracles as "Acts of Power". But even this distinction of miracles in the limited and less limited sense is not rigid; it has shifting boundaries, as *e.g.* in the case of some of the miracles of healing that Jesus wrought, of which one part was analogous to acts of healing otherwise exercised on the physical sufferings of individual men, even of those who in no way accept a religious view of the world.

Moreover, the names by which miracles are described in the original, both in the Old and in the New Testament, answer exactly to the idea of miracle which we propose. The Hebrew and the Greek nouns for miracles signify either "something astonishing," or "acts and energies," or "signs". The word "astonishing" corresponds exactly to the Latin noun "miraculum," from whence is derived the English word "miracle".

This suits what we must, in distinction to the occurrences of Nature known to us, name "miracles" in the narrower sense, because these miracles rouse our astonishment precisely through

the new and unexpected element in them; but it also suits the recurring millions and millions of natural occurrences surrounding us everywhere, which the religious man, according to our theory, also calls "miracles," on the ground that they point to the working of a Living God. For these natural occurrences become for the religious man astonishing revelations of the sovereignty of a Living God, because he recognises in them a harmony of order; especially in organisms, and above all in the organic structure visible in the life of man, he sees an adaptability to purpose in the structure, and a harmonious concatenation of all the organs, working towards an aim, which the mere category of final causes and final effects cannot satisfactorily explain. These compel us to recognise a Supreme Intelligence and an Almighty Power directing all. This excites our wonder, because we see the workings of this Power and Reason, and yet nowhere can we either name the place where, or fix the way how, they intervened with effective control in the course of Nature. This last problem in all natural events compels even "monists," who dispute the existence of aim in the world and the sovereignty of a Living Personal God, to speak of "miracles";

even Häckel's latest book is entitled *The Miracles, or Wonders, of Life.*

The second name for miracles, which recurs frequently in the New Testament, the name "energies" or "acts of energy," generally translated by Luther "deeds," shows us with especial clearness that the religious conception of miracle is far remote from any thought of an interruption to the laws of Nature. For with the designation "energies," "miracles" are put into the same category as any other operative force in Nature and in human life, all of these being traced back by the religious mind to a Divine origin. All that is conveyed by the designation of miracles as "energies," is that they point in a specially striking and direct way to the Divine Originator of this "energy". The name "energies" or "acts of energy" for miracles was certainly applied at a time when the conception of a law of Nature as immutable had in no way—or at most in sudden flashes of inspiration, as in Psalm cxlviii. 5 and 6—dawned upon man; but it fits in very well to our modern knowledge of the reign of law over the energies operative in the world, and also shows that, even for the most advanced knowledge of

Nature in our day, the recognition of miracles certainly does not involve belief in an interruption of the laws of Nature. When anything occurs, it means an energy or group of energies coming into operation and thereby superseding the other energies for some time, without affecting the reign of law over what has temporarily been called into operation, or over the forces which have been momentarily put aside. In the case of miracles in the narrower sense, we see with especial clearness that the Sovereignty of a Living God is behind what happens; but whether God works directly in these events or through intervening causes yet unknown to us, whether these intervening causes are forces which now come into existence for the first time, or forces already present with all their laws of operation, which are unloosed now for the first and only time, or only at rare intervals, lying latent during the intervening periods—all this, I repeat, lies hidden from our view. That God in all He does, even in His exceptional wonders designated as "acts of energy," works in no unmethodical aimless way, but in harmony with all His other actions and in perfect conformity to a purpose, this we take as

unquestionable. But that does not exclude exceptional acts of energy pointing to the Divine Sovereignty in an exceptional way.

This leads us to the third designation of miracles as "signs," which is also extremely common. Miracles are called signs, partly because they point to the Sovereignty of God, partly because they prove him who performs them to be a messenger with a commission from God and equipped for this commission with special powers.

With regard to this designation of miracle as "sign," the question of primary importance is what degree of proof attaches to miracles, in the mind and teaching of Jesus Christ, particularly to those miracles which interest us most deeply as Christians, namely those which the evangelic narratives declare to have been performed by Jesus. By way of answer, we get the remarkable assurance that they are merely of secondary value as proofs. The primary proof of divine credentials possessed by messengers of God must lie in the immediate impression produced by their person and their words. When Jesus saw Himself surrounded by unbelieving people, He performed no signs "because of their unbelief". When people

expressly asked Him for signs as a condition of faith in Him, He refused their request. Even when He had reason to suspect an unexpressed desire for signs, He said to them in rebuke: "If you see signs and wonders, yet will ye not believe". But where faith in Him already existed, He readily aided it by showing His miraculous power; He revivified thereby a faith already existing and made it still stronger, often adding expressly: "Thy faith hath made thee whole".

This standpoint which Jesus Himself assumed with regard to the question of miracles, shows us in our own day how to view the acceptance or rejection of faith in miracles.

Acceptance or rejection of faith in miracles stands in most vital connection with our view of the world. A naturalistic view has no place for faith in miracles. It lacks the obvious supposition for all such faith, *viz.*, the recognition of a Living and Almighty God Who rules the world, and the recognition of any purposive tendency. On the naturalistic view, the human individual ceases with death, and the whole human race is going to annihilation—what room is there for miracles? The supporters of a naturalistic view can at most

use the name "miracle" metaphorically for whatever still exists in the occurrences of Nature that they cannot yet explain. When accounts of miracles in the narrower sense cross their path, they simply explain that they are impossible, and therefore that they never happened, no matter how striking are the proofs for their occurrence; others they may declare as, *e.g.*, some cases of healing the sick, to be occurrences which can be adequately accounted for within the sphere of natural conditions.

The position of a supporter of the teleological, theistic, and especially the Christian view of the world toward the question of miracles, is entirely different.

