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CREATION AND EVOLUTION

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The book of Prof. Dr. J. <sup>an</sup> LEVER, entitled "Creation and Evolution" (1956), which appeared in an excellent English translation from the hand of Dr. P. G. Berkhout in June last year, is at present among the most discussed works in Reformed theological circles, both here and abroad, in the sphere of the relation between faith and science. This fact alone already proves its importance, insofar as it penetrates deeply into theological problematics. Yet it was certainly not written from a theological point of view. The writer is professor of zoology, specialising in morphology, at the Free University of Amsterdam. In his preface he accounts as follows for the purpose of his work:

"The problem of how the Christian should approach the origin of organisms in connection with the present state of investigation in the field of natural science has already set many a pen in motion. The opinions which have been launched from orthodox quarters on this subject during the last fifty years were, almost without exception, variations on fundamentalistic and supra-naturalistic themes. This meant that everyone who could not agree with these views in every respect, was often warned that he was on the wrong road and permitted himself to be influenced too much by the quasi-certainties of natural science. On studying the history of the Christian attitude towards the problem of origin, however, one comes to the surprising discovery that both the fundamentalistic and the supra-naturalistic approaches themselves originated from too strong an orientation towards the quasi-certainties of natural science (of some centuries ago), so that they can certainly not be regarded as fundamentally Christian. The biologist who has become conscious of this, and who is nevertheless convinced that

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he must also live and think as a Christian when it comes to the important questions on origin, meaning and purpose of life, comes to the conclusion that there must be another way.

This book originated from the tension of this situation and is an attempt to find this new way."

This is not said by a theologian, but by a Christian biologist who wishes to be serious about the biblical starting-point of his scientific thinking. Precisely for this reason he takes a critical attitude towards theological interpretations of the divine revelation concerning creation in which, according to his opinion, the central religious meaning of this revelation is obscured because of the admixture of (outdated) natural-scientific conceptions. I shall not enter into the question whether he is being altogether fair towards the theological interpretations which he disputes by entitling them either fundamentalistic or supra-naturalistic. But it is a great step forward, in any case, that the author has broken in principle with the traditional theological confusion of creation with the process of genesis within the order of time, a confusion which has been increased undoubtedly under the influence of Greek philosophy and is largely responsible for the lack of insight into the true relation between the Word-revelation and scientific research. The Word-revelation concerning creation is not situated in the plane of scientifically ascertainable facts and scientific conceptions. It has an absolutely **CENTRAL**, religious meaning and stands, for that very reason, in relation to the **WHOLE** of empirical reality in the temporal order, so that, without it, we can never see that reality in its proper light.

This is, in brief, the trend of the first chapter under the title "The Bible and reality". This chapter can only be understood against the background of the Philosophy of the Cosmomic Idea, of which the author is a convinced adherent, which does not mean, of course, that he accepts its philosophical ideas as unassailable. No one who has truly understood this philosophy would do this, for that matter. One should

not hold it against the author that, in this connection, he has not expressly dealt with the cardinal point of the embodiment of the Word-revelation in historical facts within the order of time, through which these facts themselves form an integral part of this revelation under the aspect of faith. This is understood, by virtue of his Reformed biblical standpoint.

When he writes: "Consequently we can never derive from the Bible exact physical, astronomical and biological knowledge, and therefore no exact historical knowledge either, as this is simply not the purpose of the Bible", we should certainly not interpret this as if he e.g. holds that the facts of the salvation story as recorded in Holy Scripture are open to argument. His intention is merely to emphasise the fundamental difference between the theoretical scientific point of view and the concrete way in which Holy Scripture imparts such facts to us in the language of naive experience. The author justifiably takes for granted knowledge of the relevant elaborate expositions in the transcendental critique of scientific thought, as developed by the Philosophy of the Cosmomic Idea. That the creation as God's work cannot be a scientifically ascertainable "historical fact" within the temporal order, however, must be clear to anyone who has arrived at the Biblical insight that the temporal order with its historical aspect PRESUPPOSES creation. The "in the beginning", with which the book of Genesis commences, can therefore, itself never fall within this temporal order. The writer answers the question what should be understood by the six "days of creation" in the vein of the well-known "cadre theory", as it was developed in Reformed circles a.o. by Prof. Dr. N. J. Ridderbos.

#### CREATION AND THE TEMPORAL ORDER.

I do not regard this theory as completely satisfactory, and I pointed out recently in my treatise "The relation between Philosophy and Theology" which

appeared in the previous volume of this journal, that the religious relation, established in the decalogue between the six days of work and the "days of creation", is of essential significance, and that this significance can only be understood in the faith-aspect of time.

But the cadre concept, already defended by AUGUSTINE, may in any case be accepted in as far as it recognises, in its modern development, that God's acts of creation can never be set within an astronomical or geological concept of time and in essence transcend the entire temporal order.

#### CREATION AND THE TEMPORAL GENETICAL PROCESS.

Of the creation alone may it be said, according to Gen. 2:1, that it is COMPLETED. This can never be said of the genetical process in the temporal order. For this process is still going on; individual men, animals, plants, etc. are formed, and this is not a temporal CONTINUATION of God's work of creation, but only a CONSEQUENCE, <sup>a</sup> within the order of time, of the completed creation.

A tremendous period preceded the forming of the individual created things and beings within a cosmos already developed in its basic structures, a period in which these basic structures have realized themselves in a, since then closed, process of successive cosmic evolution. But this primeval process of cosmic evolution was merely the elaboration of God's completed work of creation within the temporal order, which only brings to successive expression, in a rich diversity of modal aspects and typical structures of individuality, creation's order which God has established.

An example of the un-biblical views theology was able to adopt as soon as it lost sight of this fundamental difference between creation and temporal genet-

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<sup>a</sup> development: elaboration (uitwerking).

ic process may be seen in the renowned psycho-creationistic theory, which states that God still creates the "rational, immortal soul" in the human body during its temporal process of development and that only this gives it its human essence. Here we may ask the sensible question at which moment this creation takes place. Gen. 2:7 does not deal with man's CREATION but speaks in an anthropomorphic way about God's dealing with his BECOMING on earth;<sup>1</sup> but it has been explained in this psycho-creationistic sense, negating the clear statement at the commencement of this chapter.

Under the influence of the dualistic form-matter motive of Greek philosophy the centrally religious meaning of the biblical creation-motive had been lost sight of. For how could man BECOME a "living soul" within the order of time if God IN THE BEGINNING had not spoken His creating word which called the whole of mankind in its totality, represented in its progenitors, into being, a being which would only DEVELOP itself in the temporal genetic process? Or does one think that the completion of man's creation only refers to two human individuals and that their descendants were not included in God's completed work of creation? But the first people who appeared on earth within the temporal world were also subject to the process of physical formation of which Gen. 2:7 speaks, and in which they BECAME "living souls" because God "breathed the breath of life" into them. However such formation is a consequence of God's word of creation, it is in itself not creation but the giving of form to material which already existed in the temporal order and, in turn, had come into existence through the divine word of creation, as had also the

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<sup>1</sup>"and man became a living soul". This statement speaks clearly of man's becoming a temporally living being. MAN'S becoming a living being supposes that man had already been created. Man already stood before God through the Word that called him into being.

"breath of life".

In other words, creation comprehends man in his totality, in his central dependence on God, bearing the image of his divine Origin; formation and receiving the breath of life is the consequence of God's creative work in the temporal genetic process, in accordance with the dispositions and structures which God has laid down in the temporal order. Creation itself surpasses all human understanding and all human imagination, because it is not a temporal happening but God's work "in the beginning".<sup>2</sup>

This entire temporal order, together with the entire genetic process which was to take place within it, was undoubtedly comprised in creation, but only as CREATURELY RESULT of God's completed work of creation. This work of creation is not, conversely, comprised in the creaturely order of the temporal genetic process. We may never use the fact that God's work of creation is revealed to us in Holy Scripture in language which is human and bound to the creaturely order of time, as an argument for the conclusion that the work of creation itself took place in the creaturely temporal order. The revelation CONCERNING creation

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<sup>2</sup>One should therefore guard against the speculative conception of seeing the calling into being through God's Word as a pre-existence in idea of the created things in God's mind. This, too, is an invalid attempt of human thinking to penetrate into the secrecy of God's work of creation. Our thinking is tied to the temporal order and is therefore only able to approach creation's order in the temporal structures which can only be DIRECTED towards the Divine Origin of all things in the religious concentration of the believing heart. For this reason our transcendental idea of creation is merely an IDEA OF TIME, directed towards the Divine Origin by the central creation-motive of God's Word. It has no METAPHYSICAL-ONTOLOGICAL significance, as in "natural theology", but its meaning is fulfilled only in the CENTRAL-RELIGIOUS MEANING of the REVELATION CREATIONIS.

may not be identified with creation. This revelation is primarily directed to the human heart, the religious centre of our existence, in which God has placed "eternity",<sup>3</sup> and in which, by the work of His Spirit,

<sup>3</sup>The theological exegeses of this text (Ecc. 3:11) which translate "the times" or "history" or "the world" instead of "eternity", deprive it of its central-religious meaning; just as the well-known text in Proverbs: "Out of the heart are the issues of LIFE", in consequence of a certain theological exegesis, lost its central-religious meaning, when the heart came to be understood as "seat of feeling". If it only concerns "history", it does not matter if the expression "heart" in the first mentioned text is replaced by "historic consciousness" or, according to an older scholastic view, by "human reason" or "human thinking". But there is definitely no sense in putting "the times" or "history" instead of "eternity" if one maintains, as SPIER does in his book Tijd en Eeuwigheid, that the word "heart" is meant here in the sense of RELIGIOUS CENTRE OF HUMAN EXISTENCE. For it is in man's heart that "history" in its temporal sense must get its CONCENTRATION ON GOD'S ETERNAL PLAN OF SALVATION. Without this concentration, history remains a temporal process that is not in any way directed towards that which transcends time, unless towards an eternity-IDOL in the sense of the "idea" which unfolds itself dialectically. But how can the "heart", in the above mentioned sense, function as RELIGIOUS CONCENTRATION-POINT OF HISTORY if it were entirely contained "within time"? The introduction of a "religious time" is of no avail here, because the religious concentration precisely implies a central relation between the human I and eternal God, which can never merge into time. It is moreover hard to see how such a religious time could be anything else than what is called the faith aspect of time in the Philosophy of the Cosmologic Idea. As regards its possible SENSE, the term "religious time" remains highly problematical.

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all temporal happenings are seen in central relation to Him. But this revelation also enters the temporal horizon of our experience and speaks within the temporal order to man's faith. WITHIN the temporal order the Word-revelation often speaks about God Himself in temporal terms, but that does not mean that God and His acts of creation are contained within that time.

I therefore believe that J. M. SPIER is mistaken when he, in his critical discussion of LEVER's book,<sup>4</sup> thinks that he does more justice to the "creation story" by assuming "three kinds of divine creative activity", viz. creative CALLING, creative ORDERING and creative PROVIDING. The former was meant in Gen. 1:1 and had taken place before and above all time. The creative calling into existence of heaven and earth "did not take up any time. The result of the calling is simultaneous with this divine calling." THEREAFTER - for now that the cosmos and time has been created with it is it possible, according to him, to speak in terms of time - followed, in God's dealing with his creation, the creative ordering of the cosmos, which has been described anthropomorphically for us from Gen. 1:2 onwards. Now, according to SPIER, "God takes time to fill the primary cosmos, which at first was still "empty", with concrete creatures and to relate those creatures one to the other and to combine them to a beautiful whole". Although in the primary creation some aspects and structures had already been given, now God creates periodically new aspects and new structures, not just as POSSIBILITIES which would have to await their providential unfolding, but realized in concrete creatures and structures of individuality. And after the completion of this creative ordering the last of God's creative activities was to begin, viz. his creative providing, or providence, which now extends over the totality of created things.

This threefold theological differentiation in God's creative activity leads us - surely against

<sup>4</sup>Over het creationisme van Dr. J. Lever (Bezingning, 13<sup>e</sup> jrg.1958, No. 1, p. 44.)

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SPIER's intention - again into the centre of a way of thinking in which the central meaning of the revelation concerning creation is derogated and also a new attempt is made to interpret the "days of creation" as "periods" (the "periodical creative ordering" in SPIER's sense). It comes in conflict with the text of Genesis I, in which God's creative calling into existence is emphatically related to all six "days of creation". With his differentiations the writer entangles himself in contradictions which should have warned him that he was on a wrong track. On the one hand, alluding to Genesis 1:1, he says that the result of God's creative calling into existence is SIMULTANEOUS with the calling; what he intended to argue, though, was that the creation of heaven and earth took place OUTSIDE and ABOVE time "in the beginning". On the other hand he declares that the six words of creation, recorded from Gen. 1:2 on, do not imply creative "calling", but "ordering", and that God "took time" for that purpose, and created periodically in the time. Does this mean then that God's "creative ordering" and its results are not simultaneous? Or does he want us to assume simultaneity here as well? In both cases God's word of creation is deemed to be subject to definitions of time which are of a creaturely order, and we come dangerously close to the un-biblical notion that God, in speaking the six words of creation, really acted merely as a Greek Demiurge, as "Organiser".

This, of course, is not SPIER's intention at all, and he wished to cut this conclusion off in advance by speaking of CREATIVE ordering. But by opposing this creative ordering to "creative calling," and to "creative providing" (contrary to the clear wording of Gen. I), the integral and central meaning of the revelation concerning creation is lost, and we are back on the track of a scholastic way of thinking which used to try to accommodate the Greek view to the ecclesiastical doctrine of creation. God's work of creation and its creaturely result are not of the same order, consequently they cannot have a creaturely definition of time in common. The confession of the essential

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difference between Creator and creature will, in my opinion, stand or fall with the distinction between creation and temporal creaturely genesis. And SPIER, after all, wishes to maintain this essential difference to the full.

#### THE CENTRAL RELIGIOUS MEANING OF THE REVELATION CONCERNING CREATION, AND SCIENTIFIC RESEARCH.

LEVER, in the first chapter of his book, has continued to build on this distinction, and from it he has drawn conclusions for the relation of the first chapter of Genesis to natural-scientific research.

