

ESSENCE AND EMERGENCE OF BIOLOGICAL LIFE

<http://universe100.narod.ru/LE090-Oglavlen.html>

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Abstract. Added probably the last missing element in the foundation of the biological sciences. This element consists in describing the nucleation of living molecules from inanimate ones. The origin of life coincides with the appearance of vibrations of molecular flagella under the action of quanta of energy flowing from a molecule to water. The evolution of living molecules to cellular organisms has been speculatively traced. An attempt has been made, while not rigorous, to inscribe this element in the existing system of biological knowledge. The role of living molecules in modern organisms has been established. Several new hypotheses have been formulated with the participation of a new element: on aging, on diabetes; about the causes of cancer and some others.

For further advancement, it is necessary to concentrate theoretical efforts in the detected directions.

TABLE OF CONTENTS.

Briefly about the main
Introduction
Fundamental quantum laws
Quantum processes under the sun
Prerequisites for the origin of life
The birth of a great life
Differences and Advantages of Self-Moving Molecules
Hypotheses about the role of molecular engines. Aging. Diabetes
Evolution of pansperms. Reproduction and replication
Formation of molecular organisms
Formation of cellular organisms
The emergence of the information chromosome
The emergence of diploid cells
Multicellular organisms. Cancer
References
When evolution finds a new branch. 2012.12.25

Briefly about the main

The discovery was made in November 1996.

A trail in 2000 Published in 2002

Before answering how and when Life arose, whether there is Life on Mars, we must answer thousands of previous questions. On thousands! There are thousands of unresolved issues along the way. We run ahead of the horse. And only after answering these previous questions, the question of Life and whether it is worthwhile to fly for her search for Mars will be solved easily and naturally.

The answers to several previous questions are suggested. And then the formulation of the most primordial, far-out-of-the-cell Essence of Life will be proposed.

- Why does the flag on the roof of the building fluctuate? "Because the wind is blowing." Laws of aerodynamics. In this case, the energy of the air stream is converted into the energy of the flag's vibrations. The flag seems to come to life.

- Why are the algae, branches, leaves, fibers running around the river? - Because they are shaken by moving water. Laws of hydrodynamics. At the same time, the energy of the water flow is transformed into the energy of vibrations of algae, branches, leaves, fibers. All these listed objects begin to stir and seem to come to life.

- Why is the pendulum ticking in hours - hiks? "Because there's a weight hanging downstairs, it pulls down a chain that drives the wheels that swing the pendulum through the balance. The laws of mechanics. In this case, the potential energy of the weight is converted into the energy of the moving wheels, the oscillations of the pendulum and the movement of the arrows. The clock and hands seem to come to life.

- Why does the kitchen tap sometimes crumble? - Because it has a stream of water and loose details. The laws of sanitary engineering. In this case, the energy of the water flow is converted into the vibration energy of the crane parts. All these listed details begin to vibrate, make a roar and, as it were, come to life.

- Why does birch juice reach the very top of the tallest birch? Yes, birch, eucalyptus juice reaches a height of one hundred meters. Where is this pump? In the roots? - No! If you cut the tree bark anywhere (!), The juice will flow in this place, but regardless of this, it will flow to any place above the cut up to the very top of the tree! The poet who, having fallen asleep in a haystack with a songwoman, drank birch sap from the morning dry in a pine forest (or vice versa, once in no time, in a birch forest - a pine tree). And other fools, spoiling birches know this.

Approval number one.

THE PHENOMENON OF LIFE ARISES IN THE ENERGY STREAM. IN PARTICULAR, it IS ENOUGHLY ENOUGH THAT OUR CURRENT EARTH LIFE HAS ARRIVED AND EXISTS IN THE STREAM OF SOLAR PHOTONS = QUANTS OF ENERGY.

Approval number two.

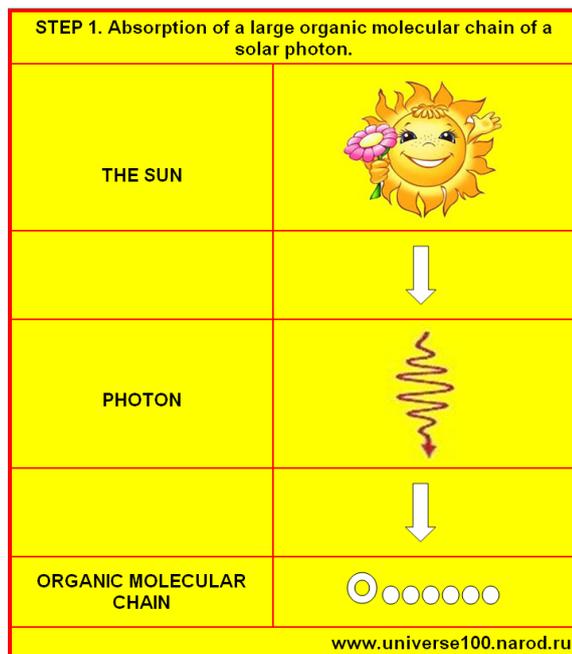
THE PHENOMENON OF LIFE CAN NOT BE OBSERVED IN A MICROSCOPE. HE CAN BE UNDERSTANDLY ONLY THOUGHT, BY A DANGEROUS WAY.

A huge river of solar light (photon, electromagnetic) energy, that does not fly past the Earth and does not immediately reflect it into space, eventually falls into the sea of thermal (kinetic) energy of terrestrial molecules. Earth's molecules are the atmosphere, the land, the seas and rivers, the ocean, dissolved in it large organic molecules.

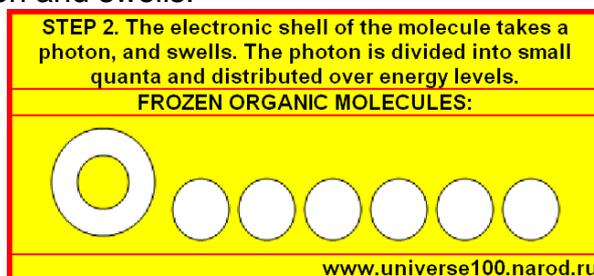
There must be some processes that transform one energy (photons) into another (thermal) energy. These processes give rise to Life. It is necessary only very subtly and very accurately to imagine all these processes.

Stages of the emergence of Life and the components of the process of Life.

STEP 1. Absorption of a large organic molecular chain (hereinafter simply a molecule) of a solar photon strictly wholly, without scraps. The fragmentation of a photon on a part by no one has ever been fixed and does not make sense! This phenomenon: Absorption by a molecule of a solar quantum of energy, strictly wholly, without scraps - it exists objectively and no one can deny it.



The photon falls on a molecule of a suitable configuration and location in space and is absorbed by it. In terms of the birth of life, the most promising are the molecular configurations in the form of a "head" of several atoms and a "molecular tail" from the chain of laws. Various variants of molecular structure are possible, branchings are possible. In this context it does not matter. The most probable arrangement of a molecule is perpendicular to the motion of a photon, this is the basis of the electromagnetic theory. Just like the antenna when receiving radio waves and both of these processes have an absolutely unified nature. As a result, the electron shell of the molecule takes a photon and swells.

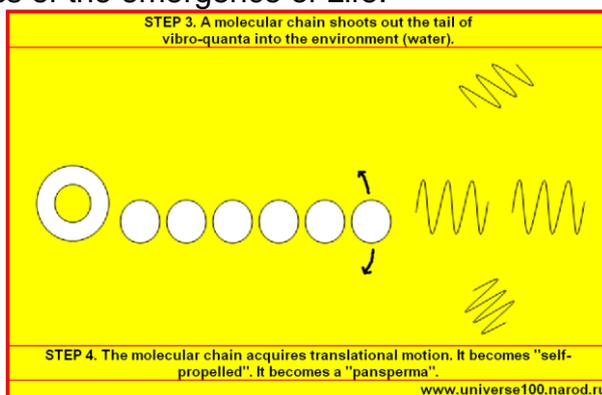


STEP 2. Immediately after the absorption of the photon, it is "digested" by the molecule according to natural laws, is ground into small quanta and distributed over the electron shells and energy levels of small fragments of the molecule. That is, inside the molecule the photon ceases to be a photon, it dies, it becomes just an electromagnetic energy that can be quantized into small pieces in accordance with the spectrum of possible energy levels in the molecule.