When miracles in the narrower sense are related to him, he will certainly feel himself bound to ascertain, with all available means of historical and psychological research, whether what is related has really happened, and whether one has reason to assume that it happened exactly as it is said to have done. But he will not at the outset reject the miracle as impossible, and therefore as never having occurred. The possibility of miracle is involved, for him, in the seriousness of his faith that

an Almighty God is Creator and Guide of the world. And the probability, nay, the certainty, that miracles in the narrower sense have happened, can still happen, and will happen, is bound up for him in his conviction that the whole human race and the separate personalities of men have been created by God capable of and responsible for moral freedom, born with the capacity and instinct for moral perfection, *i.e.* for a goal as yet unattained. Now, when aims not yet attained are in question, it is no longer possible to exclude miracles in the narrower sense of the word. For the essence of miracles in the narrower sense consists in the emergence of something new, something that draws attention to the Sovereignty of God and to the goal towards which He is leading the children of men. Above all, when he who takes his stand on a Christian view of the world recognises in Jesus Christ his own and the world's Redeemer from sin and death, and when through Him he has learnt to know God as his Heavenly Father and to have communion with Him, he will no doubt be scrupulous in observing the necessary precautions against accepting isolated accounts of miracles, but he will be inclined at the outset

to assume that this elevation of mankind to the state of Redemption and the position of God's children, and especially the appearance and work of the Redeemer, has revealed something new in the experience of mankind, revealed it, *i.e.*, through miracles. We shall see, in our next section, with what cogent reasons the greatest of all recorded miracles, the Resurrection of Jesus Christ from the dead, compels recognition as an historical fact. Any one who sees himself compelled to recognise this fact will not be deterred from confessing his belief in miracles by the reproach of backwardness in scientific knowledge, a reproach hurled at those who believe in miracles. By the very caution of the criticism with which he approaches the record of miracles in the narrower sense, he will be in a position to show whether or not he is to be numbered among those who are retrograde in science. He may find himself compelled to assign the whole universe in mass as well as in detail to miracles in the wider sense, and above all to include his own existence and the course of his own life; yet this constitutes for him a perennial fount of joy, a rich and overflowing compensation for any reproach of scientific backwardness.

It is a matter for rejoicing to see that even scientists, *e.g.* Dr. E. Dennert in his book *The Bible and Science* (Stuttgart, Kielmann, 1904), stand up so bravely and ably for faith in miracles as based upon faith in an Almighty and Living God. Among theologians who have grasped the idea of miracle so as to make its religious character the central point of the conception, instead of any contradiction of miracle with the laws of Nature, I would mention the late Willibald Beyschlag, who treats of faith in miracles in the volume already mentioned upon Christian faith in Providence, and in still more detail in the first volume of his *Life of Jesus* (Halle, Strien, first ed., 1885) as well as in his *New Testament Theology* (1896, same publisher). Albrecht Ritschl also (1822-89), in the *Annual of German Theology* for 1861, proposed a conception of miracle which makes the religious and teleological significance the central point, thus avoiding the possibility of any collision between Science and Christianity. In my book on the Darwinian theories (1876) I have myself treated the whole question of Providence, with answers to prayer and miracles, in a special paragraph (par. 39) which enters into greater detail than the present pages. My position there is the same as I hold now.

CHAPTER V

THE PERSON OF JESUS CHRIST

An inquiry into the relations between Science and Christianity has finally to include the person of Jesus Christ Himself within the circle of its discussions. The Biblical accounts of His virgin birth, of the miracles He performed, and of His Resurrection, compel us to take this step.

For us Christians, Jesus Christ in His Person and in His Work alike is utterly unique among all men. He is unique in His Person. He is indeed truly human and as such has shared the sufferings and death of sinful man. But He is at the same time the sinless, perfect Son of God, Who as the Personal Revelation of God stands unique amid humanity. And He is unique in His Work. He has redeemed mankind from sin and death, and has become thereby the One Mediator between God and man. For those reasons we cannot admit the right of Science to

attack the uniqueness of the Person and career of Jesus, because it finds no such analogy among other men. It is this very uniqueness that lifts Him above the criticism of science. It is only historical research, next to the direct religious experience that we ourselves personally enjoy through Him, that has any right to speak, because its business is to discuss with us the question whether we have any right or reason to assume that what is told of Him really happened. As far as historical research has to answer this question in the affirmative, its results do fall within the circle of Science, but only in the sense that Science has to see how it can adjust itself to facts which it cannot deny, but which on the other hand are not analogous to the results otherwise attained by scientific investigation.

Well, in the case of the three unique stories of the life of Jesus, historical research reaches dissimilar results. In the case of the stories of the virgin birth of Jesus, it has to confess its ignorance. The records of Jesus having often performed many miracles, it finds valid, but it must be deemed possible that, in the decades between the life of Jesus and the composition of

the Gospels, the account of several miracles has been embellished, if it does not owe its origin to the unconscious and inventive religious imagination. The account of Jesus's Resurrection is found also credible, even though a harmony of all the individual features in the different narratives is not feasible, while the possibility is not to be excluded that one or another trait may have been added by unconscious and inventive religious feeling. We shall try to prove this briefly in detail.

1. The Account of the Virgin Birth of Jesus

The virgin birth of Jesus is narrated in the Gospels of Matthew and Luke; but all through the record of the birth and childhood of Jesus, the two gospels differ so widely from one another that they defy any verbal harmony.

The Gospel of Matthew begins with a register of births which traces Jesus through forty-two ancestors from Joseph, Mary's husband, past David back to Abraham. Thereupon it relates that Mary, Joseph's bride, was found to be with child before her marriage. Joseph took her therefore to be a fallen woman, though he did not wish openly to

reprove her, but to put her away privately. Thereupon an angel of the Lord appeared to him in a dream and explained to him that Mary was with child by the Holy Ghost, and would bear a Son whose Name should be called Jesus (Saviour), for He should save His people from their sins. On awaking, Joseph took his wife home, and when she bore a son he called Him Jesus.

Now when Jesus was born at Bethlehem in Judæa, there appeared wise men from the East in Jerusalem, led thither by a star, and asking after the new-born King of the Jews. King Herod directed them to Bethlehem, on the ground of information received from the scribes concerning the prophesied birth-place of the Messiah. There, under the guidance of the star, they found the Child, paid Him homage, and returned another way home, being warned by a dream. Joseph also, in consequence of a warning received in a dream, fled with the mother and Child into Egypt. Then came the slaughter of the innocents at Bethlehem, and after the death of Herod the return of the holy family to Judæa. But because Joseph was afraid of Archelaus, the son of Herod, who had become King in Judæa instead of his

father Herod, he settled down with his family in Galilee and took up his abode in Nazareth.

Luke's account is different. He begins with the account of the wonderful prophecy and birth of John the Baptist, according to the message of the angel Gabriel, a child granted to a hitherto childless and aged priest and his wife. Then he relates the Annunciation to Mary in Nazareth, by the same angel, that she should be with child of the Holy Ghost and should bear a Son and call His name Jesus, and that He should be the Messiah. Mary then visits her relative Elizabeth, the mother of John the Baptist, of whose pregnancy the angel Gabriel had likewise told her. At this, both mothers mutually give utterance to their hopes in prophetically inspired words, while *Z*acharias, the father of John, speaks in prophecy on the occasion of his son's circumcision. And now through a decree of Cæsar Augustus, that all the world should be taxed, Joseph and Mary come to Bethlehem the city of David. There the birth of Jesus takes place in deepest poverty in a stable, but is announced to pious shepherds in the field by the angel of the Lord, whereupon they hear the multitude of

the heavenly host praising God. The shepherds then go and pay homage to the Child. After eight days follow the circumcision and the naming of Jesus; then, forty days after His Birth, the customary presentation in the temple at Jerusalem, where the new-born Babe is saluted as the Messiah by the aged Simeon and Anna. Then the parents return to their home in Nazareth.