Although the formulation of these conclusions is not always unambiguous and clear, there is no doubt that what LEVER MEANS to say gives evidence of a biblical-critical insight that may be called "liberating" indeed for biology and natural philosophy as practised from the Reformed point of view. It also means a call to renewed reflection for those theologians who cling to the traditional scholastic conceptions of Genesis I and II. It is far from Lever to treat these conceptions with hauteur. On the contrary, he shows that he fully understands the deeper intentions of the advocates of these conceptions, viz. to uphold unabridged what Holy Scripture reveals to us concerning creation. But the predominant question is whether the traditional interpretations of Genesis I and II have not just derogated the central and radical meaning of this revelation.

#### THE ANTI-NOMIES IN A CONCEPTION OF THE DAYS OF CREATION AS ASTRONOMICAL OR GEOLOGICAL PERIODS.

One should not forget that when God's work of creation, either wholly or partly, is conceived of as a successive series of TEMPORAL happenings, one becomes entangled immediately in the modal diversity of aspects which is inherent in the temporal order as a creaturely order. One can then no longer refer to

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that time-order in its integral and universal meaning, which also comprises the aspect of faith, but one is forced to suppose that the modal aspects of time themselves were only **CREATED** in the successive order of the six days of creation, and the latter must then have been of temporal duration. Before, within the temporal order, the first organic life came into being in living organisms on earth, that temporal order would therefore have had only the first four aspects. But within which aspect of time then did the creation of the succeeding aspects of time fall? By simply asking this question, the antinomies are already uncovered in which one becomes entangled by fixing the days of creation in theoretically abstracted aspects of time.

That any attempt to determine them according to objective astronomical and geological measurements of time, either as days of twenty-four hours or as geological periods, is irreconcilable with the story of creation itself, is already evident because "seasons, days and years" are only established on the fourth "day of creation", so that "day of creation" cannot possibly mean day or period in the sense of duration of time. And any such attempt finally runs aground completely on the seventh day, the day of God's sabbath rest, every interpretation of which as a space of twenty-four hours or geological period would lead to blasphemy.

One can ask oneself if perhaps SPIER has meant the "time of creation" in the supra-modal sense of a so-called "religious time", a central dimension of cosmic time where, according to him, the "human ego" would be. But this conception of time, which he developed in his interesting book Eeuwigheid en Tijd (Eternity and Time) and which was apparently strongly influenced by VOLKELT's views concerning the inner time of the ego,<sup>5</sup> cannot possibly be taken into con-

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<sup>5</sup>When SPIER, in his above mentioned work, appeals to various Scripture texts in order to show the biblical foundation of his conception concerning re-

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sideration here, for SPIER expressly speaks of primeval time which was created together with the primary creation of heaven and earth and in which some aspects and structures had already been given. For that reason it was possible to speak about God's "creative ordering" in terms of time. Those terms of time can therefore, in SPIER's line of thought, only have a MODAL and TYPICAL STRUCTURAL character, and this emphasizes again that with such a conception the revelation concerning creation loses its central religious meaning and is scattered entirely in the modal and structural diversity of our temporal experiential horizon. As it appeared moreover that this conception is not in keeping with the text of Genesis I, even though the latter uses terms of time (the meaning of which can only be understood in faith), it is hardly possible to maintain that it does more justice to the "story of creation" than does LEVER's view.

In as far as these first two chapters of Genesis also speak of the genesis of the world and of man WITHIN THE TEMPORAL ORDER, as a RESULT of creation, they do not do this, as LEVER rightly observes, in a natural-scientific sense, but purely to reveal to us that it is God who takes care of the elaboration of his words of creation in the temporal order with the structural laws which He has enclosed therein. This implies that in no way any scientific conclusions can be drawn from the communications of Genesis in question, and that therefore the traditional confrontation of these communications with the SCIENTIFICALLY ASCERTAINED facts is on the wrong track. The facts which are revealed to us in the first two chapters of Genesis are of a different order than those which natural scientific research is able to bring to light.

(5 contd.) ligious time, it is no more convincing than his appeal to the words of Gen. I. to show that, according to Holy Scripture, God's "creative ordering" is subject to definitions of time. My remarks regarding the latter argument also apply to the former.

*Genesis I.*

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 It is said "incomplete" "revised" "some" "been" "estimated."

Precisely for that reason they are of central FUNDAMENTAL significance for this research.

THE TERMS "CREATIONISM" CAUSES CONFUSION.

Although I can generally agree with the point of view about the relation of creation and temporal process of development as LEVER has developed it in the first chapter of his book, I regard as less felicitous the term "creationism" with which he characterises this point of view as opposed to "evolutionism".

By "creationism" he means "every biological approach to the problem of origin which, starting from the central credo of the Christian Church, is prepared to confess also in science that God created this reality and daily guides all processes" (p. 26).

Although the words "starting from the central credo of the Christian Church" are obviously meant to prevent the isolation of the creation-motive in the author's starting-point, the term "creationism" remains in my opinion doubtful because it rather suggests this isolation and cannot express in any way the Reformed Christian starting-point of the author. Any such terms as "creationism", "theism", etc. are strongly tainted by a scholastic tradition of "natural theology" and can only create misunderstanding and confusion when used in a framework of thought which takes its bearings on the Philosophy of the Cosmogenic Idea.

In the second chapter of his book the writer gives a very interesting and absorbing critical-historical survey of the theories about "the origin of life". He dwells at some length on the conception of the so-called generatio spontanea, which holds that living organisms may originate spontaneously from lifeless matter. This theory, which was accepted from ARISTOTLE's time until well into the nineteenth century on the strength of apparently convincing experimental data, was finally refuted in 1862 by the investigations of PASTEUR into the origin of Infusoria. We see its revival, nevertheless, in classical evolutionism, when HAECKEL posits the theorem that all

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higher organisms have developed from so-called "monera", formless bits of living protoplasm which have originated through spontaneous generation.

EVOLUTIONISM, THE IDEA OF GENERATIO SPONTANEA, AND THE VIRUS-PROBLEM.

The would-be experimental confirmation of this hypothesis appeared to be based on an error and the "monera" were ruled out from scientific discussion, but in the twentieth century the generatio spontanea idea came up once again in a slightly different form in connection with the discovery of viruses. LEVER's opinion is, that the viruses cannot be considered in order to support the thesis that vegetable and animal organisms could have originated spontaneously from a kind of link between lifeless matter and living organisms, and the viruses themselves, in their turn, from absolutely lifeless matter. He bases this opinion on the three explanations for the origin of viruses which are most current and present and which all take as their starting-point that viruses owe their existence to the fact that living organisms have been present before then. This does not appear to be a strong argument to me, because these attempts at explanation are only hypotheses themselves.

Since we are unable to say anything with certainty about the origin of viruses, it would have been better, in my opinion, simply to state the fact that all processes of multiplication, assimilation, etc. of these causes of disease, which appear to have a certain similarity to processes of life, depend on a parasitic relation to living organisms and have never been shown independent of them. For this is sufficient to remove the factual basis from the evolutionist interpretation of these processes, as far as our present knowledge of the factual material goes.

THE EVOLUTIONISTS' POSITION OF THE PROBLEM REGARDING THE ORIGIN OF "LIFE" IS UNACCEPTABLE.

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I wish to draw particular attention now to the conclusion at which LEVER arrives on the basis of his historic survey about the development of the generatio spontanea idea; he writes:

The origin of organisms remained hidden from observation and research. This had two consequences: firstly, there was from now on no further talk about the origin of distinct organisms (frogs, Infusoria, monera), but about the origin of "life", a concept even more difficult to define than the monera! Secondly, the absence of data enabled world-views to influence scientific hypotheses with maximum boldness. (p. 42.)

It is regrettable that the writer did not immediately subject the positing of the problem concerning the origin of "life" to fundamental criticism, but for all practical purposes accepts it with only the reserve that "life" is a concept which is even more difficult to define than the monera.

In the introduction to the third chapter he writes: "Life on earth, however, does not exist as such, AT LEAST NOT NOWADAYS, but is only found in LIVING ORGANISMS" (p. 59).

But what meaning can the question about the origin of "LIFE" have then? Not only NOWADAYS, but as far in the past as the palaeontological material of fossils reaches, organic life-functions were only present in living organisms. The oldest known fossils are those of algae. The debut of life on earth means therefore, if we stick to the data of experience, the first appearance of these living organisms.

What ever does one mean by the noun "life" as distinct from living organisms? We may say that our temporal experiential world has an ORGANIC LIFE-ASPECT, but this is not a concrete WHAT, but a fundamental experiential and empirical MODE of existence which cannot be identified with any living "something". A "living organism" is a typical totality-structure, QUALIFIED by the organic life-aspect, but in which this aspect is revealed on IN INFRANGIBLE COHERENCE WITH OTHERS. It is not possible that, within our time-horizon, any living being should exist or

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have existed that has MERGED\* in its biotic ASPECT. This is impossible because of the modal structure of this aspect, which refers back in its retrocipating or retrospective analogous moments to all earlier ranking aspects, and therefore PRESUPPOSES them.

In modern biology and philosophy of organic nature, however, the term "life" is never used in the sense of a modal aspect of our temporal horizon of experience, but in the sense of a concrete phenomenon, a SOMETHING. It would depend entirely on the speculative view of reality that was used as a starting-point whether by this "something" a complex protein structure was meant, or an invisible entelechy, an immaterial substance which has a controlling influence upon a mechanical constellation of matter, or a vital force, or a so-called bio-molecule, a "protomeries", etc. In the Neovitalist sphere of thought (DRIESCH) one spoke of "life" in the phylogenetical sense as of a "supra-individual substance" which has no origin in time, and all visible individual organic forms are merely its materialized products. And in modern sociology FR. OPPENHEIMER<sup>6</sup> joined in this conception and argued that human society is only a branch of this one immortal substance "life".

Neovitalist  
materialized

#### THE TERMINOLOGICAL CONFUSION IN LEVER'S THREE HYPOTHESES CONCERNING THE ORIGIN OF "LIFE".

Because he adopts the term "life" in its plurality of meanings, LEVER does not succeed in defining his point of view clearly ~~as against~~ other conceptions when he discusses the three possible answers which present-day Christian thinking may give to the question about the origin of "life", viz.:

1. primary life was created out of nothing;
2. a vital element was introduced into a certain

\* dissolved, evaporated (opgegaan).

<sup>6</sup>System der Soziologie, 2<sup>e</sup> Halbband (Jena, 1923) S. 443.

material construction, causing it to become alive;

3. the essence of the LIFE-ASPECT in the organism lies in its specific structurality which was created "in the beginning", and has been realised under God's continuous guidance in a series of processes which may seem improbable to us but were natural just the same, since it was given in creation as possibility (or necessity). (p. 57.)

The third conception, which he announces as his own solution, clearly starts from the view, developed in the Philosophy of the Cosmogenic Idea, that an organic life-aspect has been given in our temporal order of experience and in the temporal order of empirical reality, which is comprehended in the creation-order and which can only realize itself in living organisms.

But what is meant by "primary life", which, according to the view mentioned under 1, "was created out of nothing"?

Are not, according to the author's own recognition of the integral universal meaning of the revelation concerning the creation, all living organisms—therefore also the ones which first appeared on earth—an integral product of God's creative calling into being, and were they not therefore in that sense "created out of nothing"?<sup>7</sup> Or does he mean by "primary life" something different than the "first living organisms"? If so, what may that be? By rejecting out of hand, IN THIS WORDING, the conception mentioned under 1, a CONTRADICTION between creation and temporal genesis is suggested which is incorrect and, viewed from the author's own starting-point, untenable. This is certainly not LEVER's INTENTION, and it CANNOT

<sup>7</sup>Apart from that, the expression "creation out of nothing" cannot be recommended, and it has certainly not been derived from the Bible. The only explanation is the attempt to formulate metaphysically the fundamental difference between creation in the biblical sense and the Greek idea of a divine action which gives form to un-created "matter".

be his intention, after having stated the true relation between creation and temporal genesis so clearly in the first chapter. By the first conception, which he rejects, he probably meant the so-called "fundamentalist" point of view, discussed by him earlier and according to which it is clear from Genesis I that God created the living organism in such a way that He placed them ready-made, after their constant kind, on the earth or in the water. This is the theory of the so-called special creation, which in turn implies that God's work of creation took place within the time-order. KUYPER, in his well-known address on the question of evolution, already seriously doubted whether this theory is Scriptural. If it is thought out consistently it must, according to LEVER, lead either to the acceptance of the generatio spontanea (following on the words of Gen. I verse 11 and 12 and 24 and 25: "let the earth bring forth"), or, since this idea evidently does not fit in with what the fossil discoveries tell us about the successive appearance of many groups of organisms in flora and fauna, to the hypothesis that CONCRETE GERMS of these groups were created at first, which developed only much later. If one does not accept the latter view, "one lapses into the evolutionist idea that the newly appearing forms are descended from the existing ones, which would be contrary to the constancy of kinds". (p. 55.)

I doubt that the present-day THEOLOGICAL protagonists of the conception which is disputed here will feel "touched" by these arguments. Probably they will accept neither the generatio spontanea theory nor the doctrine of created "germs" of living beings, which was advocated by AUGUSTINE and was merely an attempt to adapt the stoic and neo-platonic conceptions on this matter to the church's doctrine of creation. For I do not believe that they will attach any importance to the results of palaeontological investigations in the face of what they consider to be the clear teaching of Holy Scripture on this point. Undoubtedly they would have a strong case if they had kept in mind that the facts of creation, revealed in Genesis I, are of a fundamentally different order than

the data which scientific investigations can bring to light. But exactly because they bring these facts into the plane of temporal creaturely events, the discordance between their idea of Gen. I and the fossil discoveries of palaeontology cannot be a matter of indifference to any Christian biologist who takes the radical biblical starting-point of his thinking seriously. For this discordance does not concern a conflict between the Word-revelation and an evolutionist theory which rejects creation, but scientifically ascertained FACTS which cannot possibly be subjected to rational doubt. And a conflict like this is always a strong indication that the theological conception concerned is on the wrong track.

In the conception mentioned under 2, LEVER takes "life" in the sense of a "vital element" that causes a certain constellation of matter to become alive. I do not know which ~~present-day~~ Christian conception <sup>the</sup> ~~writer~~ has in mind here. Does he perhaps mean a neo-Thomist conception? But this would never speak of "vital element", only of a PSYCHE as substantial form and entelechy of a material body. And it teaches only with respect to the human "anima rationalis", along psycho-creationist lines, that the soul as principle of life is still being created into the material body. On the other hand, ecclesiastical teaching does not forbid neo-Thomist biologists to accept the evolutionist doctrine in respect of plants and animals, according to which matter comes to life (and therefore, in the neo-Thomist frame of thought, becomes "animated" matter) as a result of a natural process of development.