STEP 3. Such an "energy-pumped" state of an organic molecule is not in equilibrium with surrounding molecules. The molecule is as if inflated, the internal energy of its atoms exceeds the internal energy of the surrounding atoms, and such a situation is unstable. Each weakest impact of surrounding molecules on it initiates the release of a significant portion of energy from the molecule to the surrounding molecules. This happens in reality, for example, through the vibration processes of various fragments of the inflated molecule. Parallel to this, there is an energy redistribution of internal energy tending towards equilibrium. In other words, the molecule, pumped up by energy, starts to "shoot" a little - energy, "thermal" quanta in the surrounding water molecules. It is no longer a photon, but simply a portion of mechanical energy transmitted through the vibrations of various fragments of the molecule, as its stem part (not to be confused with stem cells!), And molecular branches of the tail type, flagella (not to be confused with

flagellar ones! later).

The simple emission of energetically small photons (however very large in size!) Pumped by the molecule into space, if possible, it seems that this process is not the main one in the process of the emergence of Life.



STEP 4. As a result of firing by vibrational quanta, the molecule receives back jerks and acquires translational motion. It is not difficult to establish that the direction of motion of a molecule for any kind of vibration of its fragments is movement toward its head. It becomes "self-propelled".

THIS IS THE MOMENT OF LIFE !!!

The molecule becomes alive. The molecule comes out of the action of the laws of entropy, chemical kinetics and other natural laws.

This is the desired, so mysterious, sought after by all biologists, PANSPERM.

STEP 5. 1) The self-moving molecule comes out of the action of the laws of entropy, chemical kinetics and other natural laws. It from the first movement from the arising vibrations acquires properties:

- It is more active than simple molecules to attach atoms and molecules to themselves. That is, it begins to grow.
- There are processes of growth, decay, recovery, and thus the process of reproduction of these pansperms.
- The filling of the ecological niche for pansperms begins.
- The evolution of "self-moving molecules" or pansperms arises and is proceeding.
- There is an evolution of life.

Apparently, already at the earliest stage of Life there are processes of "absorption of food" (photon), "digestion" (fragmentation of the photon into small energy quanta and their distribution according to the energy levels of the molecular chain) and "isolation" of vibrating edges.

In particular, the only meaning and result of Vegetable Life is the mediating role in the transformation of solar energy into heat. And in animals - twice the mediator role in the transformation of already accumulated solar energy (in the form of food - chemicals) into heat.

It becomes clear that life is not a miracle. Life is born every second in every puddle, in every drop of water under the rays of the Sun. Do not fly for her to Mars and Venus. And sing about this song to the soundtrack.

And then, in just 1.5 billion years of the evolution of Life, a Man emerges, the Man has the Reason and the ability to this World to Know, Model in the Brain and Influence it.

Essence of Mind, Mind - Modeling an object. It occurs through speculative images, written and spoken language, mathematics, physics and other sciences. There is a simulation of even themselves - this is the ability to write literary crap and shoot on it the TV series for fools in the style of "action."

There is an opportunity to influence this world - genetics, nuclear reactors, chemistry, oil, electricity and much more. This man, as it were, rises both above the inanimate and

above the living Nature.

This will destroy him if he does not get smarter.

INTRODUCTION.

The author's claim to the existence of the claim is that biologists know quantum physics worse than physicists know biology. At least because physicists are interested in biology for love and voluntarily. If only because the popular and relevant science of biology is noticeably more interesting than quantum physics. And biologists are interested in quantum physics unless forced at the institute or on a working need or know about it by hearsay. In any case - superficially. Yes, if we take into account the boredom of these false quantum matrices and tensors ... We hope that the new Quantum Physics introduced by us on www.universe100.narod.ru will be an order of magnitude more interesting than the previous one, Schrödinger's. And consequently biologists will also be interested in it, considering that the emergence of life is pure New quantum physics.

While biologists are looking only at the basis for creating a new, less contradictory picture of the living world, it is possible to create an accurate, axiomatic biology. Along with the parallel and simultaneous axiomatic physics that we are creating. On the basis of purely physical, mainly quantum laws, the emergence and the entire evolution of life on the Earth, from the inanimate broth to the higher organisms, is restored.

People did not get scared when they found out that they were made up of atoms. They were not intimidated by autopsy, anatomical and physiological details. Do not be frightened by the absence of a soul in the body and a place for it. People are not scared, but even laugh and happy that they grow out of sperm. Smiling and squealing in ecstasy prostitutes smear sperm on the lips and face in American porno-blockbusters, sold in every transition, despite strict laws. Consequently, no one is afraid of knowing the power and those transmission mechanisms that activate life itself.

Almost all of the "raw" information and terminology used, unless otherwise specified, is taken from textbooks, from predecessor scientists. We practically did not use the original works, as there is no possibility for this - distance from Moscow and poverty. Unless later some arguments accidentally found in random books in favor of our already created theory were added later. We do not aim to review information, links, references, etc. Only a textbook on biology for universities. Everything that is mentioned here from our material, with the exception of a few late additions, is in the textbooks on biology and physics.

The only reason for the proposed research is to add one new moment to the knowledge accumulated by previous generations. The very moment that was still incomprehensible and unattainable. The existence and necessity of which many felt, but could not catch.

The whole novelty of the proposed article is the application of elements known in quantum physics to biology, an attempt to inscribe these elements in the existing system of biological knowledge. True, in this case it was possible to significantly deepen (in a certain direction) the quantum physics itself and to make a few small discoveries purely in this science. These discoveries are set out here.

Panspermia as a hypothesis about the origin of life is not invented by chance. Truth is in the air. The beginning of life takes place at the level of atoms and molecules. It should be some special molecules, some complex molecular formations that carry a special life force and special properties. The strength and activity of these mysterious molecules is somewhat superior to the usual chemical force and activity, something is different. Than? - Until now it was not clear. Where is this first microbe?! - Popular scientists, television anchors and commentators are asking, crying and even screaming

in the television screen. And, as will be shown below, the essence of the new moment was close to the one that is hidden in the form of a question, contained in the hypothesis of panspermia.

The obvious question is: if these special molecules, pansperms, existed, then where do they disappear or have already disappeared in our time? Do these living molecules exist in current organisms or have they already increased? The answer will also be given below.

To successfully solve the problem, it is desirable to formulate it accurately. In various textbooks the signs inherent in a living are enumerated. We will not repeat them. Taking into account all the signs listed in the textbooks, and using their physical knowledge, the authors formulate their understanding of the problem. The essence of our understanding is as follows.

The river of solar light (photon, electromagnetic) energy, that does not fly past the Earth and is not reflected immediately from it into space, eventually falls into the sea of thermal (kinetic) energy of terrestrial molecules. Earth molecules are the atmosphere, the land, the seas and rivers, the ocean.

Let through some intermediate stages, let sometimes through a stage of internal energy of molecules (i.e. chemical or excitation of electrons), but light photons turn to heat of terrestrial molecules. And then immediately there is an important point. It's different kinds of energy! So different that the first (electromagnetic) - according to Einstein - is in general, in a sense, a kind of matter! While the second (kinetic) - again according to Einstein - is generally reset in a suitable coordinate system. And there must be some processes that transform one energy into another or matter into motion.

Modern science is powerful and has the ability to analyze these processes! There would be brains. And the analysis of these processes yields very interesting results, even important for radio engineering and, in general, for macrophysics. Gives theoretical discoveries!

Our discoveries are set out below. Let's return to the river of solar energy. At the confluence of the river into the sea, the branching of the delta is formed. Part of the solar stream is absorbed by the atmosphere (there its branches, nitrogen, oxygen, water vapor, etc., for each cloud, including the acid one). The other part is absorbed by the land (there are even more ramifications). The third part is absorbed by the ocean and dissolved in it by salts (the mass of branching). Of the many branches of the solar energy stream, there is one very small flow of energy that leads to life. This is the flow that is absorbed by floating (dissolved) in the ocean organic molecules. Again, not all of this small stream, but one of the many branches of it. Life is like a continuation of the movement of solar energy in an oceanic organic matter. And then the micro-branch that passes through complex carbon-containing substances and their various chemical transformations. All these words and phrases have undoubtedly met in publications and this is not the subject of novelty of this article. Where the Sun is life. Where it is not there is no life or it is wretched. All this is obvious. Although there are debaters for any statement. On any small grid there is a midge that will climb through it. Or it will gnaw out. There are people who say that life is possible without the sun. And we do not argue with this. No! But we are currently exploring life with the Sun. The one that the Sun gives us.