Luke gives us also a genealogical tree of Joseph that goes back past David. He puts it into his gospel after the narrative of the baptism of Jesus by John. This genealogical tree does not only go back, like that of Matthew, to Abraham but to Adam. Yet in the numbers and in the names of the ancestors, it differs widely from that of Matthew. At the very beginning the father of Joseph is not called Jacob as is the case in Matthew, but Heli, while in Matthew the line goes from David through Solomon and in Luke through Nathan. Nor do the two narratives agree in their wording. Their difference shows that in the primitive Christian circles a coherent tradition concerning the circumstances of the birth of Jesus did not exist. The narratives refer back to different sources of tradition. Beyschlag con-

jectures in his Life of Jesus (vol. i.) that Matthew reproduced an oral tradition in plain language, but that Luke used two written sources, in his first chapter a poetical, in the second chapter one more historical.

To this difference of the two reports must be added the further circumstance that neither the Gospel of Mark nor of John, nor any other New Testament writing, knows anything about the virgin birth of Jesus, that Paul in his unquestionably genuine Epistle to the Romans (i. 3 and 4) and Peter in his discourse on the day of Pentecost (Acts ii. 30) seem to presuppose the Davidic descent of Jesus through Joseph, and that there is no trace, in the missionary activity of the early Church, that any allusion was made to a virgin birth of Jesus.

With these historical facts, finally, we must correlate the theological consideration that our conviction of the uniqueness of Jesus Christ's Divine Sonship does not require a virgin birth.

We see in Him a new scion who has been grafted from above into the genealogical tree of sinful humanity. But this is just as conceivable if He were begotten of parents, as if He were

born of a virgin. For even in the latter case the hereditary sin which the newly born son of a mother would bring into the world would have to be overcome by a divine New Creation of His ethical condition, just as surely as in the first case.

We may not therefore depreciate the Christian heritage of those who doubt or deny the virgin birth of Jesus for the reasons just outlined, as though that heritage were inferior to the saving experience of those who, on the ground of two Bible narratives, affirm the virgin birth. Beyschlag, who for a long time accepted the virgin birth and then gradually felt himself compelled to reject it, shows in his Life of Jesus how tenderly and with what deep religious feeling one can from this standpoint do justice to the origin, the beauty, and the relative truth of the records.

On the other hand, we cannot go further than the admission that historical research has concluded it can say nothing either about the virgin birth of Jesus or about His generation by Joseph and Mary. It cannot deny either one or the other. For *if* a virgin birth took place, this

remained, according to all rules of psychology, a sacred secret to Joseph and Mary, which only in very rare moments, perhaps far distant from one another in point of time, was communicated to one or another of their trusty intimate friends in a confidential way. This would explain how such disjointed and fragmentary reports could result in such different accounts as are contained in the gospels of Matthew and Luke. Moreover, it is self-evident that it could not have been God's purpose that allusions to the exceptional character of His birth should aid faith in Jesus as the Redeemer of the world. This would be in contradiction to all that we know of the substance of the first missionary sermons of Christendom. The impression of the Person of Jesus, of His Word and of His Work, that is what must waken and maintain and ripen faith—not any news about some physical miracle whereby He came into the world.

Little as we can prove the virgin birth of Jesus with the aid of historical research, as little then can we *deny* it. Nor can we deny its possibility on the ground of natural science. If Jesus had simply been a man like ourselves,

even though He had been the greatest of religious geniuses that has ever appeared among mankind, then natural science would certainly have had ample right to assert, on the analogy of all experience, that He did not come into the world in any other way than we do, *i.e.*, by parental generation. But it is a fact of experience that with the coming of Jesus into the world something utterly new and supreme has become a permanent part of humanity. The language of Christian piety calls this new thing "the Kingdom of God," or "the Kingdom of Heaven"; in individual men, it is redemption from sin and death, sonship with God, and eternal life. Now science, for all its concrete clearness, does not know by what way, even prior to the creation of man, God called into existence the new and higher forms of existence which have successively appeared on the earth. If the conjecture is well-founded that markedly higher organisms were originated, not by gradual but by spasmodic evolution, then we are quite ignorant as to whether these new and higher organisms, which thus spasmodically appear, may not have come into existence through this very medium of *parthenogenesis* (*i.e.* through

a virgin birth). Above all, we do not know circumstantially and clearly how God called man into existence, even supposing we assume that He created him on a previous basis in the animal world. The thought of parthenogenesis at once suggests itself at this point. Now the sending of the Redeemer is the last, the greatest, and the climax of God's new creations on earth. It is also the only one that falls within the temporal limits of human history. Hence the possibility that this last of God's new creations was called into being by parthenogenesis, is not to be denied, for, on the analogy of all His dealings with us, God may have let a veil fall over the history of this occurrence, which leaves room for doubt. Here the law manifest throughout all the great questions of human life would apply, *viz.*, that God declares Himself to be not only a revealed but also a hidden God, because, instead of desiring to force the recognition of Himself and His Sovereignty by the weight of logic or irrefutable inductive proofs, He would gain that recognition by the trustful devotion of man's heart to Himself. Moreover, a glance at the Person and Work of Jesus will make us content with this view. Where

so much is revealed, where, above all, whatever promotes our salvation and peace is so accessible, we need not wonder if a veil is drawn over Jesus's entrance into the world, a veil which we can hardly raise, if we can raise it at all.

The result of our investigations, then, is, that we must not deny *the full possession of salvation* to those who doubt or deny the virgin birth of Jesus, nor must we charge those who affirm it with *lack of science*, nor again must we deny to those who are contented to be ignorant *the courage of confession* or *joy in believing*. The question of joy in believing does not come up at all here, for the essence of faith does not consist in maintaining the truth of a narrative or a doctrine, although such maintenance must have a place of its own in faith; it consists in *trust*. The original language of the New Testament has the same word for *faith* and *trust*. Trust in Jesus, in the case of those who confess that they do not know the manner of His birth, and in the case of those who assume that Jesus was born of Joseph and Mary, may be just as great as in the case of those who affirm the virgin birth of Jesus.