#### LEVER'S THIRD HYPOTHESIS CONCERNING THE ORIGIN OF "LIFE".

The third conception, <sup>which he</sup> preferred <sup>5</sup> by ~~the~~ writer himself, ~~he~~ elucidates and elaborates in such a way that we at least get a basis for comparison with mechanistic evolutionism and are enabled to determine the apparent conformity as well as the fundamental

difference between the two. Even at present the vast majority of scientists who occupy themselves with the question concerning the origin of "life" adhere to this evolutionism, which teaches that the organic life\*function has developed of its own accord BY A PURELY PHYSICO-CHEMICAL PROCESS OUT OF lifeless matter. It reduces all modal aspects, which in the universal time-order follow that of energy, to mere modalities of the latter. It eliminates all individuality-structures, basic to the temporal genetic process of all transitory living beings according to the divine order of creation. It has its root in the basic religious motive of Humanism: NATURE AND FREEDOM, which is irreconcilable with the creation-motive in its biblical meaning.

LEVER naturally rejects this evolutionism as sharply as possible. He nevertheless recognizes that the hypothesis about the origin of life mentioned under 3, which he himself prefers, "appears to be very similar to the materialistic approach to the problem". Therefore he further explains its real purport as follows: "Suppose that this hypothesis afterwards appears to be correct and that life made its appearance via amino\*acids, proteins, aggregates, etc. The Christian will then see it in this way: he believes that God in the beginning created nature in a very special manner with a certain number of very specific elements which possess special properties, and with the task and the potential for the later development of certain aspects (in other words, at the creation these were placed in what was created), and that He then brought about such conditions of humidity, pressure, temperature, etc. that all conditions for the realization of life as He desired it were fulfilled. Then came a succession of processes (perhaps statistically improbable to us in their nature and in this succession) according to the laws which were placed in nature at creation, so that the atoms and molecules, step by step and very purposively, were arranged and combined in such a way that a very special constructed protoplasm was formed in which the created life\*aspect was revealed" (p. 58).

I regret that I cannot follow my friend LEWNER here any more. On the one hand because he, in my opinion, breaks faith with his own starting-point and includes certain natural-scientific hypotheses in his belief in the divine creation, with the intention of adapting it to his natural-philosophical hypothesis concerning the origin of life. This means a reversion to the scholastic line which he had rejected so clearly in the first chapter of his book. For there he declared that we do not know HOW God has created the world. Apparently he does know it now, with the proviso that his own natural-philosophical hypothesis proves afterwards to be correct. On the other hand he elaborates this hypothesis, to which I do not object in its first wording, in such a way that it comes very close, if I see it correctly, to the conception of the evolutionary process as it is developed in the so-called "emergent evolutionism" (C. LLOYD, MORGAN, WOLTERECK, BERNARD BAVINK, ~~etc.~~).

THE INNER ANTI-NOMY IN THE SO-CALLED EMERGENT EVOLUTIONISM. WOLTERECK.

*The latter conception*<sup>8</sup> ~~discussed earlier by me in this journal~~ starts on the one hand from a "Stufenbau" of reality where every "Stufe" has its own irreducible character and is determined by structural constants (in a Christianised version: by divine creational ideas). On the other hand it wishes to be as accommodating as possible to mechanistic evolutionism in the explanation of the evolutionary process. For this purpose it assumes a continuity in this process of evolution as follows: out of a-biotic matter, through an over-complication of its physico-chemical structure, "organic life" is formed of its own accord as an "emergence" of a certain material constellation; in a similar continuous manner the higher sphere of

<sup>8</sup>Het Substantiebegrip in de moderne Natuurphilosophie (Phil. Ref. 15<sup>e</sup> jar., 1959, p. 66-139).

the "psyche" is formed out of "organic life", and "mind" out of psychical life.

WOLTERECK has openly recognized the antinomy in this conception between the DISCONTINUITY, accepted a priori, of the various levels of reality according to their ideal structural constants, and the CONTINUITY of their realization in the temporal process of evolution. And he cannot find a solution for it. The origin of this antinomy can be traced back to the inner conflict in the humanistic basic motive of NATURE AND FREEDOM. The evolutionistic conception, after all, is firmly in the hold of the classical, humanistic science-ideal, which is directed towards autonomous domination of nature and has an inner tendency towards continuity which is irreconcilable with the acceptance of the irreducible modal aspects and structural types. Over against the idealistic theory of a discontinuous "Stufenbau" of reality, ordered according to the timeless idealistic structural laws, WOLTERECK himself in his Ontologie des Lebendigen returns to the freedom motive: the non-determined creative freedom of the "Weet subjekt" (see p. 9 and the entire paragraph #176).<sup>9</sup>

Entirely isolated from this evolutionism one finds for example in the Kantian transcendental idealism the typical dualistic trends to abandon, on the one hand, the genetic question with respect to the genesis of the categories of thought to a natural causal psychological explanation or, on the other hand, to root the idealistic universal validity in the transcendental freedom of the autonomous law-giving mind.

#### THE THREATENING ANTINOMY IN LEVER'S HYPOTHESIS.

In the developing of LEVER's hypothesis with respect to the origin of "organic life" I seem to detect a TREND which gives rise to a similar ANTINOMY (although with an entirely different background). On the

<sup>9</sup>See my A New Critique of Theoretical Thought, Vol. III, (1957), p. 762 ff.

one hand he begins, along with the philosophy of the ~~Cosmogonic Idea~~ with the structures as these have been ordered by God in His creation order. In this line of thought he is careful to avoid agreeing with materialistic evolutionism that "organic life" has developed out of lifeless materia and he speaks only of the appearance of organic life through a constantly more complex protein structures. On the other hand at the end of the above given quote where he develops his hypothesis more fully, he allows for the origin of living protoplasm THROUGH a—let it be a more purposeful—arrangement and combination of atoms and molecules. "according to the laws given at creation to nature".

Does this last presentation of the matter at hand rest upon a lapse in formulation? I do not think so. For in this case his own observation that his hypothesis manifests an apparently great similarity with materialism would have no meaning. The "apparent similarity" can only mean that in his thinking the organisms which first appeared in the temporal genetic process have originated from a collaboration of climatic, atmospheric and other factors with physico-chemical processes of increasingly more complex protein compounds which do take place "very purposively" under God's guidance, but in which the organic life-function itself can evidently not yet play a role, just because its appearance is seen as a RESULT of the physico-chemical processes. A CONTINUITY in the conception of the process of evolution is certainly achieved in this manner, but it is difficult to reconcile this continuity with the irreducibility of the organic life-aspect to the (physico-chemical) aspect of energy which the writer has so emphatically recognized. This caused the threat of an antinomy between his GENETIC and COSMOLOGICAL views.

#### THE PHILOSOPHY OF THE COSMONOMIC IDEA AND THE DYNAMIC PROCESS OF BECOMING.

I must dwell a little more here on this critical

point in LEVER's conception because it is of the utmost importance for the future development of the Philosophy of the Cosmomic Idea. In certain quarters it has been asserted<sup>10</sup> that this philosophy could only develop a (in itself very valuable) theory of the static structure of temporal reality, but is not able to do justice to the DYNAMIC PROCESS OF BECOMING. If this criticism were justified, I could not but welcome any attempt to fill in such a gap. But this is a matter of a fundamental misunderstanding. The Philosophy of the Cosmomic Idea itself has warned emphatically against absolutizing the constant structural principles of created reality, comprised in the temporal order. It has pointed out that these structural principles have only been realized successively in the FACTUAL PROCESS OF BECOMING, and that this genetic process blends into the CONTINUITY of cosmic time which guarantees an INTER-MODAL coherence between its modal aspects.

Evolutionism in its pseudo-natural-scientific forms, however, endeavours to achieve the continuity in its conception of "the origin of life" by giving a genetic-causal explanation of the organic life-function, according to which the latter has come into being merely through a co-operation of physico-chemical factors.

LEVER undoubtedly does not go as far as this. He CANNOT mean a causal-genetic explanation of the origin of organic life out of an increasingly complex combination of proteins, for such an explanation would imply that the organic life-aspect could be REDUCED to the physico-chemical energy-natural-scientific evolutionism insofar as he thinks of the INTERNAL PHYSICO-CHEMICAL STRUCTURE of the living organisms which first appeared on earth as being already developed, BEFORE their actual biotic function was unfolded. This energy-structure, which is typically directed at the biotic function and therefore opened, is thus con-

<sup>10</sup>E.g. Dr. J. Kalma in his book De Mensch Een Evolutiebeeld.. (Tjeenk Willink, 1938-1940).

sidered as the "condition for the realisation of the organic life-aspect given by God in His creational order" and a continuity in the conception of the evolution of lifeless matter to living organisms appears to have been achieved without having reduced the organic life-function itself to a mere product of physico-chemical material processes. Now this appears to me to be a THEORETICAL REVERSAL OF THE GENETIC ORDER in the factual process of development of a living organism which has no scientific justification whatsoever and which fails to recognize the character of the actual process of disclosure in the internal physico-chemical aspect of the living organism.

#### THE REVERSAL OF THE ONTO-GENETIC ORDER IN LEVER'S HYPOTHESIS.

For what is the case? The complex and highly labile protein structures as they are found in the internal sphere of a living organisms are not, as far as our present and past experience goes being met with ANYWHERE OUTSIDE OF THE LIVING ORGANISM. Their building-up and breaking-down take place in so-called BIO-chemical and BIO-physical processes in which the organic life-function itself has the leading and governing role. In other words, these processes take place within the typical totality-structure of this organism, and can therefore never serve as an explanation for the ORIGIN of the organic life-function in the great process of evolution of our temporal world.

As long as the actual BIO-physical and BIO-chemical processes are not considered to be open to a PURELY physico-chemical causal explanation, nothing has been achieved yet for the explanation of the origin of "life" with the hypothesis that the most complex protein structures may have been brought about along purely physico-chemical lines.<sup>11</sup> For the physico-chemically qualified materials of a cell-body are not part of the actual living organism, but only

have an ENKAPTIC FUNCTION in the latter, viz. in the purpose assimilation - and dissimilation processes. Even the most complex protein molecule lacks the typical hylocentric, kinocentric and morphocentric structure of a living cell. It lacks the typical totality-structure of a living cell-body, that maintains itself in all metabolic processes of its physico-chemically qualified materials. The realisation of this totality-structure cannot possibly be explained from the writer's own philosophical point of view by a successive and "very purposive" arrangement and combination of atoms and molecules. The concluding words of the amplification of his hypothesis about "the origin of life" in the above-mentioned passage of his book (p. 58): "SO THAT a very specially constructed protoplasm was formed in which the created life-aspect was revealed," therefore, are entirely without a basis in his line of thought.

As the writer recognized emphatically, we know NOTHING scientifically about the origin of the first living organisms on earth. Any evolutionistic hypothesis which attempts to explain this origin along physico-chemical lines oversteps the bounds of natural science, and moves into the field of a philosophical totality-view of the genetic process of our world which obliterates the modal borders between the energy aspect and the organic life-aspect. In my opinion any concession to such an evolutionistic hypothesis should be avoided, even if it is adapted as well as possible to the doctrine, governed by the biblical creation-motive, of the modal aspects and individuality structures of our experiential world.

HAS LEVER'S HYPOTHESIS A SCIENTIFIC CHARACTER,  
OR IS IT PURELY SPECULATIVE?

When the writer remarks about his own hypothesis:

II I left this possibility open myself in Vol. III of my A New Critique.

"Suppose that this hypothesis afterwards appears to be correct", the question arises: How do you imagine that such a confirmation of its correctness could be obtained? Along the road of further physico-chemical experiments?<sup>12</sup> I can only think here of experiments in the field of synthetic production of so-called "living protein". For, as I said previously, nothing would have been achieved yet for the explanation of the origin of living protoplasm, if complex protein combinations were composed synthetically or brought into existence with the aid of physico-chemically qualified processes. But if man should manage to form "living protein" in a purely physico-chemical way, the writer's entire philosophical view concerning the irreducibility of the organic life-aspect would have been refuted by the facts. In that case I would personally say: We must surrender to the facts, because our philosophical theories evidently do not agree with them. And I cannot see how LEWER then would manage to reconcile these "facts" to the Philosophy of the Cosmonomic Idea's doctrine concerning the irreducibility of the organic life-aspect and of the individuality-structures of living organisms. Meanwhile, there is not the slightest indication in the facts known to us that synthetic composition of

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<sup>12</sup> Apparently something is also expected of a further investigation of the recently discovered traces of organic life on the planet Mars. Again, such investigation cannot teach us anything about the question how that life has originated there, if the hypothesis were confirmed that - in view of the climatological conditions on this planet - only algae would have a possibility of life there. For then again it would be in living organisms that the organic life-function would be revealed. And the point was to obtain confirmation of the hypothesis that "organic life" has developed via increasingly complex formations of protein compounds which have come into being even before the organic life-function appeared as directing and leading factor.

living protoplasm is possible. Leading biologists, such as WOLTERECK, BERTALANFFY, and others, have clearly set forth the reasons why such a synthesis must be deemed impossible in principle. In Vol. III of my A New Critique of Theoretical Thought I have endeavoured to explain in detail why the question how "living protein" can originate in a purely physico-chemical way is an incorrectly posited problem. And LEVER himself has also firmly rejected this positing of the problem.

But what then is the explanation for the suggestive influence, even on biologists who from true conviction reject its philosophical basis, of the evolutionistic hypothesis about the origin of organic life out of increasingly complex protein combinations? Why do they make certain concessions to this hypothesis, which threaten to cause a conflict between their cosmological and their genetical views? LEVER gives the explanation of this fact himself on page 53 of his book. "The mechanistic hypothesis", he says, "is certainly the most attractive for anyone who has received his education as a biologist in the twentieth century. For with the aid of an, admittedly, speculative and yet scientific-like complex of hypothesis the transition from life-less to living can be made complete". But he immediately adds that such an idea has fundamentally unacceptable consequences, and that throws a clear light on its real intention. The hypothesis concerning the origin of organic life which he develops should therefore certainly not be interpreted without further ado in this evolutionistic vein. But, because of the concessions to this pseudo-natural scientific point of view, a fundamental obscurity creeps into his argument, so that it becomes difficult indeed to demarcate clearly his SCIENTIFIC point of view concerning the genetic problem from the mechanistic viewpoint. And I really regret this, because it creates misunderstandings which could be quite incorrectly ascribed to the standpoint concerning the relation of Gen. I and II to biological research, which he argued in such an excellent manner in the first chapter of his book.