As will be understood from the following, life without sunlight in its essence does not differ from the solar Life. Because it arises only where there are hot springs, temperature difference and a stream (let thermal, but high-energy) of quanta, quite analogous to light. Similarly, life is possible in the vicinity of stocks of slowly decomposing chemical, and perhaps nuclear, fossil substances.

There existed and there are both pessimistic and optimistic opinions about the possibility of spontaneous generation of life on Earth. As in the ancient era, so now.

As pessimistic, it is possible to note the naive experimental attempts to obtain life under laboratory conditions. Type of experiments Pasteur with organic broth. These attempts ended unsuccessfully, which served as an argument in favor of the impossibility of spontaneous generation of life on Earth. In the absence of a convincing earthly version of the origin of life, these arguments seemed quite plausible. But were these experiments conducted correctly? Indeed, just by increasing the scale of the experiment, it was possible to try and get the sprouting of crocodiles from warm sand, fish from muddy water, mice from straw and cockroaches from the sexual slit. (Lieutenant Rzhevsky silent!)

In our opinion, frankly speaking, formulated on the basis of the time scales laid down in the textbooks, even the pre-cellular evolution of Life, purely at the molecular level, lasted no less than a billion years. Depressingly slowly, quadrillions of unsuccessful directions, trials, with extinctions of more important and cognitive extinction of dinosaurs, a subtle, openwork, precision and sufficiently stable, dicellular dynamic molecular system was created. Some directions of its evolution may have even reached the cell, even before multicellular, but then inevitably died out under climatic or other fluctuations in the environment due to imperfect work of this intracellular molecular apparatus. In an animal cell there are about 10^7 or more atoms. This is how many combinations in space and taking into account the difference in form and composition ... What Pasteur could trace all this with his experiments on spontaneous generation of life ?!

We will even suggest that dinosaurs also died out (they could not stand either competition or changes in external conditions) just because of this imperfection of their intracellular molecular system. Moreover, this system does not maintain a constant body temperature. This will be the 1001st version of the causes of extinction of dinosaurs.

In the textbooks are found and optimistic fragments. A materialistic hypothesis about the origin of life from the emergence of molecular chains is given. Which, once were able to appear on Earth, evolved, learned to reproduce themselves and multiply. Then these chains became genes and formed the primary genotype of the cell. However, authors of textbooks still fail to grasp the main factor that makes these chains begin to live and then evolve. It is not possible to distinguish between chains that have woken up and begun to live, from those who are sleeping in a dead dream. No signs are formulated. There is not enough understanding of the essence of living molecule - the chain. There's nothing to catch on. One can say this: the power of the mental microscope was insufficient to look inside the molecules, see their internal processes and at this level separate the living from the inanimate one. It is worth recalling the winged phrase of Mikhail Genin: Microbes were born with the invention of a microscope. So the Essence of Life will appear if the microscope is made even more powerful.

RETREAT. Speaking of a mental microscope. This is very important. We think so, on the basis of our own experience. The depth of a man's mental microscope is very much related to his ability to kneel before Nature and Truth. Only by drowning, having reduced its self, its EGO, realizing its insignificance, completely immersing itself in the problem, it is possible to increase the depth of its mental microscope. Having made yourself small, you can swim between molecules, get under the rain from photons, get hit by a sperm tail (huge as a whale!), Be absorbed by the entrance of the microbe and again get out through the outlet. But it is very, very difficult to do. And not because it's hard to reduce yourself, no. But because it happens only in thoughts and dreams, but really you live among the huge, very rude, selfish and stupid people. The Russian climate and living conditions are embittering people. And as soon as you begin to kneel before Nature, when you become small, there is a friend who notices and uses you in this state! It

could be a person whom you considered to be your friend. He uses you to the fullest, as if it's you who are kneeling before him, and not before Nature, he does not understand! He sees how small you have become and has borrowed money from you. Very long. Takes books, your collection of CDs. It takes your travel card to the train, the metro, TAT. Takes everything he sees. He starts you and uses your junk for personal purposes. And he will not give it up until you return from immersion in science. Until you become as big as him. Not even until you become more of him! Because of the circle of our friends and friends, we were deceived at the time of science, who is petty, and who is larger than 15-20 people. This is a lot. In addition to the Moscow criminal fraudsters (including the Gypsies) and cops, the overturned, this frank young scum, fining for sending a small need in the bushes. Naturally, without any receipts.

We return to the problem of Life. In order to break through to knowledge in this matter, it turns out not enough to re-read the mountains of books. Understanding of intracellular processes, the foundations of vitality, can not be achieved by simple observation in a microscope. Even in the electronic. Even by describing the entire human genome, this dubious and frightening object with a thickness of not more than a hundred atoms and a length of several tens of meters, which is reported annually on television as a sensation for a dozen years.

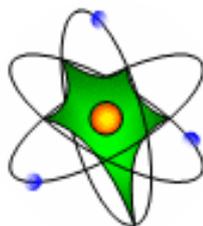
Understanding the essence of life can be achieved only by logical, mental methods. So we reduce ourselves! Let's strain our mental imaginary super-powerful microscope, which allows us to see individual molecules, atoms, light quanta, and electron clouds. And see in the movement and not interfering in the processes. Let's try to catch the moment when the inanimate becomes alive. Let the neighbors and acquaintances during our immersion in science be rude, cheated, rubbed into friendship and use us as disposable latex products. Let our small business go bankrupt, and children lose all prospects, a well-fed and prosperous life. Forgive us, children! Yes, money is not happiness! You are healthy, beautiful, intelligent and will break through in this life.

Below is a skeleton describing the origin and evolution of life. It is expounded on a purely speculative, deductive level. This, however, does not detract from its significance in the first place because of the extreme logic that the authors are capable of. secondly, reliance is made on physical laws, no pseudoscience. And thirdly, because there is no convincing alternative. In addition to such a frivolous panspermia.

FUNDAMENTAL QUANTUM LAWS

An important role in understanding the phenomenon of life is played by a good understanding of quantum physics. In turn, the theory of Gukuum ([22] - [26]) that plays an important role in understanding quantum physics, namely physics, physical processes, and not meaningless mathematical matrices, tensors and operators. It is very important to take into account the following circumstances. These theses should not be taken as some prerequisites - a lemma to the proof of a theorem, but they simply need to be kept in mind as a certain background for all the rest of the presentation.

1. Electron is not a point, furiously wandering in an atom or molecule. A popular image of an atom in the form of a central core with three ellipses around, on which the points are marked - electrons:



— it's full of foolishness and naivety. An electron is a real cloud. An electron is a localized wave formation of the universal GUKUUM = VACUUM (see our website www.universe100.narod.ru, there is a portrait of an electron and other elementary particles). And this cloud actually increases when the atom absorbs energy and decreases when it is emitted. Electrons in a multi-electron atom are arranged by successive shells. These shells are enclosed in one atom in one atom, and in other atoms are pressed against each other, rubbing each other and creating a multilobed form atom. And in the center of all these events is the nucleus of the atom. Which also has a multi-fleck cloud, but two thousand times smaller and (in spite of all habits and expectations) as many times as much weight (the paradox explained by us).

That is, the electron actually in the atom actually inflates and even changes its shape to a multilobed one when the atom absorbs quanta of energy-photons. With the free electron, the absorption of photons has not yet been observed, but have we searched for it correctly?

2. All the processes of transitions and transformations of energy within atoms and molecules occur solely from discrete, quantum laws. There is no simple leakage of energy, as it were through a hole, from an excited molecule to the environment and turning it into heat.

3. For any transitions and transformations of energy inside atoms and molecules, there is a strictly determined probability of a given transition and transformation under given conditions. Some transitions are very likely. Others are less likely. Third transitions are generally impossible.

4. Experiment number 1. Let's pass monochromatic light (from a laser light pointer) through a not very clean liquid enclosed between two parallel flat glasses. Roughly speaking, through an aquarium or water from a puddle. Of course, all the elements and the light source are fixed. On the reverse side, we fix a white sheet of paper to observe the light emerging from the aquarium.

Results.

The decrease in the intensity of light at the exit occurs as a result of the absorption of some photons by the liquid.