2. The Miracles of Jesus

On the miracles of Jesus I can state my views more briefly, as almost everything essential to this problem has already been discussed in the third part of the section on Providence, answers to prayer, and miracles.

That Jesus performed many miracles, and specially that He healed many sick in a wonderful way, is beyond all doubt. Not only are the four evangelists at one on this, but the other New Testament writings, many of which are earlier than the Gospels, assume it as indisputable. Men like Paul were conscious—and their experience bore them out—that they themselves and the other first witnesses of Jesus, as well as whole congregations, such as that of the Church at Corinth, had received from Jesus Himself power to perform miracles. The contents of the very first sermon on Jesus amount to this, that Jesus died and rose again for us and proved Himself by word *and deed* to be the Son of God—the Messiah.

As for the separate accounts of miracles, it must be admitted that in the decades between Jesus and the origin of the four Gospels, this or that story may have arisen in the course of time,

or have gradually been adorned with various additions. Critical historical research concerning the recorded miracles will therefore never be at rest. Its results will vary according to the individual character of the investigator and of his readers, and often enough a choice of alternatives will be left open. Let not that disturb us. We have shown above (p. 202) that Jesus Himself ranks His miracles only in the second place as a proof of His Divine mission, and that this must remain our standpoint to-day. We can therefore, without any disquiet, doubt or surrender one or another characteristic in the record of a miracle, or even the entire narrative of a miracle, without introducing confusion into our conviction of Jesus's miraculous power, and of the value His miracles had and still have for faith. Moreover, we need not be disturbed when attempts are made, in the case of several of His miracles, to correlate His power with certain "energies" in the natural situation of man, as *e.g.*, in the case of several instances of the healing of sick people, although this does not apply to every case, and in particular is irrelevant to the case of those whom Jesus healed at a distance. Certainly one could not go

as far as Beyschlag, who, in his Life of Jesus (vol. i., 3rd ed., p. 326), when discussing the account of the changing of water into wine at the wedding at Cana (John ii. 1-11), tries to avoid the impression of magic by thinking of an analogy in hypnotic suggestion, thus transferring the miracle from the water-pots to an illusion of the senses on the part of the wedding-guests. That would have been no manifestation of His Glory such as is intended by the evangelist who relates the miracle. Surely here it is more advisable to admit simply that one does not understand the occurrence. Nor does Dennert help us, when, in his book on *The Bible and Natural Science* (p. 307), he adduces proof that in this miracle it is a question, not of the new creation of elements that were not already at hand in the house, but only of some sudden and new combination of the same. Water consists of hydrogen and oxygen; wine, as regards its chief ingredients, of alcohol and sugar. The latter, like the other ingredients of wine, are composed of hydrogen, oxygen and carbon. Now hydrogen and oxygen are found in water, oxygen also in the air, and carbon in carbonic acid, which is always present in the air; so

that all the chemical elements of which wine consists were already in the house. But, how the water suddenly turned to wine at the will of Jesus, is surely not made more intelligible to us by the fact that the chemical elements of the wine were already at hand; although, at the same time, it is not to be denied that some reference to the natural surroundings of a miracle has generally a bearing of its own.

It is not, however, our business to discuss single miracles of Jesus. Our task is to investigate the attitude of Science towards the miraculous narratives in the life of Jesus. If we can lay down a general principle, controlling this attitude, we are saved any inquiry into individual instances. Now, we have already (p. 199 f.) paved the way for such a general principle, by proving that the thought of an interruption of the laws of Nature was remote from the religious and biblical conception of miracles, and that this conception is disposed to rank ordinary and extraordinary occurrences alike under the category of miracle.

On this view, Science has no occasion to deny historical and religious inquiry the right of discussing the question whether Jesus performed miracles in

the narrower sense, or to monopolise such inquiries. The decision for or against faith in miracles is arrived at, not in the sphere of natural science, but in metaphysics, and in consequence of our general view of the universe. For any one who completely denies purpose in the world or the Existence and Sovereignty of an Almighty Power and a Supreme Intelligence, there can be no miracle at all. But whoever affirms both, for him the whole world is full of wonders; and whenever a man admits that these purposes of life are not yet achieved, but are only in process of being worked out, it becomes self-evident that new incidents in life, which refer to such processes and purposes, *i.e.* miracles in the narrower sense, have happened and can still happen. The deeper a man's mind, the less will it be shackled by ideas of any arbitrariness in God's so-called method of originating miracles or of revising His own works; and miracles (in a narrower sense) of whose reality he is convinced, will appear in ever closer connection with those aims towards which God is leading man and the Universe. It is necessary to say this; for not only may faith in miracles, if uncontrolled by thought, lead to serious errors,

but one often reads and hears that for those who believe in miracles God must always be correcting His own work, or that He acts according to caprice and arbitrary choice.

Finally, the answer to the question, how did Jesus Himself regard His own miracles, may also show the wide outlook on things which His miracles open before us. Before Jesus performed His first miracle, He had the consciousness of possessing the gift of miracles, not in order to use it for personal ends, but to bring about the speedy coming of the Kingdom of God. This is shown us by the story of the temptation, which occurs in the period between His Baptism by John the Baptist and His entrance upon the public ministry. *Pity* for the physical and mental needs of those who turned to Him for help, caused Him at first and most frequently to perform a miracle; next to that, *the perception of a faith* on the part of suppliants which He sought to raise to some higher level by granting their request. The Kingdom of God, which He was conscious of heralding, had its complete realisation for Him, not only in removing the feeling of distance from God and annulling the moral woes of man, but also in

liberating men from evil and death, and in a perfect transfiguration and re-creation of the world, where sin, evil, and death would have no more place, but where the purpose of God for men would be for ever attained. From this point of view, the miracles of Jesus were to Him, as they are still to us, prophetic deeds by which He who inaugurated the Heavenly Kingdom guaranteed its final and eternal perfection at the very moment of its establishment.

3. The Resurrection of Jesus

The question of the resurrection of Jesus alone remains. In discussing it we touch on the one hand one of the central foundations of the Christian certainty of salvation, and on the other we raise one point where Science would have had the right and duty to contradict the fact in question, did not Jesus in His Person, as in His career, stand out unique among men, and were not the proofs of the reality of His Resurrection of overpowering weight.