## REVERSION TO THE SCHOLASTIC LINE?

I have already mentioned a certain reversion to the scholastic line in the explanation and amplification of his hypothesis about "the origin of life". I believe that this had consequences also for the further elaboration of his conception about the relation of his biblical starting-point to biological science. These consequences already reveal themselves at the end of Chapter 2, where we read concerning the three aforementioned hypothesis:

From the fact alone that these possibilities are put forward it is already evident that Christianity does not pretend to know doctrinally HOW primary life originated, but only THAT it finds its origin in God's creation..... The fact that the Christian biologist does not pronounce on the "how" is an indication that there is no need for him to introduce a DEUS EX MACHINA into the natural-scientific problematics, as is argued so often, but that his attitude towards these problems can be scientifically even more free than that of e.g. the doctrinarian mechanist who is forced by his philosophy to speculate, because his philosophy stands or falls with a certain solution of this problem. The Christian knows that all aspects of reality were created in the beginning. By which course these aspects have come to be realised is a problem for science.

In connection with the first sentence of this conclusion the following remark could be made: The three possible answers, put forward by the author from a Christian point of view, to the question how first organic life originated, do not show at all that "Christianity" does not pretend to know doctrinally how this happened, but only that he himself denies that the answer to this question can be found a priori in Gen. I. But, more importantly, will not the adherent of mechanistic evolutionism be able to object, and rightly so, that the greater freedom towards the "natural-scientific-problematics", about "the origin of life", which the writer claims to have, exists in

the latter's imagination only and that, rather, he is checked doctrinally by his own "philosophical a priori" concerning the mutual irreducibility of the modal aspects?

This consideration is bound to raise the question: What actually does LEVER understand by the freedom of the scientific investigator with regard to the question how first life originated? Is it his opinion indeed that this problem can only be finally solved by unbiased scientific investigation, and that the religio-philosophical view of reality ought not to have a DIRECT, leading role in it, but should come in only AFTER THE EVENT, in a philosophical interpretation of the scientific theory of genesis? If so, then his conclusion would only lead us back to a scholastic conception about the relation of faith and science which seeks to accommodate the results of a supposedly autonomous scientific investigation to the Christian religious view, whereas in reality this so-called autonomous investigation was determined by an un-biblical starting-point.

But can this really be LEVER's intention, after, in the first chapter, having thrown such a clear light on the central significance for biology of the biblical creation-motive? No, but in my opinion the author gets entangled here in his endeavours to meet pseudo-scientific evolutionism as far as possible. Consequently his answer to the question whether natural science will be able to explain the origin of "organic life" by continued investigation, is not clear-cut any more. He started off by recognizing that, scientifically, we know nothing about it. Then came the first concession to evolutionism, in the elaboration of his own hypothesis, with the enigmatic supposition: "Suppose that this hypothesis afterwards appears to be correct". With this supposition he was already on his way to the last concession to this evolutionism, viz. that the question about the origin of life is essentially a question of NATURAL SCIENCE, which the Christian biologist should approach without doctrinaire prejudices. But the evolutionist does not need anything more in order to be completely satisfied.

For he can then ignore all of LEVER'S view about modal aspects and individuality-structures, because it is philosophical in character and has its roots in a religious point of view that he cannot accept.

"Erkenne nur das Recht der Wissenschaft,  
Des Menschen allerhochste Kraft,  
So hab'ich dich schon unbedingt".

(If you recognize only the right of science, man's highest power, ..... then I've got you completely).

With this radical variant of MEPHISTO's well-known words in GOETHE'S Faust he would be able to repulse LEVER'S attack on his mechanistic starting-point. Therefore I am inclined to object to LEVER'S conclusion that the question HOW the organic life-aspect has been realised in the process of becoming, is a SCIENTIFIC problem.<sup>13</sup> At least if he means that as such it has no philosophical and religious implications. But the trouble is that I do not know exactly whether he means that. For there are plenty of statements in his book which point in the opposite direction and are evidence of the view that the question about the origin of the first living organisms leads us of necessity outside the bounds of natural science to the sphere of the philosophical total-view of reality.<sup>14</sup> So that I can establish with certainty only

<sup>13</sup>Comp. p. 96: "The Christian knows that God brought organisms into existence at His command, but not HOW and WHERE and IN WHICH WAY this happened. These questions belong in the sphere of science"

<sup>14</sup>Comp. e.g. p. 52, where the writer, after an enumeration of the data about "the origin of life" which according to our present knowledge are certain, draws this conclusion:

If we want our judgement to be PURELY NATURAL-SCIENTIFIC, therefore, we must leave it at this. So that we may come to the conclusion that we FACTUALLY KNOW NOTHING about the origin of life. If

that the writer has become somewhat entangled in his problems by making concessions (traditional in biological circles) to the evolutionistic way of thinking, although he cannot accept its consequences.

THE SUCCESSIVE REALISATION OF THE INDIVIDUALITY-  
STRUCTURES AS TYPES OF ORDERING OF THE VEGETABLE -  
AND ANIMAL WORLDS.

In the third chapter, entitled: "The origin of the types of organisms", the author raises the question in what terms we should think of the gradual realisation of the tremendously ramified structural-typical ordering of the vegetable - and animal kingdoms in the temporal genetic process, in the light of the central creation-motive of the Word-revelation. This is not LEVER's formulation of the question, but it expresses his intention undoubtedly better than the one he chose in the title of this chapter, which follows current biological usage.

For the structural types of plants and animals are as such not individual subjects, originating in the temporal process of becoming, but rather types of ordering which belong to the law-side, and not to the factual side, of our empirical world. They can only be realised in temporal individual living beings, but as TYPES OF ORDERING they have necessarily a constant and fundamental character in the temporal order because it is only through them that our experience of the vegetable - and animal worlds becomes POSSIBLE, irrespective of one's THEORETICAL conception regarding

(14 contd.) we want to work on this problem in a purely natural-scientific way, we can e.g. perform analyses of the oldest rocks. This may possibly produce further data. Any line of thought that goes beyond this and pretends to know more about it, is not purely natural-scientific any more and has its origin in a philosophy, a world-view or in a religion." This statement contradicts the one on p. 96 of LEVER's book quoted above.

the GENETIC PROCESS of living organisms.

This does not mean, of course, that we may simply identify this structural-typical ordering with the systematic categories of LINNAEUS' system of classification. This has already been pointed out by Dr. H. DIEMER in several of his publications. In this respect, too, LEVER takes, with DIEMER, the point of view of the Philosophy of the Cosmomic Idea, as evidenced in his statement (p. 137) concerning the possibility of a new concept of species, which can give a synthesis of the modern discoveries about the genotypic and phenotypic structural peculiarities in the vegetable — and animal kingdoms. "Only a view of reality", he says here, "which recognizes every single aspect and every single individuality-structure as specifically laid down in creation and therefore as for the present irreducible realities, and which has an open eye for their mutual interlacements, will be able to achieve this synthesis in accordance with the real structurality of the organisms. On present evidence, however, this is beyond reach for the time being." Just the same, this statement contains a certain reserve which is not immediately clear. Why does he refer to modal aspects and individuality-structures laid down in the creational order as "FOR THE PRESENT irreducible realities?" Does it not rather concern here FUNDAMENTALLY mutually irreducible structural laws, and is not therefore the reserve, expressed in the words "for the present", meaningless?

I can only find one answer to this question. If LEVER CONSCIOUSLY chose the term "realities", he evidently had in mind the structures as they have been FACTUALLY REALIZED within the temporal order in plants and animals which are subject to generation and decay. In that case he would have wanted to keep the door open for the hypothesis that in the great process of evolution the entire flora and fauna as we now know them in their tremendously differentiated and ramified structural-typical articulations have sprung up VIA one and the same stem, which in turn originated VIA the formation of complex protein compounds. But now it appears to be much more difficult to maintain the

fundamental difference between "VIA" and "OUT OF" which, in the second chapter, could still be more or less clearly discerned in LEVER's hypothesis about the "origin of life". And for that reason it will also become more and more difficult to distinguish the writer's GENETICO-BIOLOGICAL point of view from that of evolutionism, in as far as he counts the hypothesis concerning the origin of all living beings from one common stem as a scientific attempt at explanation, which is acceptable from the Christian point of view, even though it is not the only one. Here again one gets the impression, stronger this time, that the author has not sufficiently considered the critical prior question whether a hypothesis concerning the origin of the present vegetable - and animal worlds FROM THE PURELY SCIENTIFIC BIOLOGICAL POINT OF VIEW IS POSSIBLE AT ALL, or at least that he has not yet arrived at a CLEAR, unequivocal answer to that question.

LEVER's exposition of the problem concerning "the origin of the types of organisms" follows the same course as that of the question concerning "the origin of life". First of all he establishes that, in medieval scholastic-christian as well as in Greek thought the doctrine, of generatio spontanea led to the unquestioning acceptance of the transition of one form of plant or animal into another or even of the formation of animals out of lifeless matter, although at the same time the ultimate cause of the appearance of the various types of organisms was seen in divine creation. I wish to point out here that this cannot be used as an argument from THE AUTHOR'S OWN REFORMED STARTING POINT for the compatibility of such a conception with the biblical creation-motive. This scholastic-christian view of the genesis of plants and animals, after all, was not dominated by the biblical creation-motive in its radical and integral character, but rather by the Greek form-matter motive which was only ADAPTED to the ecclesiastical doctrine of creation.

DID THE CHANGE IN SEVENTEENTH AND EIGHTEENTH CENTURY  
BIOLOGICAL THINKING TAKE PLACE UNDER THE INFLUENCE  
OF CLASSICAL PHYSICS AND CHEMISTRY?

But it is subject to serious doubt whether, as the author thinks (p. 61), the change in seventeenth and eighteenth century biological thinking which led to the acceptance of a constant systematic order in vegetable - and animal groups, took place primarily under the influence of mathematical physics and chemistry. Classical physics at least, founded by GALILEO and NEWTON, was not at all directed towards the search for the structural-typical ordering of phenomena. On the contrary, it eliminated all individuality-structures in order to be able to understand the physical phenomena in the entire universe as a closed cause-functional coherence. The influence which this way of thinking exercised on biology rather took place in a mechanistic direction, which was further stimulated by HARVEY's discovery of the double circulation of the blood, so that DESCARTES already had declared animals and plants to be inanimate mechanisms. For the Aristotelian doctrine of the substantial forms, which deemed at least the ideal entity-types of the natural substances to be not subject to the genetic process, had been generally discarded under the influence of the basic motive of modern Humanism.

LEIBNIZ AND THE CONSTANCY-IDEA IN SYSTEMATIC  
BIOLOGICAL TYPOLOGY.

It should be admitted, though, that in LEIBNIZ' philosophy a point of contact may be found for the idea of a constant structural-typical ordering of the vegetable-and animal worlds. LEVER assumes with an appeal to E. UHLMANN (Entwicklungsgedanke und Artbegriff, Jena, 1923 p. 21), that this line of thought in LEIBNIZ' philosophy of organic nature leads to LINNAEUS and from there via CUVIER to the so-called idealistic morphology (p. 64). But I must say

that UHLMANN's own expression is more cautious and only speaks of "a certain dependency of LINNAEUS' epistemology on the Platonic ideology via LEIBNIZ", whereas LEVER writes: "LEIBNIZ' great significance for the history of biology was that his monadology really combines the old concept of creation-ideas, as it is found both with the Greeks and the Church fathers (e.g. AUGUSTINE) and which predominantly influenced natural-scientific thought for a long time, with the lex continui element which opens the gate to evolutionism" (p. 64).

This statement contains two misunderstandings to which I call attention only for the sake of historical truth, and not to reproach LEVER who is, after all, far from presenting his exposition as the result of an independent investigation into the historico-philosophical connection between LEIBNIZ' thought and the constancy-idea in systematical typology. The first misunderstanding is that the Greeks already would have known "creation-ideas". That can definitely not be maintained, since the Greek form-matter motive excluded any thought of a divine creation. I presume that this is a slip of the pen, as for the rest he appears to be completely aware of the fundamental contrast between the Greek and the biblical basic motives. The second misunderstanding is the LEIBNIZ' theory of the "verites eternelles" would be the same as the doctrine of the creation-ideas, which appeared already at the time of the Church fathers and was based on an adaptation of the Platonic e.g. Neo-platonic ideology to the ecclesiastical doctrine concerning creation. In this connection I would like to refer to my detailed analysis of LEIBNIZ' metaphysical theory of monads and eternal truths in Vol. I (p. 240 f.) of my A NEW CRITIQUE OF THEORETICAL THOUGHT. As I have endeavoured to show there, this theory, notwithstanding its scholastic terminology, is primarily oriented towards the modern mathematical science-ideal which has got an entirely new perspective through LEIBNIZ' discovery of infinitesimal calculus and secondarily also towards the autonomy-postulate of the Humanistic personality-ideal.

LEIBNIZ' METAPHYSICAL THEORY OF THE "ETERNAL TRUTHS" IS NOT CONNECTED WITH HIS HYPOTHESIS CONCERNING THE EXISTENCE OF CONSTANT SPECIES.

If in LEIBNIZ' views about the organisms a point of contact may be found, as I admitted previously, for LINNAEUS' idea about the constancy of kinds, no direct connection can be shown, as far as I can see, with the metaphysical theory concerning the "verites eternelles". LEIBNIZ' pronouncement in question, quoted by UHLMANN, merely says that "if we possessed the discernment of higher spirits, we MIGHT find constant attributes for every species which all the individuals belonging to it have in common and which are always constantly present in the same organism etc. This "might" expresses uncertainty rather than certainty and shows that LEIBNIZ thought that the limited human mind, whose definitions of the natural genera of organisms are in his view only provisional and adapted to our cognition, is not equal to the task of discovering such constant attributes of species.