Photons are not absorbed all at once, everything is completely, because for their absorption we need a certain instantaneous configuration of sorins, molecules, atoms, electronic shells.

The main conclusion. When light passes through a liquid, photons do not tear apart. Otherwise there would be a change in their color, color divorces, which were never observed in science and in nature. The color of a photon is determined by its energy. Yes, white light splits in the rainbow. But white light is a mixture of many colors, many photons with different wavelengths. And monochromatic light never changes, except in the Doppler effect.

Even if we take a "very ultraviolet" laser, so that the "pieces" of photons are in the visible spectrum, we still will not see any light divorces. It is impossible to imagine the process of the conversion of a high-frequency wavelet to two low-frequency electromagnetic waves.

Generalization. The photon is either completely absorbed by the medium, either

completely reflected from its surface, or entirely, without change passes through this medium.

Another confirmation of the integrity of the photon is the fundamental Planck formula:

$$E = \hbar \cdot \nu$$

In addition to its basic value, it additionally makes sense of the constancy of the size and configuration of the photon. Regardless of where this photon came from and what process it was formed. There are no photons of type:

$$E = \frac{5}{2} \hbar \cdot \nu \quad E = \frac{3}{16} \hbar \cdot \nu$$

The dimensions, configuration, momentum and energy of a photon are determined solely by its frequency. Unfortunately, the lack of time, resources and attention to us from the Academy of Sciences does not allow us to establish the listed parameters of a photon and some other particles. So far we have identified only the parameters of an electron, a proton and a neutron.

5. Experiment number 2. Let us consider the known experiments from radiophysics. Here is a list of known and interesting results and our own conclusions. We take them without stretching, straining and ambiguous interpretations.

a. The optimum antenna size for receiving a radio wave is close to the wavelength of this wave. Any multiple lengths do not interest us.

b. For radio transmission, the optimal size of the transmitting antenna must also be close to the length of the radio wave. Multiple lengths again do not interest us.

Conclusions:

a. Own output number 1. Like quanta of light, radio waves are compact formations with a size close to the wavelength. Let physicists forgive us if we repeated someone's statements. Like the quanta of light, radio waves are also exclusively photons! The nature of electromagnetism is unified, regardless of size and scale. And this nature is quantum.

b. Own output number 2. As in experiments with the passage of light quanta through an aquarium, quanta - radio waves passing through certain objects (urban forest from antennas) do not tear apart. Quanta - radio waves are either absorbed entirely, either reflected whole or pass through the object without change. This is confirmed by the fact that the wave from the radio transmitter in its further movement, reflection, refraction, absorption does not change the frequency (except for the Doppler effect in reflection or motion).

6. Own conclusion number 3. Now draw the reverse analogies from the macro world (radio waves) again to the micro world. In a large organic molecule, the motion of free electrons is possible. This phenomenon exists, there is even a conductive organic material produced in industrial quantities. Consequently, such an organic molecule, located more or less perpendicular to the direction of motion of a photon, is capable of absorbing a light quantum in a manner similar to the reception of a radio antenna absorbing a radio wave. A photon, like a radio wave in a receiving antenna, should be best absorbed by a molecule if the size of the molecule is close to the wavelength of this photon. Of course, we should not focus only on such a mechanism for absorbing a photon. Nature is diverse. We estimate the size of organic molecules capable of absorbing the visible light optimally. We use only those directories that are available to us, that were bought 15-20-30 years ago. Visible sunlight is located in the wave interval from 760 mk (millimicron, 10^{-6} cm) up to 380 mmk. That is, the wavelength of light is about $5 \cdot 10^{-4}$ cm. According to the physical reference, the effective size of the

molecules of a real gas, obtained from the Van der Waals equation is 10^{-7} see This is the size at which electronic shells of gas molecules begin to overlap and they begin to repulse. Real gases are CO_2 , O_2 , N_2 . The real gas is so good that it is close in composition to the composition of the organics. Dividing the length of the light wave $5 \cdot 10^{-4}$ see the van der Waals parameter, 10^{-7} see the result: the organic molecule must be in the length of the order $5 \cdot 10^3$ molecules of real gas. Or, roughly speaking, should contain the order $10^3 - 10^4$ carbon atoms. The result is quite meaningful. Because, even if a molecule contains one hundred times less atoms, it still does not completely lose the ability to absorb solar photons. Let's recall a comparison with antennas. Even a small antenna, in several decimeters, takes the first TV channel with a wavelength of about 3 meters. Thus, starting with approximately 50-100 organic carbon chains, these chains acquire the ability to absorb solar photons.

Of course, in modern plants to absorb solar quanta, just chains of length of the order of 10^4 volumes of carbon. There is no suitable reference at hand to clarify the length of the molecules (and their associations) of chlorophyll, which serves in plants for this purpose, but there is certainty that the length of its molecules (or their associations) is exactly this.

But we have not finished the discussion of experiments №1 and №2.

7. Own output number 4. There is a generally accepted view that passing through an antenna, an electromagnetic wave (radio wave), as it were, swings the electrons in the antenna, creates currents that are further amplified and detected. And the wave itself - allegedly rocked and flew farther as if nothing had happened. Where is the law of conservation of energy?! We believe that this is not true. These are naive obsolete ideas. All that happens in electromagnetism is only quantum processes. No rocking "for a healthy life" does not exist.

8. A similar experiment. Here is the microwave oven. The electromagnetic waves generated by it are converted into heat, kinetic energy of molecules. What is the micro-mechanism of the process? Also the buildup of molecules by an alternating field? At first glance, it seems to be the way it is, it is also generally recognized. And this again is not true. We have already concluded that the nature of electromagnetic waves and photons is one, these are localized objects. What happens when photons hit a leaf of a tree, too, swing chlorophyll? So they lose energy, which means they change color? Again Vysotsky: It's not like that, guys! Both radio antennas and the microwave oven receive fluxes of macro-photons, radio-photons or infrared photons, which are absorbed. Whole, without waste. No swinging takes place anywhere. And there are only quanta absorption. And not necessarily on the surface of the antenna.

9. Own output number 5. Very unusual for understanding the conclusion. And it can not be done within the framework of traditional physics. Well, how does the electromagnetic field turn into the kinetic energy of the molecule?! The answer is this: all matter and energy are one-sided and they are fluctuations of Gukum = Vacuum, described by us in the website www.universe100.narod.ru of the description of the universe. And elementary particles, and molecules, and photons, and quarks, and mesons, and Cobsons and all-all-everything; and plus to this kinetic and any other energy - it's all there are fluctuations of Gukuum. These fluctuations of Gukuum often (if not always) localized. They are either inactive (particles) and can contain an additive in the form of kinetic energy without noticeable change in structure. Either they are always moving with the speed of light and the addition of kinetic energy to them changes their internal structure, size, changes their frequency of oscillations, the color of photons, the wavelength of radio waves or generalized, the internal energy of objects. But in the vibrations of Gukuum their essence and their community. And only through this

community these objects can interact and mutually convert. They can absorb each other (the atom absorbs a photon); can annihilate (matter + antimatter, turning into photons); and can emit a photon (the excited atoms emit photons). Now we understand almost everything that happens in the microcosm.

10. **Own output number 6.** Among the interactions of elementary particles and atoms, transformations and energy transitions there is one interesting process. This is the process of transferring a quantum of energy from an electron belonging to one particle (atom, molecule) to an electron belonging to another particle with an increase in its kinetic energy. Or, from the point of view of classical physics, this is the collision of electrons belonging to different particles. In principle, any collision of molecules occurs not through the collision of atomic nuclei, but through the collision of electron shells. But the main thing is not the collision of molecules, but the fact that at the moment of collision of electron shells, these shells can have different energy states. Suppose one of the electronic shells has just absorbed a quantum of light. Its electrons are spinning at a furious speed, and in the second colliding molecule, the electrons are "quiet." It is natural to assume that in this case (statistically) the energy will pass from an excited molecule to a quiet one. So.

I. We take into account that all objects of the Universe considered by us are localized oscillations of Guk.

II. We take into account that all energy transitions occur according to quantum laws, discretely.

III. We take into account that everywhere in these processes there is a light speed, so everything happens very quickly and very quickly.