To begin with, there is one proven historical fact, sublime and indubitable, *viz.* that all the preaching of that Gospel with which the apostles

and their co-workers and successors went to the world, culminated in the proclamation of two facts as the foundation of man's assurance of salvation: Jesus Christ, the Son of God Our Lord and Master, *has died, and is risen again for us*. By this they did not mean the beginning of another and a blessed life after death, as was the hope for all who had lived a holy life. No missionary or martyr zeal could they have drawn from that. What they understood by the Resurrection was the real and complete victory over death which Jesus gained on Good Friday by His innocence and voluntary obedience to the will of His Heavenly Father, a victory which consisted in the revivifying of His dead body to a glorified and heavenly existence which was for ever safe from mortality, a victory in which Jesus showed Himself the conqueror of all that is called sin and death, Lord of the Kingdom of Heaven, one Who gives His Holy Spirit to those who believe on Him, and one Who is with them always even unto the end of the world, directing the Kingdom of God to its final perfecting.

The success which attended this preaching of a Gospel in which the proclamation of the Resur-

rection of Jesus, side by side with the proclamation of His Crucifixion, formed the central point, has been of unparalleled significance in the history of mankind. Hitherto, indeed, it has penetrated with success only to one third of mankind, but still with unabated, and in fact increasing impetus, it continues its missionary activity throughout the world. Despite the horrors which illegitimate appeals to religion and Christianity produced ere long within their national life, the nations which accepted Christianity have attained the highest level of civilisation on earth. And millions upon millions of individuals who have truly and inwardly appropriated Christianity, are thereby endowed with the forgiveness of sins, sonship towards God, and eternal life—a veritable treasure of spiritual blessing, which is allied to an ever-increasing moral power and purity and activity, such as no other religion that has ever appeared in the world offers to its adherents. Here, if anywhere, are Jesus's words valid: " By their fruits ye shall know them ". In face of this noblest and most precious of all fruits on the tree of mankind, the vital growth of the gospel of Jesus's Death and Resurrection, we are entitled to ask: *Is this faith of the disciples*

in the Resurrection of Jesus founded on real historical fact, on the real awakening of Jesus from the grave, in the sense in which we have already defined it ?

At the outset, we must premise that the Resurrection of Jesus is not such a generally recognised fact as the murder of Julius Cæsar, or the battle of Leipzig. We cannot and must not expect that, when we consider the way in which God generally reveals Himself and His salvation to mankind. We have already had occasion to refer to the fact that in all the crucial questions of life, God is either a hidden or a revealed God, according to man's attitude to Him. The recognition of God and of His saving work cannot be the logical result of observations which man could not deny, even if he wished to; it must be a free ethical act of the inner man,—of the soul. If this act is accomplished, then man sees himself surrounded by revelations of God and by proofs that his faith is true. But any one who chooses to refuse to recognise God and His work of salvation, is at liberty to do so; he can give reasons for it, and, if he has the necessary mental equipment, he can build these up into a regular scientific system. The latter process, *e.g.* in reference to the question of

the Resurrection, has been followed by Strauss in his two versions of *The Life of Jesus*, and in his *Old and New Faith*, which gives us his entire view of the world in compact compass. He does not shrink from summing up his results in the following words (second ed., p. 72 ff.). "Viewed historically, *i.e.*, when the vast effects of this faith are correlated with its utter baselessness, the story of the Resurrection may be described as a humbug in the history of the world." From any one who confesses to such a philosophy of history, which regards the greatest achievements of mankind as developed from a "historical humbug," we must part company, of course; he and we can have no common ground of understanding.

It was inevitable that the news of Jesus's Resurrection did not possess the same degree of certainty as, *e.g.*, the news of His crucifixion. The reason lies in the facts of the case. Death is a fate which all men experience; the Resurrection, as it is related of Jesus, is something which no one but He has experienced. His Death upon the cross was suffered openly before all the people; He was accused by the Jewish and condemned by the Roman authorities. But as risen from

the dead, He showed Himself only to His faithful ones and to these only at separate intervals. This difference also corresponds to a difference in the accounts of the Resurrection. The record of Jesus's death in the four gospels, all composed a considerable time after His death, is itself not absolutely identical. The gospels have their small points of divergence; even on the question of the day of His death the synoptic gospels (Matthew, Mark, and Luke, on account of their many similarities, are classed as such) do not agree with the Gospel of John. But these divergences would by no means justify a denial of the fact of the crucifixion of Jesus. The account of Jesus's resurrection permits, however, the possibility of such denial, though this, of course, involves great violence to the meaning and contents of the record, and heavy loss to the saving grace enjoyed by mankind, as well as to the intelligent understanding of history.

The oldest account of the resurrection of Jesus does not come from the gospels, but from the fifteenth chapter of the first epistle written by Paul (about the year 57 A.D.) to the Christian Church at Corinth, whose genuineness is beyond all question. The information of this letter has

this advantage over the gospels, that it goes farther back; it is an historical source of primary importance, because Paul received his news from real eye-witnesses of the appearances of the Risen One, who, at the time at which he wrote the letter, were for the most part living. The gospels, though composed later than the First Epistle to the Corinthians, have this advantage over it, that they give us vivid accounts of the appearances of the Risen One, whilst Paul gives only an enumeration, not an account. Yet on the score of its dependence upon real eye-witnesses of these appearances, this mere enumeration retains a value of its own.

The account given by Paul in 1 Corinthians xv. 3-8, runs in the main as follows: Christ died for our sins, was buried, rose again on the third day, was seen of Peter, then of the twelve, afterwards by more than 500 brethren at once, of whom the greater part at the time of the composition of this letter were still living, afterwards by James (probably the Lord's brother)—who though formerly unbelieving took a prominent part in the early Church, and is probably also the author of the Epistle of James—, then of all the Apostles,

perhaps a larger number than the twelve, or rather the eleven, known to us, since Judas had become a traitor. Finally he was seen by Paul himself. By this last appearance Paul can only have meant the appearance of Jesus in light on the road to Damascus.

From the circumstance that Paul expressly mentions the burial of Jesus and puts the burial and the resurrection "on the third day" close together, we must infer that according to the account which Paul gathered from the eye-witnesses, Jesus was seen alive on Easter Sunday and the grave found empty. When he mentions the appearance of the Risen Jesus to himself before Damascus, some years after the death of Jesus, in connection with the appearances of the Risen One in the year of His death, it does not follow, as some conclude, that all the appearances of Jesus were subjective visions, but *vice versa* that Paul, who was convinced that all the reported appearances of the Risen One were really objective events, did not look upon even the appearance before Damascus as merely a subjective vision due to the will and power of God. It was not upon the same level as, *e.g.*, the vision of the man from

Macedonia who called him (Acts xvi. 9) to Macedonia. Nay, he was persuaded that the Risen and ascended Jesus had personally appeared to him as formerly He had to the apostles.