In any case, he cannot be dealing here with the eternal truths, but rather with a divine choice from the logical possibilities contained in the "verites eternelles". For the "eternal truths" may, according to LEIBNIZ, also be discerned by human thought and can therefore never be subject to doubt. They are merely metaphysico-logical possibilities. But we may undoubtedly say that the hierarchical arrangement in series of the monads in their windowless enclosedness excluded any evolutionistic conception about the formation in mechanical ways of the higher ranging ones out of the lower ones. And it is probable that this basic characteristic of discontinuity in LEIBNIZ' monadology, together with the traditional doctrine of the creation-ideas, has influenced the later conceptions concerning a constant structural-typical ordering of living nature, because LEIBNIZ in fact broke with the Cartesian mechanistic conception of the vegetable-and animal worlds. Especially the drawing up, as part of a constant building plan, of the MORPHOLOGICAL SERIES OF LIVING ORGANISM BY IDEALISTIC MORPHO-

LOGY betrays the influence of LEIBNIZ' thinking in series.

LEIBNIZ' LEX CONTINUI AND EVOLUTIONISM.

Whether on the other hand the continuity trend in LEIBNIZ' metaphysical conception of the world-order has paved the way for evolutionism, is a question I find harder to answer. It is certain that LEIBNIZ' lex continui did not intend in the least to give a mechanistic explanation of the origin of living beings. According to him all monads, including the material monads, are animated and have the same perceptions in which the entire universe is mirrored. They differ only in the degree of clarity of their perceptions, and the lex continui intended to bridge these differences, after the example of infinitesimal calculus, by infinitesimally small transitions, in order to explain the harmonia praestabilita between the monads, in particular between those of the soul and those of the body. But there is no question of an evolution of higher monads out of lower ones in LEIBNIZ' metaphysics.

THE EVOLUTIONISTIC HYPOTHESIS IN KANT'S  
"KRITIK DER URTEILSKRAFT".

If, therefore, the continuity principle were to acquire an evolutionistic-biological meaning, it had to be disengaged at all events from LEIBNIZ' mathematical metaphysics and, with that, denatured in principle. This occurred for the first time, as far as I know, in KANT'S "KRITIK DER URTEILSKRAFT" (1790) which derived from LEIBNIZ the connection of the mechanistic with the teleological view of nature. In the analogy of the forms of the various classes of organisms he found a basis for the supposition that they are descended from a common mother-organism. He called a "gewagtes Abenteuer der Vernunft" (daring adventure of the mind) the hypothesis that specifically differ-

ing living beings have been formed out of each other, e.g. out of aquatic animals - marsh animals, out of these after a series of generations - land animals. But he had a faint hope that something could be done here with the principle of nature's mechanism, provided that the teleological view would always have to indicate the direction of evolution out of the common progenitrix.

THE SPECULATIVE AND IRRATIONALISTIC EVOLUTIONISM IN SCHELLING'S AND OKEN'S NATURAL PHILOSOPHY.

It is only via KANT's Kritik der Urteilskraft that LEIBNIZ' conception of continuity acquires an evolutionistic interpretation in SCHELLING's work Von der Weltseele (1798) and in the natural philosophy of his pupil OKEN. But it concerned a speculative and irrationalistic evolutionism which, in its philosophy, had a transcendental-idealistic basis and is therefore diametrically opposed to the later classical, mechanistic evolution-theory of DARWIN and HAECKEL, who finally led the dogma of evolution to its victory in scientific, biological thinking. No connection can be demonstrated between LEIBNIZ' principle of continuity and the rise of this theory of evolution. The latter merely gave a pseudo-historical turn to the thought-pattern about organic nature which hails from DESCARTES, and with it the idea of the steady upward development from lower to higher was transferred from the eighteenth century Humanist view of history to the genetical-biological way of thinking.<sup>15</sup>

<sup>15</sup>In HERDER's Ideen zur Philosophie der Geschichte der Menschheit (1784) we already find the idea of historical development based on an idea of natural development, which sought to explain the entire upward line in the formation of groups of organisms, culminating in man as animal destined to reason from the unity of organic force and its dif-

A certain influence of LEIBNIZ' continuity principle (without the monadology) on nineteenth cen-

(15 contd.) ferent methods in keeping with the differences between organs. He already views the entire cultural development of mankind as the inevitable consequence of the development of organic nature. According to him, man was predestined for rational thought, cultural activity and religion, by virtue of his natural organic development and, particularly his erect posture..

In his well-known review of the first volume of HERDER's Ideen, KANT sharply criticised this conception. "But the unity of organic force (p. 141)", he wrote, "which, whilst it forms the multiplicity of organic creatures and works in different ways according to the differences between organs, wipes out the whole distinction between its many genera and species, is a conception which lies entirely outside the field of natural science and belongs to purely speculative philosophy, where, if it found entrance, it would be bound to play havoc among the accepted ideas. But to want to determine which arrangement of the head, externally in its shape and internally with regard to the brain, is necessarily connected with the predisposition to erect posture, and, even more, in what way an organisation which is solely aimed at this objective, can contain the basis of rational power so that animals acquire it, that clearly goes beyond all human reason, whether it is groping physiologically or flying metaphysically". (Kant's W.W. Grossherzog Wilhelm Ernst Ausg. I p. 254).

Undoubtedly HERDER was strongly influenced by LEIBNIZ' from whom he borrowed his organic force idea. But he rejected LEIBNIZ' metaphysical monadology. He took only one motif out of it, viz. the independent value, which in the complete coherence of the universe is due to every individuality and finds expression in its development. In his view of the development of nature not a single point of contact can be found for a mechanistic-materialistic theory of evolution, as KANT also recognized in his review.

ture scientific-biological thought can be shown only in DE LAMARCK'S theory of evolution, and this via BONNET, who was an adherent of LEIBNIZ' philosophy. But it was not LAMARCK who determined the triumphal march of evolutionism. LEVER'S thesis, that LEIBNIZ' lex continui opened the way to evolutionism, cannot therefore be maintained in its generality.

The writer shows us very instructively how mechanistic evolutionism since HAECKEL often a priori transformed into a phylo-genetical series of morphological series which idealistic morphology had drawn up and which related to constant types of living organisms.

He establishes emphatically that it is only palaeontology which is in a position to supply irrefutable data concerning the relation between the various groups of organisms, and that embryology and comparative anatomy can give us pointers in this respect only if a phylo-genetic relation has already been proved palaeontologically. But, he remarks, the fossil discoveries give no factual basis at all to classic evolutionism. From the pre-Cambrian only algae fossils have been preserved. Fossil records tell us that in the Cambrian fossil representatives of virtually all prominent groups of invertebrates appear fairly abruptly. "We are bound to conclude from these remarkable data that nothing can be said with any certainty or even with any probability about the mutual genealogical relations between these groups" (p. 78). Nor does palaeontology provide us with any evidence about the descent of vertebrates from invertebrates.

"We are therefore bound to conclude that nothing is known about the origin of the main groups of organisms, that phyla" (p. 80). But what about the classes, orders, etc. into which these phyla can be subdivided in a natural way? The writer points out that for several of these sub-groups the same holds as for the phyla. E.g. the classes of Mollusca and several classes of Echinodermata have existed separately ever since the Cambrian, and here again, nothing can be said with any certainty about their origin and their

mutual genealogical relations.

It has been shown, though, that the different classes of vertebrates, viz. cyclostoma, fish, amphibians, reptiles, mammals and birds appeared one after the other. But, after the intensive research of the last hundred years, no fossils transitional forms have been found here either. The same hold for almost all orders (sub-groups) of all classes of animals, both vertebrates and invertebrates, as G. G. SIMPSON, a true evolutionist of (neo-) classical persuasion, had to point out: "A fortiori, it is also true of the classes themselves, and of the major animal phyla, and it is apparently also true of analogous categories of plants". (16).

#### SO-CALLED NEO-EVOLUTIONISM.

This state of affairs led to the rise of a so-called neo-evolutionistic trend which, in contrast to the classical evolutionists, accepts original discontinuities, natural jumps in development, by means of which the higher categories of the types of living organisms have separated from each other without continuous transitions. According to the neo-evolutionists the further differentiation into lower sub-types (species and genera, and possibly families) took place along continuous lines with the aid of the mechanisms of selection, mutation, isolation etc., only after these higher types had formed themselves, by jumps, in an earlier ontogenetic phase.

In order to explain the development, in jumps of the higher types, LEVER discusses three neo-evolutionistic hypotheses, viz. those of BOKER, SCHINDEWOLF and A. MEYER. He deems all three of them speculative and hardly suitable to give an acceptable explanation for the gaps in the evolutionary process, with which the available fossil material confronts us. Coming back to classical evolutionism, the author points out em-

<sup>16</sup>Tempo and Mode in Evolution (New York 1947) p. 106 f.

phatically that large numbers of biologists have continued to defend it against the neo-evolutionists. They are of the opinion that it is definitely possible for the continuity-mechanisms of the micro-evolution (mutation, selection, migration and geographical isolation) to fill the gaps. And LEVER prefers the views of these investigators to those of the neo-evolutionists, especially since experimental research is possible in the sphere of the micro-evolution, although he also points out the restrictions to which this research is subject, and does refer to certain objections which may be raised to the drawing of conclusions with regard to the macro-evolution from experiments in the sphere of the micro-evolution.

LEVER'S POSITION WITH REGARD TO THE PROBLEM OF THE GENESIS OF THE TYPES.

At the end of the third chapter he comes to the following conclusion about the problem of the genesis of the types. Creationism can, according to him, opt for the position that in all probability an evolutionary process has taken place within many phyla. This happened, however, according to a divine plan. "An evolution e.g. of mammals OUT OF reptiles and of amphibians OUT OF fish in view of the successions which palaeontology has ascertained must not be deemed impossible. "As we have seen, we get the impression that the intermediate forms are missing. It is therefore possible that a gradual transformation in the sense of classical evolutionism did not take place at all. We should rather think in terms of a complex of processes which took place once only in improbable combinations." This holds, of course, for the genesis of the lower categories as well.

LEVER'S POSITION WITH REGARD TO THE PROBLEM OF PHYLO-GENESIS. HIS HYPOTHESIS CONCERNING THE ORIGIN OF THE PHYLA OUT OF A COMMON STOCK.

As far as the origin of the phyla, the highest primary types, is concerned, the writer considers three hypothesis as possible from the "creationistic point of view". The first of these, concern the "special creation", called "creation out of nothing" again, which is confusing. The writer points out that this hypothesis cannot be contradicted by research. The second possible hypothesis corresponds with his hypothesis concerning the origin of "life", previously discussed, and says that "out of first life, the various phyla originated in a series in a way which has not been understood at all (as yet). Which series that was, one cannot say". The third hypothesis is that the phyla all originated independently. "If this view were confirmed, it would mean that in the case of most of the phyla we are dealing with really irreducible groups, in other words with separate sub-kingdoms within creation. This would be in line with the views of CUVIER and of idealistic morphology" (p. 99).<sup>17</sup>

The first of these hypothesis, which confused creation and temporal genesis, had already implicitly been rejected by the author, and, in my opinion, rightly so. As regards the two other positions, it seems to me that the first of these should be the more attractive one for the writer, in view of his remarks in that respect in the second chapter. But it places us immediately before a number of questions to which we receive no answer, because the writer himself does not ask them.

#### CRITICAL QUESTIONS CONCERNING THIS HYPOTHESIS.

First of all we should ask ourselves: What scientific significance can this hypothesis have, when LEVER himself remarked a little earlier: "As we have

<sup>17</sup>It is not clear why the writer, from a possible confirmation of a hypothesis which posits the irreducibility of ALL phyla, concludes that only MOST of them are irreducible.

seen, not a sensible word can be said, actually, about the origin of the phyla" (p. 94). Are we still in the scientific field of biology, in fact, or have we moved altogether into the domain of a speculative philosophy about the origin of living nature? In the first case, we can only speak of a scientific hypothesis if it would be possible to either confirm or disprove it by continued experimental research. The neo-classical evolutionists' investigations regarding the micro-evolution are, of course, the only ones to be considered. The writer says in this connection: "We shall have to watch closely, therefore, the research of the investigators with rather classical tendencies, and to refrain for the time being from bringing in a verdict on the fundamental possibility or impossibility of their method of interpretation which is STILL hypothetical AT THE MOMENT" (p. 92).

The writer, quoting DOPZHANSKY, states expressly that it is impossible to reproduce in a laboratory even the genealogy of the horse, and therefore, because all research into micro-evolution can be related to macro-evolutionary processes by inference only, without the possibility of verifying the correctness of these conclusions experimentally, the question arises whether such conclusions can ever amount to more than speculations when they are brought to bear on the explanation of the origin of the highest primary types (the phyla).

The very wording of LEVER's second hypothesis betrays a speculative tendency. He again uses the speculative term "first life". In consideration of what he said when he elaborated his third hypothesis in chapter two with respect to "the genesis of life", one can here only think of a tiny lump of living protoplasm which should as yet not demonstrate even a single typical cell-structure. For if the latter were the case it would already appear within a highest primary type (phylum), viz. that of the unicellular plants or animals, and it could not be considered as the progenitor of the successive series of phyla. It should also lack the radical-type of plant or animal, in so far as this already is a structural-type, the

origin of which the hypothesis intends to explain. Have we not returned now to the discarded Haeckelian "monera", or perhaps to the more recent hypothetical bio-molecule? Speculatively, of course, we can understand anything by "first life", but SCIENTIFICALLY this term does not offer us any hold at all because it certainly does not denote any empirical datum. In addition, the hypothesis referred to now definitely speaks of an originating of the phyla OUT OF, and not just VIA, this speculative progenitrix of all earthly plant-and animal life, and that in a successive series. ACCORDING TO ITS WORDING this hypothesis can hardly be distinguished from the evolutionistic view. For the addition "in a way which has not been understood at all as yet" and because one cannot say which series it was, leaves intact the basic thesis that the phyla themselves have originated out of a common stock.