IV. Consequently, when energy is transferred from an electron of one atom to an electron of another atom, a tangible impact occurs, a push along the atom to which this energy is transferred. Not like in ordinary life, trains sometimes get under way and accelerate unnoticed. A strictly required kick or push. Well, according to Newton's third law, an atom that gives a quantum of energy gets a reverse push of the same strength.

11. And the last. It is not difficult to notice and guess that with numerous collisions of molecules with each other, two or three processes are constantly occurring. This can be compared to the battle of two soldiers, each holding a club in each hand. There is a collision of the bodies of the warriors themselves, there are collisions of the clubs against each other, and there are still punches with the club on the opponent's head. If we take into account that the electrons are localized vibrations, that there are quantum inhibitions and vice versa, quantum resolutions, then it is possible:

a. Elastic collisions of molecules with each other without changing the energy of their electron shells. It's like a collision of billiard balls. (Collision of bodies of soldiers, shoulder in the shoulder).

b. Such strikes of molecules, when for an instant electronic shells interact with each other, transferring portions of energy from one electron to another. (Palitsa about the club). The molecules themselves collide almost like billiard balls.

c. Such an impact of an electron on another molecule, that the whole molecule is pushing. (Palica on the head, chest, back). In this case, the collision dynamics is violated and both molecules receive an additional push. This variant is especially possible when one of the molecules is excited by a quantum of light.

In reality, there are such attacks, and others and others. At the same time, there is a constant transfer of energy from one electron to another, shocks, impacts on molecules.

Even if suddenly there are not yet discovered physical effects in molecular processes that can not be taken into account, imagined, predicted, it seems that these factors do not change the picture of the emergence of life radically described below. To expound

the process of the emergence of life, it is sufficient to have already discovered physical laws.

QUANTUM PROCESSES UNDER THE SUN

Deductive restoration of the miracle of the origin of life begins. Under the word "molecule" more often refer to those organic molecules that have become the ancestors of modern life. As a rule, these are polyatomic carbon-containing molecules. More recently, the authors came across a version of the fact that asbestos mined in the mines is nothing more than the remnants of silicon organic life [31]. Just like coal is the remnants of carbon life. True or not, it is not known. But the impression produces! Therefore, it is not ruled out that both these and, perhaps, some other unknown species of life arose on the Earth and existed.

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Is not it a miracle chemical properties of elements?

Is it not a miracle of their ability to connect with each other and form molecules and new substances?

Is not another miracle - the laws of chemical kinetics?

Is it not the fourth miracle - the ability of atoms and molecules to absorb photons of light energy with the inflation of their electronic shell, with the transition of the electron shell to a higher energy level?

Is it not the fifth miracle - the dual, corpuscular - wave nature of matter?

And is it not a miracle (from another region) - the laws of mechanics or fluid dynamics?

And another miracle: the transformation of a kind of matter - the electromagnetic field into the energy of mechanical motion. We are in this already, thank God, figured out ..

And how many miracles does mathematics give us ?!

Are these and other not mentioned and not listed miracles smaller or weaker than the miracle of life? Are not these wonders enough to form a combination of them, a sequence that leads to a new miracle-the origin of life? And unless without all these numerous miracles, perhaps a miracle of life?

All these miracles existed or arose before the emergence of life and are the basis of life. And only when the molecules of nitrogen, water, carbon dioxide and others were formed from the atoms first, when chemical and photochemical processes began to flow, mutual conversions of substances began, then the prerequisites for the emergence of life appeared. Below these common phrases will be specified.

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Further, we easily juggle hundreds of millions and billions of years, because no one knows and will never know more accurately than we, how many billions of years there in the past it was. Therefore, every scientist places time marks of the distant past in the way that he likes. If only to avoid blatant stupidity and not to make readers and colleagues laugh. Here, just a thousand or two years ago it was considered quite clever to think that the Earth cake lies on the back of the Kit, Keith is on the back of the Three Elephants, and the Elephants are on their backs in the absolutely huge Turtle. By this time (tortoise), the desire to continue questions and to deepen the knowledge of students was coming to an end. Otherwise, I would have to think up that the Turtle is again on someone's back and so on ad infinitum. However, the current Primary Explosion is from the same series. Or maybe this Turtle farted - and the primary

explosion?! We had such a cow in the village. The cow farted - and horns fell off ... So.

Ten billion years ago, after another (in an infinite number of) cosmic catastrophe arose a huge cloud of cosmic dust type, insignificant in comparison with the infinite universe. How the catastrophe happened, we do not know. But there is an assumption that at the same time all elementary particles were destroyed to a state of the "Marquise de Sade" type. Then came the restoration of elementary particles, which immediately (that's where the origins of sex!) Merged into pairs "electron-proton" - hydrogen atoms. What is evidenced by our cloud of cosmic dust, which arose later than all elementary particles were formed and 99% of this cloud consisted of pure hydrogen. There was little helium (Swedish family) and very few large particles (finally a group sex).

Our cloud in that space era took up space in the space around the same area where we are now. More precisely, you will not say. It received a rotational impulse, like all space objects. Whether long, shortly there was this cloud, soon the scientific theory affects, but not soon it is done, but then it began to disintegrate into parts under the influence of gravitational force. These parts also received a rotational impulse. A star appeared in the center of each of the parts. So our Galaxy arose. One of these stars was our Sun.

Five billion years ago, the residual dust cloud revolving around the young Sun, also under the influence of gravity, broke up into several bunches and from one such cluster formed the Earth.

Since its inception and half a billion years already of the existence of our planetary system, the heavy and greedy Sun has sucked off all the light atoms - hydrogen, helium - from the Earth and other planets. These atoms move at high velocities, fly far away from the planets and are captured by the Sun. Kids, do not run away from mom! Otherwise, evil bearded uncles can take you hostage!

As a result, many planets have remained mostly with heavy elements, have acquired a solid or liquid body and not too thick gas atmosphere. Part of the terrestrial hydrogen clunky and time to connect with oxygen and thus avoid flight to the sun. But helium almost flew away, as it showed a chemical passivity. The clot of matter that we, the earthmen, reached in this way, was condensed and heated up due to various processes. It already had all the atoms, of which we are all now. These atoms were later also in the bodies of the first fish, dinosaurs, African giraffes; in all kinds of terrestrial stinking abominations and in the noblest scents, drinks and dishes; in Ivan the Terrible and even in Vladimir Ilyich. This, as they say, is the cycle of substances in nature. They (the hounds) also expand their outlook.

After many pieces of time, the globe, dense and surrounded by a thick vapor-gas atmosphere, began to cool down gradually, radiating thermal electromagnetic waves into space. Among the substances present in the atmosphere appear (according to the textbooks of biology): methane, oxide and carbon dioxide, ammonia, hydrogen sulfide, cyanides.

Half a billion revolutions (it is not recommended to try to count even to a million, it will take 11.6 days, if counted 1 per second) made the Earth around the Sun until its surface cooled down so much that the water vapor condenses into the oceans.

And after another half a billion years, the oceans cooled, and complex substances containing carbon-organic substances began to form in them. Among such substances, simpler and more complex ones were encountered, such as amino acids, sugars, nitrogen bases, mononucleotides.

This is not intended to go into the exposition of the unfortunate versions of the origin of life. There is no desire to delve into the chemical aspects of the problem, and

especially in their numerous terminology. There is our own, quantum - physical analysis of the situation, with the maximum coverage of all remaining objects and processes.

Biology began three and a half billion years ago. So much time remained up to our time, when substances appeared on the Earth suitable for the origin of life. Nobody made the push of this life. We shall prove this below. The origins of biology are contained in global physical laws and the fundamental properties of elementary particles. These factors have always and will always exist. The emergence of life is an objective and universal Ecumenical process. There are infinitely many places in the universe where Life exists. There are infinitely many planets in the universe with a reasonable Life. But there are as yet unknown ways for contacts between them because of the huge, hopeless remoteness from each other. And are these contacts necessary? Shit your shit? So, the American Indians are still glad from contact with Europe ... Yes, and the Mammoths did not loosely work with primitive Siberian people. Duck and the Australian Kangaroos weep from contact with the European dog Dingo. But have you ever had such contacts? Vaughn and the AIDS epidemic went from contacts. And Pushkin and Dantes started a contact. And Gorbachev with Reagan and Thatcher for many hours alone confined ... From these contacts, then for some reason, the population of Russia began to decline drastically ... There is less law - you will live longer.