Rather different from this report of Paul's are the accounts which the four Evangelists give of the Resurrection and His appearances; nor do they agree among themselves. I may assume that these are familiar to the reader, but I must group them according to their division in the four gospels if I am to make their mutual discrepancies clear. As the Gospel of Mark is probably the oldest, I begin with it.

According to the Gospel of Mark, which in its original form ceases with the eighth verse of the sixteenth chapter, the three women, Mary Magdalene, Mary the mother of James, and Salome came with spices to the grave, early in the morning, found the stone rolled away, and in the empty grave a youth in white apparel, who said to them, "Jesus is risen". They were to tell the disciples and Peter that Jesus would go before them to Galilee and that there they would see Him. They hastened forth and said nothing to any one for they were afraid.

Verses 9-20, which are wanting in the oldest manuscript, are probably a later addition. They relate that when Jesus had risen from the dead early on Easter Sunday, He appeared first to Mary Magdalene. She told His disciples, but they did not believe her. Afterwards He revealed Himself in another form to two who were walking in the country. These told others, but they too believed them not. Finally as the eleven sat at table He revealed Himself to them, upbraided them for their unbelief, ordered them to preach the Gospel to every creature and to baptise, and promised the believers miraculous gifts; then the Lord, after He had spoken with them, was taken up to Heaven to sit at the Right Hand of God. Of the place and time of this last appearance nothing is said.

According to the Gospel of Matthew, Mary Magdalene and the other Mary came on Easter morning to the grave. An earthquake occurred, the angel of the Lord came down from Heaven, rolled away the stone from the door of the grave, and sat upon it. The keepers of the grave fell down fainting. The angel announced to the women that Jesus was risen, and that they should

tell His disciples that Jesus would go before them into Galilee, where they would see Him. Now as the women hastened forth to tell it to His disciples, Jesus met and greeted them. They fell down and embraced His feet. Then Jesus said, " Be not afraid: go tell My brethren that they go into Galilee, and there shall they see Me. . . . Then the eleven disciples went away into Galilee, into a mountain where Jesus had appointed them. And when they saw Him, they worshipped Him: but some doubted. And Jesus came and spake unto them, saying, All power is given unto Me in Heaven and in Earth. Go ye therefore, and make disciples of all nations, baptising them in the name of the Father, the Son, and of the Holy Ghost; teaching them to observe all things whatsoever I have commanded you: and, lo, I am with you alway, even unto the end of the world, Amen."

According to Luke, Mary Magdalene, Joanna, Mary the mother of James, and others with them came early to the grave on Easter morning with spices, only to find the stone rolled away and the grave empty. Thereupon two men in shining garments stood by them, who told them of the

Resurrection of Jesus and reminded them of what He had told them. They now left the grave and related what had occurred to the disciples, but their words seemed to them as idle tales and they believed them not. Peter ran to the grave, saw the linen clothes laid by themselves, and departed, wondering in himself at that which was come to pass. The latter words are not to be found in all the manuscripts.

Now follows the very circumstantial account of the walk of the two disciples to Emmaus, to whom the Risen One joined Himself. When they returned to Jerusalem, in order to tell this to the eleven, they were met by these words: "The Lord is risen indeed and has appeared unto Simon". Then Jesus came into their midst saying, "Peace be unto you". "But they were terrified and affrighted and supposed that they had seen a spirit." Jesus allayed their fears and invited them to feel His hands and His feet and "while they yet believed not for joy and wondered, He said unto them, Have ye here any meat? And they gave Him a piece of a broiled fish and of an honeycomb. And He took it and did eat before them. Thereafter

He opened their understanding that they might understand the Scriptures, and said unto them, Thus it is written, and thus it behoved Christ to suffer, and to rise from the dead the third day: and that repentance and remission of sins should be preached in His name among all nations, beginning at Jerusalem: . . . but tarry ye in Jerusalem, until ye be endued with power from on high. Then He led them out as far as to Bethany; and He lifted up His hands, and blessed them. And it came to pass, while He blessed them, He was parted from them, and carried up into heaven."

The Gospel of John was perhaps written last of all; but its report of the resurrection of Jesus contains a peculiar amount of suggestive detail, and some narratives that are quite wanting in the three synoptics. The gospel is denied by most scholars to be the work of the Apostle John. If they are right, the obvious course is to attribute these more concrete and novel traits to the pious fancy of tradition. But since so thorough and well-informed a scholar as Beyschlag maintains, on weighty grounds, the high probability that the Apostle John himself really wrote the gospel in his advanced age, we must consider it possible that

Beyschlag is right. In that event, the accounts given by John naturally assume quite a different significance. It is an ear and eye witness of the highest authority, who in part corroborates, in part completes, and in part corrects what the synoptists related.

According to John, Mary Magdalene came early on the morning of Easter Sunday, found the stone rolled away, and the grave empty; and then ran to Peter and John and complained to them: "They have taken away the Lord from the grave, and we know not where they have laid Him". The two disciples went to the grave, found it empty, saw only the linen clothes and the napkin that was about His head, and went away home. Mary now returned and stood weeping at the sepulchre, when she saw two angels within who spoke to her sympathetically. As she looked back she saw Jesus standing and at first supposed Him to be the gardener, but recognised Him when He addressed her with the word "Mary!" Then He said to her "Touch Me not; for I am not yet ascended to My Father: but go to My brethren, and say unto them, I ascend unto My Father, and your Father; and to My God, and your God".

Mary now went and told the disciples. On the evening of the same Easter Sunday, when the disciples were gathered together and the doors were shut for fear of the Jews, Jesus came into their midst saying, "Peace be unto you," showed them His hands and feet and side, and said to them, "As the Father hath sent Me, even so send I you". Then He breathed on them and gave them the Holy Spirit for the remission or retention of sins. Thomas was not with them, and he refused to believe what his fellow apostles related, unless he could lay his finger in the print of the nails and the side of Jesus. After eight days the disciples were again gathered together, and Thomas with them. Then Jesus came again, the doors being shut and said, "Peace be unto you," let Thomas lay his hands in the print of the nails and in His side, and upbraided him for his unbelief. And Thomas answered and said, "My Lord and my God!" In a supplement, chapter xxi. tells of the appearance of Jesus to seven disciples, among them Peter and John on the lake of Genesareth, of the plentiful draught of fishes, of Peter's re-establishment in his apostleship, and of the prophecies of Jesus about the future of Peter and John.