#### THE PHYLA AS HIGHEST TYPES OF ORDERING WITHIN THE RADICAL-TYPES OF THE PLANT-AND ANIMAL WORLDS.

Earlier on I already implied that the phyla (in the sense of highest primary types of the plant-and animal worlds) cannot come into existence and die in the genetic process, since they themselves are not "living being" but rather TYPES OF ORDERING of individual totalities, which make the latter possible and which form the basis of all our experience of plants and animals. Classical evolutionism eliminated those types of ordering, and consequently had to identify the phyla in a radical-nominalistic way with comprehensive groups of living individuals, to which science has given the collective name PHYLA. It wished to give a naturo-causal, essentially mechanistic explanation of the origin of the phyla-characteristics in large groups of individuals. This made sense from the mechanistic point of view. But LEVER in his position cannot eliminate the actual types of ordering. And since he rejects the mechanistic view of classical evolutionism, the question arises what he actually has in mind with his second hypothesis.

Certainly not a natural-scientific explanation of the origin of the phyla-characteristics in plants and animals. For there is no sense in that when one recognizes that these characteristics belong to a typical totality-structure of plants and animals, which cannot be approached in any way with a functionalistic causality conception which is oriented only towards the physico-chemical aspect of our experience. Apart from that, the entirely speculative idea of a common progenitrix of the phyla does not fit in with a strictly natural-scientific way of thinking. So that, in fact, the writer leaves us in the dark as to the way he pictures "the originating of the phyla" out of a common stock as well as to the real intention of this hypothesis. From a philosophical point of view the question arises whether, and if so, in which way, he is able to place this hypothesis within the framework of the theory of individuality-structures as developed by the Philosophy of the Cosmonomic Idea. The individuality-structures of the plant-and animal kingdom, contained in the creation order, must of course not be identified with the type-classification of LINNAEUS' system. But the question is whether a hypothesis, which reduces even the highest primary types of the plant-and animal worlds (and evidently the radical-types as well) to a structurally-typical completely undefined common stock, leaves any room for irreducible individuality-structures which are founded in the divine creational order. LEVER is silent on this point, but I must assume, of course, that his answer to this question will be affirmative in principle. But then he will agree that his second hypothesis needs a further elaboration and explanation, giving a more detailed answer to this question.

*characteristics*

THE MUTUAL IRREDUCIBILITY OF THE PHYLA AS  
HIGHEST PRIMARY TYPES (TYPES OF ORDERING).

As far as the third hypothesis is concerned, viz. that the phyla all originated independent of each other, this is - apart from its wording, which is

again debatable - entirely consistent in its intention with the present-day results of palaeontological research. And compared with the second-hypothesis it has the undoubted advantage that it avoids the quicksands of evolutionistic speculations, and accepts the highest types of the plant-and animal kingdoms unreservedly as mutually irreducible sub-kingdom. In other words, it is based on an honest recognition of the limites of man's experiential knowledge. And as such it fits in entirely with the anti-speculative way of thinking of the Philosophy of the Cosmonomic Idea, which does not mean of course, that it would therefore be the only ONE POSSIBLE from the Christian point of view, or that the Philosophy of the Cosmonomic Idea would have to reject LEVIER's second hypothesis a priori, before we have seen its further elaboration and explanation.

#### THE CONCEPT OF SPECIES AND THE PROBLEM OF EVOLUTION.

The fourth chapter, entitled "The Concept of Species and the Problem of Origin" is really a continuation of the third. In my opinion it is from a philosophical viewpoint, one of the best parts, of LEVIER's book. In an earlier, elaborate treatise, published in the fifteenth volume of Philosophia Reformata,<sup>18</sup> the author had already expounded the development of the biological concept of species, which nowadays has broken up into a multiplicity of largely unrelated points of view, and set forth his views on their future synthesis. In the fourth chapter of his book, however, he demonstrates in many respects a much keener critical attitude in his historico-philosophical method, together with a more thorough and particularly instructive application of the theory of structural types, as developed in the

<sup>18</sup>Rondom het biologisch soort begrip (Phil. Ref. 13, 119-138 (1948); Vol. 14, 6-32 (1949); Vol. 15, 1-23 (1950).

Handwritten note: *Handwritten note: "Handwritten note: it also look like and set forth"*

Philosophy of the Cosmomic Idea, to the scientific data. Especially his views on p. 129-136 may in this respect be called an important continuation of DIEMER's earlier attempt to make this structure-theory of the Philosophy of the Cosmomic Idea fruitful for the biological concept of species.

The question whether the species is constant or not, naturally raises its head again in this chapter. If we distinguish sharply between the law-side and the factual side of the evolutionary process - as we have seen, LEVER does not do this explicitly - it is understandable indeed that, especially with regard to the most individualized structural types (the species and the genera), the question of constancy has become the centre of biological interest, because factual scientific material is indeed available concerning the actual structural changes in the individuals of a species. One deals then with the REALIZATION of these most individualized and differentiated structural types of plants and animals, and not with the structural types as LAW-TYPES or TYPES OF ORDERING of the great process of GENESIS of the flora and fauna within the temporal order.

There can be no doubt that many of the "genera" and "species" which appear in LINNAEUS' system, as well as e.g. the various classes of vertebrates, have come to be realized only successively in the different phases of the evolutionary process of the plant-and animal worlds, nor that several of the species and genera which used to exist in former times have become extinct. These undeniable facts, however, have nothing to do with the actual question whether the species and genera are constant or not. Correctly put, the question is whether it is possible for a group of plants or animals, which belongs to an existing genus and species, to undergo a factual, inner, genotypical structural change of such a character that a new species and a new genus is revealed.

According to LEVER (p. 137) it is for the biologist a rather unimportant question which position one should take up, as a Christian, with regard to the problem of the origin of species, "because natural-

scientific research indicates a clear answer to it". This statement, considered in the light of another one to which I shall refer later and according to which the inconstancy of the species has been proved, appears incomprehensible to me when I confront it with the relevant state of scientific research.

If the concept of species is used, in what has been the traditional sense, since RAY and LINNAEUS we find indeed that more recent investigations into mutation have shown irrefutably that, within so-called poly-typical genera, inner structural changes in the carriers of the hereditary factors from one generation to the next occur frequently. Here I refer mainly to the so-called GENO-MUTATIONS (changes in the entire set-up of the chromosomes), the most frequent and simplest case of which is the so-called POLY-PLOIDY, i.e. the simple doubling, trebling, etc. of the previous chromosome material. This has been found in the vegetable world, but also in the animal world, although in a much smaller number of cases. Such changes occur mainly as a result of hybridization, but also sometimes in connection with external influences on the organism.

HAS THE INCONSTANCY OF THE SPECIES BEEN PROVED BY MORE RECENT INVESTIGATIONS INTO MUTATION? SPECIES AND VARIETIES (RACES).

It is a vastly different question, however, whether the experimental material in the field of such structural mutations, which is still increasing, can be used as proof for the "evolution of one species out of another, or of one genus out of another", species and genus used here in the sense of elementary structural types, realized in groups of individuals.

Many leading biologists, among whom there are, in particular, many practitioners of systematic biology, so-called taxonomists, regard this as extremely doubtful or even deny it in principle. Their opinion is that the available data merely prove

that new races of varieties can be formed within an existing so-called poly-typical species, which is of itself impossible in mono-typical species, which do not form varieties. The only convincing proof that really new species could be formed by way of mutation and with the assistance of other factors, would have to be supplied by the so-called MENDELIAN-analysis, which naturally cannot be applied in investigations concerning hybridization of species and genera.<sup>19</sup>

THE OBLITERATION OF THE BORDERS BETWEEN SPECIES AND VARIETIES BY NEO-DARWINISM AND ITS DENOUNCEMENT BY BORGMEIER.

The Neo-Darwinists have deliberately seized on the poly-typical species, intending to blur the borders between variety and species, to attach genetic priority to the variety as so-called "sub-species" and thus to make plausible the gradual emergence of new species out of varieties. Recently THOMAS BORGMEIER, in his treatise BASIC QUESTIONS OF SYSTEMATICS (Systematic Zoology, Vol. 6, 1957, No.2), sharply, but in my opinion convincingly, denounced this evolutionistic erosion of the biological concept of species.

He correctly points out that, if one adheres to the facts, one is bound to establish that the formation of a race is possible only within a species, in other words that the race or the variety cannot be an independent category in systematics: "Consequently there is indeed a PRIMARY DIFFERENCE between species characters and race characters, and the fact that the specific characters are retained in every formation of a race is clear evidence for the formation of races from species, but not of species from

<sup>19</sup> See B. BAVINK-PIERZ, Ergebnisse und Probleme der Naturwissenschaften (9<sup>e</sup> Aufl. 1948 p. 539f.)

racess" (p. 65 above). And the well-known geneticist-biologist GOLDSCHMIDT stated: "Sub-species are actually, therefore, neither incipient species nor models for the origin of species. They are more or less diversified blind alleys within the species". (cit. op. BORGMEIER)

The biologist NILSSON, also mentioned in LEVER's book, summarized the opinion of many systematists in his work Synthetische Artbildung (1953, p. 252) in his pronouncement: "The species is constant".

It is certain, at any rate, that mutations in genes, in chromosomes, or in the entire chromosome-pattern cannot, in themselves, cause an evolution of the species, but hinder it rather. For, if all the geno-typically different individuals of a certain species were to interbreed without limitations, these mutations would have to result in a certain equilibrium in the distribution of all the available genic-material among these individuals. Therefore, for the purpose of the current evolutionistic theories, mutation can be considered as a species-forming factor only in conjunction with isolation and selection, the task of the latter two factors being the prevention of the above mentioned equilibrium.

#### THE RELATION OF BIOLOGICAL SYSTEMATICS TO PHYLOGENETICS.

But the big stumbling-block of these theories is precisely that they do not use a clear-cut concept of species any more. It may be said of BORGMEIER that he has tied himself up too much to the Ray-Linnaean concept of species, but for the time being no better concept of species has been WORKED OUT, and it appears to me that his theses concerning the relation between biological systematics and phylogenetics are, AT LEAST IN PRINCIPLE, entirely correct: "Systematics is independent of the theory of descent. This is admitted today even by convinced evolutionists. The reasons are as follows: (1) Systematic methods provide definite results without reference to the idea of

evolution; phylogenetics has no special methods, it is essentially the interpretation of systematic facts. (2) Systematics is a science; phylogeny is a hypothesis of a historical process containing a fundamentally universifiable element (THOMPSON) and can therefore never be the foundation of a science. (3) Systematics is investigation of facts; phylogenetics is often "a dangerous play with mere possibilities" (HENNY); KANT called it "a daring adventure of the mind". Of course, any systematist is free to speculate on the probable phylogeny of certain species or genera, on the basis of systematic facts... But such theoretical considerations can only be evaluated as a supplement to systematics; they have without effects on true systematic research" (p. 54, 55 above).

**LEVER'S DENOUNCEMENT OF THE "DOGMA OF THE CONSTANCY OF SPECIES" LACKS A FACTUAL BASIS.**

LEVER does not go into these important points, which is understandable in view of the book's intention to avoid technical matter as much as possible. In opposing the "dogma of the constancy of species", still widely adhered to in orthodox Protestant circles according to him, he remarks, however, that "by not accepting the one and only point of the evolution-idea which had been proved, the philosophically strongly anti-Christian evolutionist was handed the weapon with which he could brand Christians as timid, narrow-minded deniers of facts" (p. 139).

It is regrettable that at the end of this interesting chapter he puts the matter in that way. For has it, in fact, been proven convincingly that the structures of species in their subjective realization are not constant, in the sense in which the evolution-theory had intended it? In view of what has been said above, this is highly doubtful to say the least, even if the Rae-Linnaean concept of species is used as basis. It is all the more doubtful, and it should even be denied, if one, believing that this traditional concept of species does not meet the spec-

ifications of the "new systematics" any more, shares LEVER's opinion that a satisfactory concept of species can only be achieved on the basis of the theory of individuality-structures as developed by the Philosophy of the Cosmologic Idea. For this concept has not yet been defined. Now, then, could it have been proved that the species, as this concept sees them, are not constant in their realization in living individuals and should be viewed only as variable evolutionary forms?

LEVER is quite right, of course, when he points out that one should not simply read the Linnaean concept of species into the creation of plants and animals after their kind. But that the typical differences between the species, however these may have to be understood in their structural theory, are likewise rooted in the divine creation-order and that these in the final analysis determine the nature of plants and animals, will under no circumstances be denied by LEVER, nor that these at least as "ordering types" which make our specific experience of animals and plants possible, cannot be variable.

THE CONCEPT OF SPECIES SUPPOSES THE CONSTANCY OF THE SPECIES AS LOWEST PRIMARY TYPES OF THE VEGETABLE- AND ANIMAL KINGDOMS.

Full recognition may be given, in that respect, to actual structural changes in the constellations of chromosomes and genes. But they should not be adduced as arguments against the constancy of the structural types as TYPES OF ORDERING OF THE INDIVIDUALITY. Classical and neo-classical evolutionism have simply ELIMINATED the latter, but in doing so they have also broken with any actual concept of species, as LEVER rightly points out himself. And, as AGASSIZ already observed, there is no sense in saying that the species are not constant if one does not have an actual concept of species. Of course, we may not a priori exclude the POSSIBILITY that many of the species-types which are now known as such, have in fact, as types of

ordering, realized themselves by way of a gradual or more sudden structural transformation of groups of individuals whose ancestors revealed a different species-type, even though that possibility cannot be verified scientifically. A. NAEF's remark, quoted by LEVER: "If living organisms which are nowadays present as different species, have common ancestors, they are really one species", is not correct in its generality. Common ancestry is, in the final analysis, not the decisive factor in determining whether the descendants belong to the same species-type. The type realized should be matched with the ordering-type of the species, which is constant after its inner nature and in respect to which the question of actual descent of the individuals belonging to a species is, up to a point, indifferent. Although we may say that the ordering-type of the species implies the possibility of producing fertile offspring, we should qualify it thus: within the bounds of the same type of ordering. The concept of species which is oriented towards this ordering-type will therefore always be tied to the postulate of the constancy of species, in the sense of constancy of the ordering-type of the species, no matter how any "new systematics" may define it further.