The Earth as a whole cooled down. Cooled the ocean. On the night side of the Earth, infrared quanta carried energy to the abyss of space. On the sunny side of the ocean, the absorption of the energy of solar light quanta and their conversion into heat predominated. The sun bombarded the ocean with its photons. And, as it is now commonly expressed, "like it molecules or do not like it," and also "for any," but probabilistic laws pushed photons into all large molecules and colloidal particles dissolved or floating in the ocean. Absorbed energy and organic molecules floating in the ocean.

Quantum physics on Earth as a science did not yet exist. The books were not published yet and Bohr, Schrödinger and Bonch were born, you understand, Bruevich. But the very laws of physics are absolute in the universe and always work. One of the laws is that the sun's rays consist of a lot of quanta - photons - very stable and almost indivisible wave of pelaton or portions of energy. These portions could not and now, like water droplets, can not be sprayed or smeared when they collide with terrestrial particles or molecules and thus immediately turn into heat. These portions of energy - quanta - photons or reflected by the object, or pass through the object, or are absorbed by the object only entirely. If there are exceptions, with the decay of a photon into parts, then a complex process has occurred in several separate processes, stages. And the first stage is still the absorption of the photon entirely.

The entire flux of solar quanta to the primary ocean has a known energy spectrum. There is a low-energy part of the spectrum. These are purely thermal quanta, which resonate well with simple, small molecules of the atmosphere and water and are absorbed by them. This infrared part of the spectrum for biology is of little interest.

There is a slightly more energetic and very narrow part of the spectrum that does not predominantly resonate with individual molecules of the atmosphere or water and can not be absorbed by them. It is this part of the spectrum that gives birth to life. Not surprisingly, this is just the visible part of the solar spectrum. Because the human eye has not fallen out of the general diversity of elements of life.

Even more energetic part of the solar spectrum, ultraviolet - it is already vice versa, is harmful to life. And life hides from it, as far as possible. The big luck for us is that there is an ozone layer, that the ultraviolet spectrum from the Sun is not intense enough to

destroy all life. But freon refrigerators this layer (supposedly) almost destroyed, thanks to the efforts of competing advertisers. Later, however, it was established that this was not true. But the unpleasant residue remained. Including in the pockets of manufacturers of freon refrigerators. This is an example of the surrealism of being, about what - in a different place, in another book.

DEFINITION. The primary energy pressure is the solar pressure (i.e. the visible part of the spectrum). This is a constant bombardment of high-energy solar quanta floating in the ocean of organic molecules. As a result of this, according to the probability laws of absorption of these quanta, the molecules create an energetically nonequilibrium, shifted toward excess of internal energy, the state of these organic molecules.

These high-energy solar wave pellets are either reflected entirely from the surface of the ocean as from a mirror and fly away into space. Either they pass through the surface of the water and further virtually unhindered to the very bottom. Or in the ocean they can be absorbed by large organic molecules swimming in the water, colloids, mote.

As one of the confirmations of these phenomena is the well-known household fact that muddy water is heated from the sun much more efficiently than pure water. That is, muddy water absorbs photons well.

Everything that concerns colloids, sorines and turbid water is not considered further by us. For this, there are special research institutes established under socialism. Our attention is focused on large organic molecules found in ocean water. Or they are dissolved or floating on the surface or lying on the bottom in shallow water.

UPDATE. It is necessary to confirm the statements by numerical calculations. Are the solar quanta of the visible spectrum so large compared to the thermal quanta of oceanic molecules and need to be crushed? So.

Visible sunlight is located in the wave interval from 760 mk (millimicron, 10^{-6} cm) to 380 mmk, which corresponds to the frequencies from $7,9 \cdot 10^{13}$ Hz before $3,9 \cdot 10^{13}$ Hz. This corresponds to the energy ($\epsilon = \hbar \nu$, \hbar - Planck's constant = $6,62 \cdot 10^{-27}$ erg · sec, ν - frequency) of the order of $52 \cdot 10^{-14}$ erg up to $26 \cdot 10^{-14}$ erg. At the same time, the thermal energy of the molecule at 20 degrees Celsius or 293 degrees Kelvin is determined by the formula $\epsilon = 3/2 \cdot kT$ (k - Boltzmann's constant = $1,38 \cdot 10^{-16}$ эрг/град, T - temperature) and is $6 \cdot 10^{-14}$ erg. Taking into account the influence of all the statistical distributions participating in the processes, it is easy to come to the conclusion that the light solar quanta must first be broken down into at least four (26 : 6), and usually tens, hundreds and thousands of times, and only then converted into heat of oceanic water . Q.E.D.

More simple (not all scientists know physics and mathematics), and a clear proof of the multiple excess of light energy over thermal quanta is the following experimental observation. Take the "cold" iron poker, that is, at room temperature or 293^0 by Kelvin. It is black if used (and if not gold). This is the color of the "cold" photons for our eyes, that is, the absence of any color. We'll heat up the poker. It will glow red at temperatures of about 1200 degrees Kelvin, and white at an even higher temperature. Conclusion: the energy of light photons (which radiates a heated poker) is so much more energy of "cold" photons (which radiates a cold poker), how many times the absolute temperature of the heated poker is higher than the absolute temperature of the cold poker. That is from 4 or more times.

So the hypothesis about the existence of molecules - mills of solar quanta is being born. Further refinements are made.

Infrared solar rays turn into heat immediately, but they are of little interest. They do not create earthly life and even the eye does not define them as useless. Although we must give them due credit in maintaining the necessary thermal regime for the existence of life.

At the same time, the destructive effect of ultraviolet rays for which there are no molecules capable of absorbing them and then grinding them in heat becomes more understandable. Complex molecules in most are destroyed by the absorption of such huge energies. Thus, ultraviolet rays practically do not take part in the origin and cycle of life.

So, the solar quantum approaches a large organic molecule floating in water. This molecule has a lot of energy degrees of freedom, which can get the energy of a solar photon. The basic degrees of freedom: 1) mechanical, when the nuclei of atoms of this macromolecule vibrate. 2) electronic, when the electron shells around each of the atoms are inflated. On what degree of freedom does the energy of the solar photon get? - We have already analyzed this issue. A long molecule like an antenna turns a photon into the energy of an electron shell. Perhaps through a virtual stage of intramolecular currents.

You can slightly detail this statement. No matter how unlikely, but photons are absorbed and clean water, at least marine. Apparently, the instant configuration of some local group of water molecules and dissolved salts in it plays a role. In the light of this assumption, it becomes obvious that there are stable large organic molecules (such as chlorophyll), the configuration of which is very suitable for absorbing a quantum of light.

But what happens next?

It is necessary to recall known theoretical investigations. Here is an excerpt from [08], [09]. In 1954, Fermi, Pasta, and Ulam attempted to numerically study the one-dimensional anharmonic chain of oscillators. The problem, which Debye mentioned back in 1914, was investigated. They assumed that, because of the nonlinearity property of a given object, any initial perturbation rapidly relaxes and leads to equipartition of energy over all degrees of freedom of the system. However, they discovered an anomalously slow stochastization of this dynamic system. That's what they say. "... We discovered phenomena that from the very beginning surprised us, instead of a consecutive continuous flow of energy from the first mode to the higher ... energy exchange took place only between several lower modes ... There was almost no tendency to equipartition of energy in terms of degrees of freedom for a given time. In other words, in the system definitely there was no mixing. "

These results from mechanics help to comprehend what happens next with the energy of the electron shell. The difference between the energies of the electron shell and the mechanical vibrations of the nuclei in the molecule is radically, absolutely. This phenomenon of non-mixing takes effect. This energy of the electron shells is not immediately transferred to vibrational freedom of atomic nuclei, and from there to surrounding molecules, to heat. This energy lives for some time on the electronic shell of the molecule, it retains for a long time without turning into vibrations of atoms. In this case, very quickly or instantaneously it is distributed uniformly over the electron shells of the atoms of this molecule.

Then this energy of the former photon is slowly and in parts begins to be transferred to the surrounding water molecules. It is possible that part of this energy is transferred by small quanta from the electron shells of the atoms of the organic molecule to the electron shells of water molecules. The other part is transmitted by mechanical jerks (mechanisms are given below) from the side of the atoms of the main molecule - the absorber, to the molecules of water.