These are in essence the contents of the biblical record of the Resurrection of Jesus and His different appearances. Their differences, together with the abruptness and variety of the appearances of Jesus, and their distribution over Jerusalem and its environs and Galilee, together with the different intervals of time between the events and their record, are at first sight far from surprising. Any one would allow that such discrepancies in the accounts were not inexplicable; he would be persuaded that from these different reports some sequence of events could quite well be inferred, in which each of the narratives would find its place, with slight modifications, of course, here and there. He would think so, if the events related were analogous to the rest of human experience. But this is not the case. These stories are a report of something that stands in contradiction to the fate of all other men; they describe the change of a dead man's body into a new and glorified one, no longer subject to death. This contradiction of all experience has elicited attempts to explain the appearances of Jesus after His death, without denying the corruption of His body.

For a long time the so-called hypothesis of

"vision" was the only attempt of this class. The recorded appearances of the Risen One were traced to visions, *i.e.*, to a subjective experience of the human soul, leaving it an open question whether the thing seen is only an involuntary product of the soul that sees, or is occasioned by something objective in the unseen world. Every one, on this hypothesis, would have the choice, according to his mental standpoint, of either the former or the latter interpretation of the vision. Scientists who reject a belief in the resurrection of Jesus's body, have recently begun to emphasise the objective reality of His appearances to such a degree that their view goes far beyond the conception of "vision" in ordinary terminology. This is done with the view of discarding the Resurrection of Jesus's body but at the same time of holding fast by a glorified Heavenly existence, together with the *reality of Jesus's continued existence* after His crucifixion, the *reality of His appearances to the disciples*, and the *reality of His continuous personal influence* upon the kingdom of God, of which He is the abiding Head.

The need for this has been expressed with especial warmth and depth in some lectures by

Rev. Rudolf Otto on the *Life and Work of Jesus, according to Historical Criticism* (Göttingen, Vandenhoeck & Rupprecht, first ed., 1902). The aspects which fall to be considered under the problem of the bodily resurrection of Jesus Christ, are ably and clearly presented by Max Reischle in the weekly journal *Die Christliche Welt* (No. 1, 4th Jan., 1900). The same journal contains in No. 23, 8th June, 1905, a highly readable attempt at a solution in this direction by Gustav Wepfer: "The Appearances of the Risen Lord Regarded from the Standpoint of Scientific Psychological". According to Wepfer, the Risen Christ, in purely spiritual form, entered into communication with the spirit of the disciples, in whose soul, without any co-operation of ether vibrations or air-waves, without the mediation of any physical apparatus of sight and hearing, and without the co-operation of their material nerve apparatus, the very same sensations of seeing and hearing arose as were wont to appear under ordinary circumstances in their souls by the impressions of the material and outward world upon their senses and nervous system. In consequence of this spiritual connection of the Risen One with

the quickened souls of His disciples, they really saw with their *mental* eye the sublime and gracious *form* of their Saviour, and really heard the well-known sound of His voice with their *mental* ear. But, as they could not comprehend in a correct scientific way, the peculiar seat and substance of these experiences, they *could not but hdve* the firm, immovable conviction that they had really seen their Lord and Saviour with their own eyes, and had heard Him speak with their own ears.

This solution, however, like the attempt made by the hypothesis of "vision," is impossible without some *historical tour de force*, to which, in the case of the hypothesis of vision, a *psychological tour de force* must be added.

The *historical tour de force* consists in this, that one must set aside the empty grave. For all attempts to give a natural explanation of the empty grave, whether on the ground that the disciples secretly put away the body (see Matt. xxviii. 13) in order afterwards to be able to say that Jesus was risen, or on the supposition that the Crucified was only apparently dead and woke again in the coolness of the grave, from which He went to His disciples—all such are too

monstrous to deserve serious refutation. In order to be able to set aside the accounts of the empty grave as unhistorical, Weizsäcker in his *Apostolic Age*, and Professor Arnold Meyer, who enters into more detail, in his *Resurrection of Christ* (Tübingen, Mohr, 1905), make all the disciples—in contradiction to the gospel narratives—flee to Galilee after the crucifixion; hence all the appearances of Jesus take place in Galilee. Thus there would certainly be no immediate occasion for going to see the grave and corpse of Jesus. But though we ignore what is said about the women and disciples going to the grave, the words of Paul in 1 Corinthians xv. 4 cannot be ignored, according to which Jesus rose on the third day, *i.e.*, after the ancient reckoning, on Easter Sunday. This implies that He must have been seen by the disciples on that day. Now even had they fled ever so quickly, they could not have reached Galilee in time for Jesus to have appeared to them there on Easter Sunday. Besides, the assertion that the disciples immediately fled after Jesus was crucified, has no historical, much less any psychological, basis. In Matthew and Mark there is the contrary assertion of the message

given by the angels to the women, that "they were to go before Him into Galilee". If the flight of the disciples to Galilee had begun on the evening of Good Friday the message ought to have run, "Jesus will follow you into Galilee".

But, great as is the *historical tour de force* in the vision "hypothesis," the *psychological tour de force* is just as great. In order to explain the dismay of the disciples after the Crucifixion of their Master, with its rapid and sudden change into a state of mind which caused the Crucified to appear as the Risen One, one is obliged to have recourse to a very complicated and well-nigh incredible historical reconstruction. But when we further find that not only the gospels, but also Paul (in 1 Corinthians xv.), report that Jesus appeared several times, once indeed to more than 500 persons at once; when we learn that Jesus spoke with them, and gave them orders—then *objective* appearances of the Risen One are the sole adequate basis for understanding how the Apostles came to be conscious of having received such commands, or how they carried them out with so conspicuous and epoch-making a success.

Moreover there is the fact that Christendom

changed its day of rest from Saturday to Sunday. This innovation, so momentous in the history of religion, is most simply explained by the further fact that it was on Easter Sunday that the disciples saw the Risen One first, and therefore that from the very outset they made Sunday, as the "Lord's Day," a "Day of Rest" as well as of assembling together. As Jews, they still kept the Sabbath, so they had two days of rest in the week of seven days. But this could not long continue; one of the rest-days had to be given up. After the experience of the Resurrection of their Lord, they had no longer any doubt which they would decide upon —the Sabbath had to give place to the "Lord's Day"—the *last* day to the *first* day of the week.

One fact which we must admit, and for which we also must try to find some explanation, is that many earnest and esteemed Christians oppose belief in the *bodily resurrection* of Jesus from the grave. In addition to the above-named scholars we must reckon, among others, the eminent and in many respects pioneering theologian, Adolf Harnack, in this class. He says, in *What is Christianity?* "If the resurrection of Jesus means nothing else than the resuscitation of a dead body

of flesh and blood, we should make short work of such a tradition".