LEVER recognizes (p. 122) that the scientific concept of species "has always been, from the nature of the case, a concept of something constant" and that consequently evolutionism, which views the whole world of organisms only as a stream of continuously varying forms, cannot arrive at an actual concept of species. Furthermore I might add that this concept of species is not tied to the Greek-scholastic ideas nor to form-realism. The ordering-type of the species, as the Philosophy of the Cosmonomic Idea sees it, should certainly not be understood in this Greek-scholastic sense. It is, therefore, meaningless to speak of a "dogma of constancy of species" which Christian natural science ought to drop. For, as BORGMELER points out, the acceptance of the constancy of the species is the basis of the entire biological systematics and is

founded in solid facts, whereas its negation is due to a dogmatic evolutionistic prejudice which has interpreted the systematic factual material in a scientifically unverifiable manner.

Objections can only be reasonably raised against the dogmatic identification of the constant species-types as types of ordering with the CONCEPT of species which has been traditional since Ray and Linnaeus, and against the connection of this concept of species with the scholastic doctrine of the eternal creation-ideas in the divine Logos. And I believe that only this was LEVER's real intention. But the way in which he formulated this intention could lead to serious misunderstandings. Because of this I found necessary to go into more detail.

THE ORIGIN OF MAN AND THE ORIGIN OF "LIFE". THE LATTER PROBLEM LIES OUTSIDE THE SPHERE OF THE CONCEPT OF BIOLOGICAL DEVELOPMENT.

The fifth chapter is devoted to the origin of man. And it is evident that the question concerning the relation of creation and evolution becomes critically significant here for the Christian biologist, because the central problem "what is man?" comes up for discussion. In my review of the previous chapters it became evident that in the traditional problem of evolution much more is involved than the concept of BIOLOGICAL development proper. For the latter presupposed the organic life-aspect of our temporal experiential world. The question concerning the origin of "organic life" in the temporal process of becoming, therefore, can never lie within the sphere of the concept of biological development. This question belongs rather to a PHILOSOPHICAL EVOLUTION-IDEA, which implies a development of a-biotic constellations of matter into expressions of organic life, and within the latter a further development from the most primitive to higher and finally to the highest expressions of life in our temporal world. The adherents of this idea, however, are not aware that the concept "life"

has an analogous character, i.e. possesses a plurality of meanings.

#### THE TWO AXIOMS OF MECHANISTIC EVOLUTIONISM.

This evolution-idea is unable in principle to recognize borders between mutually irreducible modal aspects and individuality-structures of our world of experience. It starts from two "axioms", the second of which had already been posited in Greek thought, viz. NATURA NON FACIT SALTUS (Nature takes no jumps) and EX NIHILO NIHIL FIT (Nothing comes out of nothing). It is logical, therefore, that it cannot but view also all post-biotic aspects of our experiential horizon from the evolutionistic view point, and that it a priori implies man's descent from animals.

Dogmatic evolutionism, in the way it reveals itself since DARWIN and HAECKEL as the predominating view in biological science, intended to give a natural-scientific explanation of the origin and development of "life" in all its stages, so it had to endeavour to explain natural-scientifically the origin of man as well. The philosophical evolution-idea from which it started, however, was not a natural-scientific causality-concept at all, but rather a transcendental-philosophical IDEA OF ORIGIN which presented itself DISGUISED as a natural-scientific causality-concept. This masquerade of a philosophical prejudice, influenced by religious considerations, as a natural-scientific causality view gave this evolutionism its (pseudo-) scientific aspect. The axiom "Ex nihilo nihil fit", which had originally a strictly logical meaning, was thus automatically given a pseudo-natural-scientific turn: In order to trace the origin of "life" and in particular of man, one must be able, in this line of thought, to explain natural-scientifically how they came forth out of originally a-biotic matter, e.g. out of an animal stock.

In as far as neo-evolutionism acquiesced to the lack of transitional forms between the higher types of plants and animals, it wished yet to put forward at

least a hypothesis for the natural-scientific explanation of the gaps in the great process of evolution. The (pseudo-) natural-scientific theory of evolution implies a FUNCTIONALISTIC way of thinking which tries to reduce the structural-typical in the temporal process of genesis of our created world to a genetic product of purely functional physico-chemical relations which, in the process of evolution, only become increasingly complicated.

The evolution-idea from which this way of thinking starts has, in fact, nothing to do with the actual concept of (ontogenetical) biological development. For the latter implies the presence in the initial situation, either predisposedly or potentially, of that which develops, and its unfolding out of this predisposition under the required environmental conditions in a purposive process. Although this concept of development as such has only a modal character, since it relates to the organic life-aspect of our experiential world, it can only be applied to living organisms as individual totalities, determined by their internal structural types. For the same reason the actual biological causality-concept can only be used in relation to the typical totality-structures of living organisms and their mutual interlacements. It can never serve to explain the typical totality-character of living beings out of a mechanism of purely functional factors.

#### THE PROBLEM CONCERNING THE ORIGIN OF MAN AND THE FOSSIL DISCOVERIES MADE BY PALAEOLOGY.

The ontogenetic organic development of MAN'S life starts with the HUMAN, and not with an animal, germ-cell. But this germ-cell can develop into the full-grown foetus only inside the human womb. How then should we imagine the temporal process of becoming of the first humans to appear on earth? Should we assume a phylogenetic connection between the human race and a certain species of higher animal primates? This question lies outside the sphere of the concept of

biological development, for it is biogenetically inexplicable how a HUMAN germ-cell could evolve from a not-yet-human parents. Classical mechanistic evolutionism, however thought that it was able to give the only possible answer to this question, even before the interesting and still increasing discoveries had been made of fossil remains of pre-historic men and man-like beings which, together with archaeological find, forced a thorough revision of the earlier, pre-evolutionistic ideas about the age of the human race.

LEVER gives a brief, but excellent survey of these discoveries. Their age places them in the Pleistocene, the epoch of the four glacial periods: the Gunz, Mindel-, Riss- and Wurm- glacial periods and the three interglacial periods which can be distinguished between them. The majority of the fossil remains in question belong to the four main group of "man-like beings", viz. the PITHECANTHROPUS (ERECTUS and ROBUSTUS), SINANTHROPUS, HOMO NEANDERTHALENSIS and HOMO SAPIENS DILUVIALIS, and only the latter corresponded roughly in anatomical structure with "historic man" (HOMO SAPIENS RECENS). The former three show, in this respect, strongly animal, as well as human, characteristics. That HOMO SAPIENS RECENS descended from HOMO SAPIENS DILUVIALIS must be accepted, as LEVER correctly observes. But it is not a part of the problem of evolution, because diluvial man, who lived during the Wurm glacial period (estimated from 60,000 - 100,000 to 10,000 - 20,000 years ago) and produced the famous cave paintings, must be considered as complete man in every respect. Evolutionism naturally looks to anatomical transition-forms for support for its hypothesis concerning man's descent from animals, and the fossil discoveries on the Pithecanthropus, the Sinanthropus and the Neanderthal man appeared to be just right for the purpose.

LEVER now shows us in a brief, but well-documented exposition how the latest fossil discoveries during the last few decades have removed all semblance of probability from the supposition that diluvial man

is descended from anthropoids via the Neanderthaler, the Sinanthropus and the Pithecanthropus . Since the sensational discoveries in South Africa or the fossil remains of the so-called Australopithecinae, it also appeared that the anatomical-skeletal characteristics, which so far had been the assumed criteria of human beings, are not sufficient to answer the question whether the fossils are of human or of animal origin. "These discoveries", LEVER writes:

greatly surprised the anthropologists. The reason for their surprise was that these discoveries show very clearly that we are not descended from recent anthropoids or from quite similar beings, and also that the typically human characteristics must be much older than had ever been thought.

Or, as KALIN expressed it:

The sensational aspect is rather, that in the eyes of the biologist the image of man becomes more and more human, and that to a large extent it had become impossible to speak of early, animal-like stages of higher primates, where man's physical independence is concerned. In the place of the savage, animal-like primitive who lived in ERNST HAECKEL's fantasy, an image of man has now appeared on whose countenance the light of the spirit is visible from the very beginning.

#### THE INSUFFICIENCY OF THE CRITERIA OF ANATOMY FOR THE DISTINGUISHING OF MEN AND ANIMALS

The above also means, however, that palaeontology has not been able, on the basis of its fossil discoveries, to determine the age of the human race within certain limits on the geological calendar. In order to do that, it needs the help of archaeology, which brings to light and investigates the objective products of human culture, preserved in various layers of the earth. And this means that Science will have to replace the criteria of anatomy for the distinction between man and animal more and more with the cultural criterion. Classical evolutionism had certainly not

expected this.

#### ARCHAEOLOGY'S OLDEST CULTURAL DISCOVERIES.

It appears that the oldest known cultural products, the remnants of which were found in Africa, date back to the early beginning of the Pleistocene. This means, assuming that the geological chronology is correct and that the primitive stone implements which were found can only come from man (and there are no reasonable grounds to doubt this); as LEVER points out, this would entail that man was already found on earth approximately 500,000 years ago. It follows then, according to the writer, that actually nothing is known scientifically about the origin of those earliest humans. For we have no knowledge of any remains of beings which, according to evolutionistic ideas, could be considered as man's ancestors and lived in the Pliocene, a period of 10-15 million years which preceded the Pleistocene (they were supposed to be anthropoids). For it has not been proved that the above-mentioned Australopithecinae, with the surprisingly strong mixture of anthropoid - and man-like features in their anatomy, already lived at the end of the Pliocene.

About the human beings who made the oldest known stone implements we have no further knowledge; but it is evident from the spread of the stone-cultures that mankind lived in practically the entire old world even as early as in the Lower Pleistocene and in the beginning of the Middle Pleistocene (i.e. about 400,000 years ago according to the geological chronology). In the same sedimentary layers (near Peking) in which the Sinanthropus remains were discovered, not only stone implements which showed that hammer and anvil were already in use, but also the remnants of fire-places where meat was roasted, were found. To connect these cultural products with the Sinanthropus, in whose habitation they were found, is obvious, although we cannot ascertain this with certainty. Thus, cautiously, LEVER makes this connection.

No doubt is possible, however, with regard to the culture of the Neanderthals, who lived according to the geological chronology approximately 150,000 to 60-70,000 years ago, and whose stone implements, however primitive, displayed a considerably greater retouching than those of the oldest stone cultures. It is certain that, as for the anatomy of these humans is concerned the humans evidenced strongly ape-like features. But it is also evident from the most recent discoveries that we should possibly think here in terms of a degeneration symptom rather than of an original presence of these features. For these discoveries proved that much older Neanderthaloid type beings must have existed, who showed many features in their anatomy which were characteristic of diluvial man as well, so that the latter was definitely not a descendent of the Neanderthal.

LEVER also goes into the religion of pre-historic man, in as far as anything can be concluded about it from the manner of burying the dead, the art products and the famous discovery made in 1920, in sedimentary layers dating from the early Neanderthal period, in the "Drachenloch" cave in East-Switzerland, which nowadays is connected either with ritual burials of animals or with the sacrifice of firstlings, as well as the place of sacrifices discovered by German RUST near Ahrensburg in the vicinity of Hamburg which dates from the last ice-age. He remarks that, if further studies should conclude the opinion that Neanderthal and ice-age people believed in a God or in gods who control life on earth, this would be an added reason to consider them as belonging, completely and in every respect, to the human race.

#### THE ANTHROPOLOGICAL VIEW OF THE PHILOSOPHY OF THE COSMONOMIC IDEA AND THE PROBLEM OF EVOLUTION.

We pay particular close attention, of course, when LEVER, in the latter part of the elaborate fifth chapter, starts to draw his conclusions with regard to the question how we should view, from the biblical

creation-motive and in the light of the present day state of science, the problem of the origin of first man in the temporal genetic process. His standpoint on this question is all the more important to the readers of this journal because his philosophical-anthropological view agrees with the guiding principles which I previously developed out of the theory of the enkaptic structural whole. He has thus freed himself in principle from the dualistic view of man which, under the influence of the Greek form-matter motive, was expressed in traditional-scholastic anthropology. Starting from the religious centre, as the root of human existence and the focal point of the sin-obscurated image of God, he sees man's entire temporal form of existence as an integral whole only, in which, in spite of the fact that four individuality-structures are enkaptically interlaced in it, there is no room whatsoever any more for a dichotomy as it used to be assumed between the material body and the so-called "rational soul" in the traditional theory.

But with that LEVER has also in principle blocked for himself the neo-scholastic way-out of accepting the evolutionistic view with regard to the human "material body", and the psychocreationistic idea, sanctioned by the Roman-Catholic church's teachings, with regard to the so-called "immortal rational soul". Reading his circumspectly worded conclusions, one finds indeed that he does not enter upon this road at all. When he (p. 178 f.) brings up the question whether, from a Christian standpoint, the door should be closed in advance on the POSSIBILITY of a genetic connection between man and animal, he is well aware that the mechanistic-evolutionistic view of this genetic connection, which had a point of contact in the anatomical and physiological relationship between the human body and that of the anthropoid, starts from a TOTALITY VIEW of man which incorporates him completely in the animal world. LEVER realizes full well that this view cannot be taken over IN PART.

"This evolutionistic view of man," he writes, "has caused a shallowness and a loss of critical scientific capacity which did not remain confined to

biology. For, if man does not differ qualitatively from the animals, the human "spirit" must be studied in the light of the soul of the animal as well. To approach man's language we must start from the sounds made by animals. There is an evolution of language. Human societies, the nations, must be compared with the communities in the animal kingdom. Wars and the dictum "might is right" can be explained and justified with "the struggle for life" and "the survival of the fittest" (p. 191).

Quite so, and we can add that in ethnology, where this evolutionism, since HERBERT SPENCER, first made its appearance, its scientific untenability also first came to light, when the ethnological factual material was subjected to really critical cultural-scientific methods and was no longer interpreted according to aprioristic evolution-diagrams.

#### THE HUMAN BODY AS AN ENKAPTIC STRUCTURAL WHOLE.

In the light of the concept of the human body as an enkaptic structural whole it is not surprising that important characteristics of anatomy and physiology can be found which are common to man and the recent anthropoids. The fossil discoveries of the Australopithecinae have proved even, that beings have lived in the past which have resembled man much more still than do the present-day anthropoids, so much more even, as LÄWER points out, that on the basis of their skeletal remains it cannot be determined any more whether they were animals or humans.