So, a molecule that absorbed a quantum of light can not quickly grind the whole portion of solar energy into a fine "energy flour" and dissipate it to the surrounding matter, turning it into heat. This contradicts the objectively existing physical quantum laws and prohibitions. According to these laws, having absorbed a portion of solar

energy, the molecule is forced to live for some time in such an excited state.

When mentioning the words "energy of molecules" in the future, it means precisely and only the energy of its electron shell, and not mechanical or otherwise. And the mechanical energy of vibrations of atoms in the molecule can not stay in it for a long time and immediately spreads to neighboring water molecules.

DEFINITIONS.

The excitation of a molecule is the moment of absorption of a light quantum floating in the ocean by a molecule.

The excited state of a molecule is a stay with an excess of internal energy above the equilibrium state. Then there is a process of crushing this energy and its subsequent transfer to surrounding water molecules.

The duration of the excited state is the time of existence of the molecule in the excited state. After the radiation of the last part of the original quantum, the molecule ceases to be a carrier of excess internal energy and passes into a state of equilibrium with the surrounding medium.

In other words, when a molecule is found in a stream of light, it often happens that the internal temperature of a molecule is many times higher than its kinetic "external" temperature. This point is understandable and obvious to physicists, although they can argue for any nonsense indefinitely.

Parallel to the above, there is a phenomenon that these excited molecules often acquire additional chemical activity. In particular, those that did not previously connect with each other, in an excited state, obtained this ability to chemically connect with each other, and even in many cases. In terms of the formation of long molecular chains, this is good. But we can not get into the chemical jungle. Life arises without chemical complications.

Solar energy pressure, as it were, causes some large organic molecules to become quanta mills. These ancient, simplest mills in hot water are not too diverse and will someday be identified, listed and systematized by chemists.

DEFINITION. Molecular quanta mills are large organic molecules floating in the ocean, and effectively transform the absorbed large solar quanta into small ones. After that, these small quanta are transferred to surrounding molecules and converted into heat. That is why, in particular, turbid water heats up faster. Further, sometimes abbreviated terms will be used: quanta mills, quantum mills, mills.

It should be added to this the possibility of the existence of solar quanta mills in the form of colloidal coalescence of several molecules. These colloids could participate in all stages of the emergence and evolution of primary life.

It is emphasized once again: there is practically no other way of converting solar energy into the heat of ocean water, except by means of large molecules-quanta mills. Mills can serve and large dust particles floating in the water. In ancient times, the amount of organic matter in the ocean was large enough and the sun's rays were completely absorbed already at a depth of several meters.

Complex molecules in water effectively solve the problem of small grinding of energy quanta and their transformation into heat. Apparently, the reason is that large molecules, due to the mutual influence of atoms forming them, have a fairly dense, frequent spectrum of energy levels of electron shells. The distances between the levels allowed for energy hopping are small. This determines the fineness of grinding the quanta.

It should be emphasized and remembered every time that all these quantum mills, organic molecules, light energy pressure are properties common to the whole Universe and objects. They are not invented by anyone, they are not created, they did not come

from outer space and this is not a miracle. All this set of circumstances and processes existed and exists everywhere in the Universe. And this is not life. This is only a description of the surrounding landscape.

The pressure of solar energy - the primary energy pressure generates excited molecules. The process of energy transfer moves further, from the molecule to the molecule. In the ocean, a number of such molecules are dissolved, which absorb and partially accumulate absorbed quanta from the Sun. On the one hand, these molecules sometimes become chemically active and part of the solar energy accumulates in the form of energy of chemical compounds. Another part of the absorbed solar energy is radiated to the surrounding substance. That is, molecules sometimes become sources of secondary energy pressure.

DEFINITION. Secondary energy pressure is the irradiation of equilibrium molecules by quanta from the side of energetically excited molecules that have arisen as a result of the primary energy pressure of the Sun.

Molecular quanta mills scatter crushed quanta onto surrounding molecules. That is, they just create a secondary energy pressure.

As a result of this secondary pressure, an energetically non-equilibrium energy is also created, displaced toward the excess of internal energy, the state of the irradiated molecules. Although it is quite natural that the quanta of the secondary energy pressure are two orders of magnitude weaker than the quanta of the solar energy pressure. But in the same amount of these quanta more. According to the total energy flow, these flows are equal - nobody canceled the law of Lomonosov. The secondary energy flow has a serious advantage. It is more uniform and constant. In the sphere of secondary (and higher order) flows, energy is transferred by small quanta, which do not destroy complex substances. Therefore, in the ocean at a depth and under the rays of the Sun, the secondary energy pressure is quite strong and a much larger variety of chemical compounds is possible here. New chemical compounds generate new quanta mills. Those quanta that are emitted from a large molecule, they continue to be ground in small, less energy-intensive mills.

It makes sense (for better mastering) once again to imagine a primitive ocean under the rays of the sun. Mentally imagine as if under a very strong microscope a vertical section of the upper layer of water. It is saturated with large organic molecules. Let the solar quanta become visible, colored yellow. Organic molecules are also visible, they are black. And all the other molecules of water and salts are colored blue. Let the process take place so slowly that it is possible to distinguish the details. Then you can see large drops of solar quantum rain, which fall on the surface of the ocean. Some of these drops rebound from the ocean as springs from a solid surface and fly away upwards. Other large droplets pass through the water, and move up to collision with large black organic molecules, with which they merge for a while. That is, they are absorbed. The black molecules turn brown. Then, from brown molecules, energy droplets in small parts, but in a larger amount, are thrown out onto the surrounding molecules. Brown molecules are quanta mills. Small quanta - droplets are also absorbed, now already black molecules and blue water molecules. After a while these small drops are again ejected in even smaller parts and dissolved in water. And so on, all the way to the bottom of the ocean, until the yellow color dissolves at all, turning into mechanical heat.

A discrete yellow energy rain is observed, penetrating into the oceanic water to a depth of several meters. It starts with rare, but large drops at the top. Then this rain becomes more and more dense to a depth of the order of one meter with ever smaller drops. The water turns yellow. But gradually this rain ends at a depth of several meters

with rare and very small droplets. And further down the water again is blue. At night all the water gradually turns blue, but these diurnal swings are not considered by us and are not taken into account as not affecting the general picture of the origin of life.

Practically in warm latitudes, the same ocean is now. With the significant difference that in the modern era in it the role of quanta mills is played by small living plant creatures. All stormy life in the ocean occurs during the day, under the rays of the sun. And at night it stops. The main process in the modern era is the conversion of solar energy not into heat, but using it for photosynthesis. Free-floating organic molecules are many orders of magnitude smaller, they are all absorbed by living beings. In addition, over billions of years, a huge amount of organic matter migrated from the ocean to the earth's surface, into coal, gas and oil layers. Therefore, organic matter in the ocean is now much less. But its number is growing with the burning of coal, oil and gas, with the clogging of the ocean. And this inspires optimism about the rapid emergence of Life on Earth after we destroy it (for those who did not understand: a joke!).

Thus, it is intuitively felt that somewhere around here, under a layer of water, in an ancient organic ocean broth rich in organic, in the sphere of all the above-mentioned primary and secondary energy flows (as well as tertiary, etc.), and numerous chemical transformations driven by these flows a real life is born. And what is interesting is that the supporters of solar life and chemical, thermal and other forms of life will reconcile here. Because the secondary flow of energy is no longer a purely solar life, but more a thermal, chemical form of life.

The appearance of chemical activity under the influence of light coincides with the appearance of photosynthesis and is practically equivalent to it. Although this term usually refers to intracellular photosynthesis, which emerged (according to the textbook) about 2 billion years ago and is accompanied not only by the synthesis of substances, but also by the release of oxygen. But the process of the formation of complex molecules under the action of sunlight objectively exists in the inorganic world. On Earth, it emerged undoubtedly earlier than cellular organisms. It is possible that sometimes oxygen was also released. This means that photosynthesis has evolved along with chemical, pre-cellular life.

The state of accumulated chemical energy is not stationary and stable. Some of the energy-intensive molecules are broken up by light quanta. Part is broken by secondary pressure or thermal collisions.

PREREQUISITES FOR THE ORIGIN OF LIFE

Now that all the objects and processes are covered, it's time to begin the assault on the main secret of life. Several leading questions, with answers.

- Why does the flag on the roof of the building fluctuate? "Because the wind is blowing." Laws of aerodynamics.