There seem to me to be two tendencies which combine to make the Resurrection of the body of Jesus to a new and glorified heavenly life, impossible and therefore unhistorical. One is the conviction of the *inviolability of the laws of Nature;* the other, the tendency which has been prominent for about a century, to dwell on *the human rather than on the Divine side of the nature of Jesus.*

As regards the latter, in connection with the more anthropological side of our Christology, it must be admitted that, for about seventeen centuries after the rise of Christianity, the Divine side of Jesus was studied to the detriment of the human in too one-sided a fashion; there is ample justification nowadays, therefore, for the increasing emphasis on, and study of, His humanity. Not only our historical knowledge, but also our piety, cannot fail to profit by this. The latter has already derived unspeakable advantage from this movement, and will continue to do so. But the advent of a new tendency, which is perfectly justifiable in itself, involves a danger of precipitancy. Many writers seem to me to be exposed

to this peril, inasmuch as they now emphasise the human side of Jesus in a one-sided fashion, relegating the unique and divine element to the background, if they do not ignore it altogether.

As soon as one places Jesus unreservedly in the ranks of other men, even if one names Him the greatest religious genius that has ever appeared, it is perfectly plain that one must allow Him to have shared the fate of death and corruption common to all men. But as soon as one does, as Christendom has rightly done till now, though occasionally with an exaggerated emphasis on metaphysical definitions of the Divine Essence of Jesus; I mean, as soon as one sees in Jesus some One unique, One Who alone could inaugurate a new and higher stage of existence for humanity, One Who brings reconciliation with God, Redemption from Sin and Death, Sonship with God, and Eternal Life—then one has no right to deny facts that are related of Him in a trustworthy manner, because they do not agree with the life and experience of other men. For Jesus, although a true Man, is "Son of God" uniquely, as He is unique in His humanity, not isolated thereby from the rest of men, but the Representative of true humanity, as

it should be, the Head of a new and regenerate humanity, the Head of the children of God in the Kingdom of God which He has Himself founded.

The inviolability of the laws of Nature remains valid even for those who believe in the Resurrection of Jesus, not only in the sense that, so long as the present course of the world lasts, the law of death and corruption holds good for all other men, but also in the sense that, even in what happened to Jesus at His Resurrection, *the law of the conservation of energy and matter* has not been put aside; what He experienced was a new and hitherto non-existent revelation of enormous import for the future of mankind and of the universe. For Jesus, when raised to a glorified existence, experienced exactly what the whole Creation will experience when it is changed from its transient and vain estate, as the Bible calls it, to the state of glory.

The theological tendency which doubts or denies the bodily Resurrection of Jesus, does appear at first sight to have gained the upper hand in our own day; but it will certainly be replaced by a tendency of thought which returns to the affirmation of the Easter message in the full sense in which it

has been proclaimed and believed from the beginning. Christendom cannot long endure that impoverishment of its religious inheritance, which is involved in the deposition of Jesus from the uniqueness of His Divine Sonship. To-day, more than ever, it must decline such an impoverishment. For in addition to the old and by no means antiquated reasons for upholding the physical Resurrection of Jesus, the development of different views of the world (a development which is essentially due to the expansion of our knowledge of the universe and to modern speculation) has given rise to yet further reasons based on biblical and especially on Pauline ideas. The old reasons, which will always form an essential part of the basis for our Christian faith, are simply these: that the victory of Jesus over death is guaranteed, and our conviction of the Righteousness of God satisfied, only if Jesus in no way remained a prey to the death which He suffered innocently for our sakes. The new reasons are these, that the bodily Resurrection of Jesus throws a new light on the whole course of the world. It guarantees for us a future glorification of the world in a new existence, in which what is to-day imperfect, and apparently purposeless,

finds its solution, in which the riddle of the universe is solved, in which the universe finds a goal. Even the old question why good and evil exist in the world—a question unsolved at the advent of Jesus—finds a satisfying answer in Jesus's physical Resurrection. That death and evil—so far as one can speak of these in the psychological qualities of the animal world which formed the preliminary stage of the human,—were in the world before the appearance of man, geology has proved beyond all question. The idea that through the Fall of the first human pair death and evil *came* into the universe, has long been abandoned by theologians; their support of it was simply due to ignorance of the results of Natural Science and a wrong exegesis of Romans v. 12. In this passage we read: "By one man sin entered into the world, and death by sin". We usually take for granted that "world" here means the same as universe, whereas, according to the whole context, "world" only means humanity. On all these problems the Resurrection of Jesus and its consequences throw an illuminating light. We now see that the whole present course of the universe, with its law of struggle, evolution, and death—a law to which

everything is subject—forms only a preliminary stage of some higher and perfect existence in which death and evil have no place. Paul puts this (in Romans viii. 20) briefly in words of unsurpassable wealth: "The creature was made subject to vanity, not willingly, but by reason of Him who subjected the same *in hope*". On this view, the whole universe, as it now exists, is based on a plan of hope, on something future, permanent, and perfect. Its present condition only reveals the preliminary stages of a goal yet to be attained, the way to which, a way on which we find ourselves, is one of evolution through struggle and transiency. Hence we can understand the existence of death and evil, and even the possibility and actual reality of wickedness in the world. It is all sown in *hope*, and the Resurrection of Jesus assures us that this hope has a foundation.

How rich and satisfying is the optimism of such a view of the world, as opposed to the naturalistic view! The latter only sees in the course of the world an eternal revolution, in which individual men and humanity, with all their achievements and experiences, appear as a wave in the sea,

which rises to vanish for ever. And more. The Christian view of the world comes into no collision with that of Natural Science. Science certainly has to investigate the natural side of all that happens or has happened in the world, and the narrative of the Resurrection of Jesus must so far fall within the range of scientific scrutiny, once it is related as fact in a trustworthy manner. But Science has no right to do more than scrutinise it. For in all the accounts of the Resurrection of Jesus, the details of the occurrence on its natural side are wanting; in fact, this beginning of a new order of being is veiled in the same obscurity as are all beginnings of life. And we have shown already that, on the question of the uniqueness of Jesus, Science cannot raise any objections, provided that the unique experiences of this unique personality are recorded in a trustworthy fashion.

But religion as well as Science has reason to confess the limitations of its knowledge, and to abide by these limitations. Certain as the Resurrection of Jesus has made us that our hopes concerning our own personality, humanity, and the whole universe will be fulfilled, the problem of the time and method of this fulfilment is

enveloped in a scarcely transparent veil, and only unsubstantial forms would emerge if we sought to lift it in our own strength. Better for us to rest content with the hopeful prospect we enjoy! Better, meantime, to execute the tasks that God has appointed to us here below, till for us too the veil is taken away.

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