One can go further, and recognize that the human body displays striking characteristics in common with the anthropoids in not only its physico-chemically qualified sub-structure, but also in that of its living organism and in the sensorially qualified sub-structure above it. But none of these three sub-structures is QUALIFYING for the HUMAN body. They are enkaptically bound in an INTEGRAL structural whole, qualified by what I called the act-structure. This act-structure stands in an inseverable relation to the

human I-ness as the religious centre, from which emanate all man's temporal inner acts and all actions which give expression to these inner acts. The realization of this act-structure in the body of the first humans to appear on earth cannot possibly be explained from a structural transformation of animal hereditary factors, which, after all, could lead at most to the realization of a new animal species-type (although it has been shown that this possibility cannot be verified scientifically).

MAN CANNOT BE UNDERSTOOD STARTING FROM THE ANIMAL, BUT, CONVERSELY THE ANIMAL CAN ONLY BE UNDERSTOOD STARTING FROM MAN, BECAUSE IT IS ONLY WITHIN THE ACT-STRUCTURE OF THE HUMAN BODY THAT THE LATTER'S ANIMAL SUB-STRUCTURE CAN DISCLOSE ITS RELATION TO OUR INNER ACTS AND CAN THEREFORE BE KNOWN BY US.

Since the three lower individuality-structures of man's body, in which he SHARES in the material-vegetable-and-animal kingdoms, function enkaptically within the act-structure of his body and display the typical HUMAN characteristics in it, the human body as enkaptic structural whole will continue to display, ALSO IN ITS RELATEDNESS TO THE ANIMAL BODY, its FUNDAMENTAL DIFFERENCES with the latter. That these fundamental differences are, in recent times, especially from a biological perspective, beginning to thrust themselves upon various investigators is not at all surprising. ARNOLD GEHLEN, in his well-known Der Mensch, has even attempted to develop, from this viewpoint (which he absolutizes), a uniform image of man as "acting being", bringing into focus in a striking manner the fundamental difference between man and the animals which are specialised in their environment. This is all the more interesting because GEHLEN started from NIETZSCHE's view on man as the animal not fixed in evolution.

LEVER particularly points to A. PORTMANN's contributions to a new zoological view on the problem of man's descent, which emphasize especially the latter's entirely unique type of biotic development. (This Swiss author, for that matter, was strongly influenced by GEHLEN).

LIEVER'S HYPOTHESIS CONCERNING A POSSIBLE  
GENETIC RELATION BETWEEN MAN AND ANIMAL.

Surveying all recent data, the writer arrives at the following statement, with which I can fully concur:

Correspondences in the lower individuality-structures between man and anthropoids, therefore, do not constitute a "simple fact" with consequences for the other structures. Going to extremes, we can even imagine beings living next to each other who looked practically the same but were characteristic anthropoids and complete humans respectively. It does not in any way solve the problem of the origin of this typically human aspect", (p. 195).

And yet, at the end of this chapter he arrives at a conclusion which, however circumstpectly worded, intends to keep the door open, from a Christian standpoint, for the possible genesis of man by way of animals, as is evident from the further explanation in the sixth and last chapter of his book.

This conclusion reads: So that, putting together our knowledge of the life of the higher primates in the Pleistocene and the revelation that man originated within creation, we may not reject in advance the POSSIBILITY of man's genesis via a being which was, at least in its skeletal characteristics, an animal according to our norms and criteria". (p. 197).

After all that has been said earlier in this chapter, this conclusion is rather unexpected, in the way that, in the previous chapters, the eventual concessions to evolutionism actually came unexpectedly because there did not appear to be any justification for them in the preceding survey of available factual material and results of scientific research. For only a little earlier we heard that the Australopithecinae, who most likely were contemporaries of the human beings who lived in the early Pleistocene, were so similar to humans in their skeletal characteristics that, on the basis of the fossil discoveries alone, we cannot determine whether they

were humans or animals. It appeared that the strongly ape-like features in the skeletal forms of the Neanderthals were much less developed in the older Neanderthaloid types of skeleton. And all the giant-size skeletal remains which were discovered in recent decades and belong to the Middle - or to the Lower Pleistocene, also appeared to be "man-like" and not "anthropoid-like" according to the anatomical criteria prevailing so far.

But I admit that, judging by the fossil remains of their skeletons, the Pithecanthropus, the Sinanthropus and the Neanderthal were built more anthropoid-like. Even though we may be sure that historical man and his diluvial ancestors are certainly not descendants of these beings, the fact remains that human (e.g. probably human) beings have lived on earth which displayed these more animal-like anatomical features.

What can be achieved with the hypothesis that man and animal used to be genetically related (the author speaks again, here, of a genesis of man VIA and animal)? In the sixth chapter LEWIS relates this possibility to that of the origin of first life via lifeless matter. Again he says (p. 221) that the Christian need not reject "the idea that a continuous connection" (he presumably means a continuous GENETIC connection) "used to exist between life and the lifeless." And he continues: "The same holds for e.g. the origin of man. Here also, we may not reject in advance the possibility that man and animal used to be related genetically. The man act-structures, however, cannot be reduced to the animal psyche. They function within the aspects of reality created in the beginning. How this possible development from animal to man took place is not known to us," etc. (p. 221).

His further explanation of this is important: "In order to avoid misunderstanding, but possibly unnecessarily, we must point out that we do not mean to say that e.g. a mother gorilla suddenly gave birth to a human baby. That would be an absurdity. For man is a unity in all his structures, and we should therefore rather imagine that within creation, viz. within the

group of higher mammals, a separate line led to man, a line in which all lower structures were directed at the unfolding of the highest structures of man."

This makes it clear, of course, that LEVER rejects the pseudo-natural-scientific-evolution-theory in principle, a fact which could not be doubted anyway.

#### CRITICAL QUESTIONS IN CONNECTION WITH LEVER'S HYPOTHESIS.

But here the same difficulty confronts us as in LEVER's elucidation of his hypothesis concerning the origin of "organic life" VIA lifeless matter. If I understand the explanation of his hypothesis about the origin of man via animals correctly, it implies in any case that, in a transitional phase from animal to man, the individuality-structures of the material composition and of the living organism and the sensorially qualified structure had already been opened and were thus DIRECTED at the human within this act-structure, which, therefore, should have been realized already. How else than within the act-structure of the human body could e.g. the function of feeling, which has the leading role in the sensorially qualified structure of the animal body, be already opened into sense of logic, of power, of language, of justice, etc.? Such disclosed functions of feeling are already TYPICALLY HUMAN in character and, consequently, cannot be revealed in a being which is still animal. The hypothesis which supposes that the realisation of the act-structure is the result only of the disclosure of the animal sub-structure, therefore reverses again the only known genetic order and leads to inner antinomies. It certainly does not belong to the concept of psychological development, just as the hypothesis concerning the origin of life via a purposive (and therefore disclosed) ordering of the atoms and molecules of complex protein compounds does not belong to the concept of biological development.

If the continuity in the evolution from animal to

man in this hypothesis is to be maintained, the latter is bound to resort to "transitional beings" which are not animals any more, but not humans either. But nobody is able to say what should be understood by such beings and in which way it could be ascertained scientifically whether or not they ever existed. And the question how a human being could originate via such a transitional being, is in my opinion no less insoluble than the question how a human being could develop from e.g. an impregnated ovum of a female chimpanzee; a question which LEVER himself calls absurd. The writer has apparently realized this: "How man's coming into being took place", he writes (p. 197) "the Bible does not reveal to us. Science is not able to answer this question, either. We are only just starting to realize that the origin of man presents a much more complicated problem than had ever been imagined."

#### HAS LEVER'S HYPOTHESIS ANY SCIENTIFIC VALUE?

For anyone who, with LEVER, rejects mechanistic evolutionism, the hypothesis concerning the origin of man via an animal line can, strictly speaking, have no real scientific significance, since it has nothing to contribute to a scientific answer to the question how that which is TYPICALLY HUMAN originated. The evolutionists' claim to an explanation, however, still attracts the author, as evidenced by his statement in the final chapter (p. 221), where he remarks, concerning the question how the possible development from animal to man took place and how, where and when the "act-structure" was realized in the first humans; "These questions may be for science to solve. We should, therefore, not keep aloof from these problems as if we had already solved them, but occupy ourselves with them among all other investigators".

THE "DOCTA IGNORANTIA" TOWARDS THE QUESTION HOW MAN FIRST CAME INTO BEING IN THE TEMPORAL GENETIC PROCESS.

I did not change  
his word if you  
got in the Dictionary  
of Phil. the word  
DOCTA IGNORANTIA

IS USED.

I believe that it is possible to adopt a third attitude towards these questions, which does not fit in the dilemma posited here by LEVER, viz. that of the DOCTA IGNORANTIA. If I have understood him correctly ADOLF PORTMANN also takes this attitude in his above mentioned work. I readily admit that the questions which LEVER refers to here do not leave me in peace either, and that the hypothesis about the origin of man via an animal line has a certain speculative fascination for me also. But as I cannot see in which way these questions could be brought to a really scientific solution, and as I do not know of any facts which would more or less force us in scientific respect into the direction of the said hypothesis (unless we are biased already by the dogma of evolution), I consider it more justifiable to reconcile ourselves to the insolubility of these problems. For if we were to occupy ourselves scientifically with them among all other investigators, as LEVER wants us to do, we should at least be able to form some idea of the scientific significance of the hypothesis concerning man's descent from animals and of the methodical path we should have to follow in order to proceed scientifically along its lines. The evolutionist of the mechanistic type has undoubtedly formed such an idea, but that cannot be LEVER's. My objection to his hypothesis now is that he gives us no indication whatever of the way in which he proposes to use it in science.

Well worth reading are his views concerning the question to what extent God's guidance and direction of the processes within the created temporal world may be seen when it is not supernatural intervention. I can fully subscribe to these views, but I do not think that he himself wishes to contend that they show us the way to a scientific application of his hypothesis. It seems to me that the latter is not necessary for the Christian biologist, palaeontologist and archaeologist in order to co-operate con amore with their colleagues who hold evolutionistic views in investigations regarding mutations, the genesis of our present-day flora and fauna, and the earliest human

it should read  
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life upon earth.

It is then my opinion that LEVER's hypothesis is irreconcilable with the biblical creation-motive and with the views, developed by the Philosophy of the Cosmomic Idea, concerning the modal and typical structures of our temporal experiential world? I would certainly not like to say that, for it differs radically from the hypothesis of mechanistic evolutionism. And he quite correctly points out (p.226f.) that already DR. A. KUYPER Sr. in 1899, in his well-known rectorial address on EVOLUTION, did not consider as irreconcilable the Christian confession and the recognition of the possibility of a general evolution from lifeless matter to man, guided by God and originating in a creation in the beginning. LEVER has, as he himself remarks, only put this possibility more positively, since none of the earlier classical views in Christian circles can nowadays stand up to criticism.

And if he asked me whether I can offer a better hypothesis concerning the becoming of the first humans who appeared on earth and concerning the origin of the first living organisms on earth, I could only answer in the negative. But if it were so, that we stand here at the limites of human experiential knowledge, beyond which we can only go by way of unverifiable and basically sense-less speculations, then I would want to maintain that the standpoint of docta ignorantia is better than any speculative hypothesis. And that is in line with LEVER's own statement which recapitulates his point of view: "He" (i.e. the Christian man of science) "should accept ALL data, regardless of the problems they cause him, but he must not magnify or minimize their significance by positive or negative speculations. He may, however, set up working hypothesis which are required for further research, provided that he continues to consider these hypothesis as POSSIBILITIES only" (p. 231).

RESUME OF MY REGARD FOR LEVER'S BOOK. LEVER'S  
CRITICAL STANDPOINT TOWARDS THE PROBLEM OF EVOLUTION  
AND TEILHARD DE CHARDIN'S SPECULATION.

So far my comments on LEVER's book. From the length this review has acquired it is evident that I regard it as a very important work. It is especially important for the readers of this journal because it expertly confronts the Philosophy of the Cosmogenic Idea with the present-day position of science as regards the problem of evolution. In this regard LEVER's book is an, in many respect valuable, continuation of the work commenced by the biologist DR. HARRY DIEMER, who passed away under such tragic circumstances. The book's attraction in particular is its completely open and honest attitude towards the factual data brought to light by scientific investigations, its well-founded opposition to the traditional-scholastic Christian views on the one hand and classical evolutionism's dogmatic views on the other, and above all the author's earnestness in attempting to find a new path by which, starting from the biblical ground-motive, the basic problems connected with evolution may be approached, thereby putting to use the view of our temporal experiential world developed in the Philosophy of the Cosmogenic Idea. In this respect his book came at the right time, as just a year earlier the posthumous first edition appeared of the life-work of the famous French geologist and palaeontologist PIERRE TEILHARD DE CHARDIN (1881-1955), entitled Le Phenomene Homme in which from the Roman-Catholic point of view an attempt was made to throw new light upon the doctrine of evolution, and which made a deep impression in many circles.

Here, in an undoubtedly grand conception, an anti-materialistic-evolutionistic view of life and of man is developed, culminating in a future view of humanity, which only in our century has consciously accepted evolution as its task and become conscious of its responsibility for the entire cosmos. The general evolution from primeval atom to civilized man of today is not, as it is with LEVER, a hypothesis

only here, to be given a place alongside others, but a would-be scientific certainty which leaves no room for critical doubt. On the other hand, though, this conception also keeps aloof from the scholastic view of "special creation" as developed in modern biology e.g. by HEDWIG CONRAD MARTIUS in her well-known work Abstammungslehre (1949)

I have raised some critical objections to LEVER's cautiously worded hypothesis of a general evolution from elementary matter to man with really no other purpose than to start off a discussion about it in our philosophical circle and to prompt him to further expound his views on this matter. I have restricted myself to the critical philosophical questions which have to be asked regarding this hypothesis. I have refrained from going into the questions he posed in the fifth chapter of his book (p. 170 f.) concerning the relation of Genesis 3 et. seq. to the results of palaeontological and archaeological research, the reasons being that these questions are theological rather than philosophical in character, that they do not concern the central basic motive of the Word revelation and, above all, that I do not consider myself competent to assess the hypotheses which LEVER raises here and which I do not particularly like, if only because of their speculative nature. But I must not refrain from referring, also in this connection, to my remarks in respect to the first chapter of LEVER's book about this general view of the relation between Holy Scripture and the results of scientific research. This view appears to me to be entirely correct IN PRINCIPLE, and in accordance with Scripture's testimony about itself. For the Bible is not a scientific book, but the embodiment of God's Word revelation. And only thus does it present itself.

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