- Why are the algae, branches, leaves, fibers running around the river? - Because they are shaken by moving water. Laws of hydrodynamics.

- Why is the pendulum ticking in hours - hikes? - Because there is a weight at the bottom, it pulls down and drives the wheels, which force the pendulum to swing through the balance. The laws of mechanics.

- Why does the kitchen tap sometimes crumble? - Because it has a stream of water and loose details. The laws of sanitary engineering.

- Why does birch juice reach the very top of the tallest birch? Yes, birch, eucalyptus juice reaches a height of one hundred meters. Where is this pump? Moreover, if you cut the bark of a tree, the juice will flow in this place, but whatever it is, it will come to the top of the tree! The great poet Yesenin, who, having slept in a haystack with a songbird, drank birch sap from a morning sushkin in a pine forest (or vice versa, once in no time,

in a birch forest - a pine tree) and obfuscations, spoiling birches know it. - We do not pretend to be a priority in this matter either. We propose a hypothesis: in the capillaries there are hairs, which with their vibrations pile up the juice and help it to move upwards. But what is the mechanism of pumping energy for the work of these hairs and who controls them, so far nobody is known (except, of course, us, the authors of this narrative). Also, the mechanism of quantum firing from the walls of the capillaries, which pushes the juice upwards, is quite real and even preferable.

"Now from the animal world." Through the smallest capillaries in the body, the blood chases even faster than through the large arteries. Much faster. Where are the laws of viscous flow? After all, according to physical laws, everything should be the other way around. The answer is the same: there are hairs that push blood through the capillaries. - What mechanism controls all these hairs in the capillaries? Where does their energy come from?

Screams from the audience: There are a lot of questions! What all this has to do with the origin of life?! Yes, we now ask so many questions that one hundred wise men will not answer! For what money was paid?! The guard is tired!

- Easy! A little patience. First, objective preliminary generalizations.

Prerequisite for life №1. The physical energy that generates and sustains life on Earth is the direct flow of radiant energy from the Sun to the future molecules - participants in the process of life. This energy flow pushes energy into the electronic shells of terrestrial organic molecules (more often floating in the ocean). There is no life at this stage yet.

Prerequisite for life №2. An objective physical law governing the process of the emergence and existence of life is a probability-quantum nature in the transmission of radiant energy from the sun to the earth substance, and also in its subsequent transfer from molecule to molecule. High-energy photons of solar energy absorbed by terrestrial molecules are ultimately crushed by molecular quanta of mills into small quanta, transferred to electron shells of water molecules and only then converted into thermal quanta of water and any surrounding matter. With the cooling of the primary boiling ocean, the dimensions of molecular mills grow. It is better to grind and dissipate energy. There is no life at this stage either.

Prerequisite for life №3. Solar energy can accumulate by turning it into a chemical one. When the terrestrial ocean cools and there is a sufficient number of different substances, conditions are created for the formation of very large (long) organic molecules. Large molecules serve simultaneously as solar energy storage (antennas!) And solar-energy mills. Under certain favorable conditions and configurations of these large-scale energy mills, a flow of fine-energy quanta from the molecule to the surrounding matter is created. Let it be interrupted sometimes, for example at night, it does not matter. It also happens that this flux of quanta flows from the end of a long molecule or from some molecular flagella branching off from the center of the molecule.

It can even be argued that in the vast majority of cases, energy flows from the molecular flagella or from the ends of long molecules. Because energy is the most rational. Just as an electric spark always jumps out of the end of the welding electrode and not from its middle. And lightning strikes at the end of the lightning rod, and not in the middle of the building.

There is still no life, but ... now everything is ready to start Life!

THE BIRTH OF A GREAT LIFE

Further, as in chess, there is a move with three exclamation marks, which solves all problems. That's how life comes about. Dance biologists! (Already 15 years old, and no one dances).

Thesa. THE BIRTH OF LIFE. The main, super-major moment in the emergence of evolution and evolutionary direction to the modern biosphere is the emergence of large molecules - mills of solar quanta. Perhaps, possessing small molecular flagella, over which small quanta flow into the environment. And it turns out that when small quanta run off from the end of the molecule or from its flagellum, there are tremors that lead to the translational motion of the molecule-the mill of solar quanta. A self-moving molecule - this is the origin of Life!

An essential condition for the onset of the translational motion of a molecule is a certain stability of its shape. Otherwise, its tail along with the engine will jerk, and the entire molecule will remain in one place and life will not arise.

Then there is a split of the process of the emergence of Life into two. Most likely, both these processes exist and in one or another situation one of them prevails.

Flagellar life. The flagellum oscillates under the action of quanta of energy flowing along it.

This version was born from the version of hairs in the capillaries of plants and animals. Hairs can develop from molecular flagella. The mechanisms of the appearance of flagellar oscillations are listed below. Such flagella, of course, can be a lot in one mill. Vibrate or even rotate and large parts of the molecule-mills. This is not the point. The true, great, full and life-affirming meaning of what happened is revealed below, when considering the resulting molecule, the carrier of the flagellum, that arises because of this. The expression "once hesitated" does not even fit here, because these flagella, if they appeared, then vibrate and fluctuate with necessity. The flagellates row like an oar. In this case, the internal energy of the electron clouds of the molecule-mill effectively transforms into the thermal energy of the surrounding molecules. And there is a mechanical movement of the main molecule.

Electronic life. The birth of mechanical motion of a molecule can occur in another way. This can also be interpreted within the framework of mechanistic models of atoms. The transfer of energy from the molecule-mill to the surrounding molecules occurs upon contact of the electron shells. And what kind of contact is this? - In the mechanistic interpretation, these are the impacts of electrons belonging to one molecule on the electrons of another molecule, which transfer mechanical motion, momentum, energy. Thus, an excited molecule by numerous impacts of its electrons on the electrons of other molecules pushes them away from itself. But at the same time, its electrons are attached to it, therefore it seems to be repelled from surrounding molecules and also acquires translational motion. Despite the fact that the masses of electrons are negligible, they move very fast according to the classical theory and give a decent push force.

Discussion of flagellar life. Electric forces that are carriers of excitation energies of electron clouds are powerful. And these forces will very vigorously swing the molecular flagella, pushing and pushing the surrounding molecules and transforming the internal energy of the mill into the thermal energy of the water. A molecular mill is rowing!

A screw-like screwing of a molecule into water, and any possible motions, can also be created.

It should be remembered that the process of absorption of a solar quantum by a molecule consists in the resonant buildup of the electron shell of a molecule by an

alternating electromagnetic field of a solar quantum. And in the same way this rocked and untwisted electronic shell can dump this energy only resonantly swinging some kind of extreme molecule or flagellum.

Such fluctuations are not an invention. firstly, they are necessarily encountered in macroscopic processes in nature at every step. This is quite normal and often occurring phenomenon. Similar fluctuations appear always in any flow, no matter what flows. The flow of water or air is capable of creating oscillatory processes. Let us recall the examples of oscillations mentioned in the preceding chapter.

In the case under investigation, the energy of the electron shells flows. Energy flows from the molecular mill. Energy quanta flow from a large, energy-saturated molecule into the surrounding water. And the molecular flagella or fragments of the molecule that oscillate in this flow, along which these quanta flow, also oscillate.

But the main reason for the fluctuations is not in the actual flow, but in the existence of a specific mechanism for their occurrence. It can be considered more closely and visually. Many variants are possible in describing the appearance of flagellar oscillations.

1. Here comes a fine quantum of excitation from the center of the molecule to the flagella. What is an excitation quantum? - This, in its properties and figuratively speaking, some bulge, swelling in this place on the general huge and far from spherical or axisymmetric electron cloud of the parent molecule - the quantum mill. This protuberance can deflect the flagellum in one direction or another. Then the quantum slips from it and the flagellum returns to the equilibrium state. The next quantum comes up and again rejects the flagellum and so on.

2. Quanta are suitable on one side of the flagellum, then on the other, the mother is a large mill. In this case, the flagella deviates one way and the other.

3. It is important that after slipping each quant from the end of the flagellum, it is energetically favorable for this flagellum to deviate back from the molecule that received the quantum.

4. It is also sometimes energetically favorable for him to bow to that part of his molecule, from which the next quartet approaches the flagellum.

5. It is possible that the quantum emanating from the mill passes into the flagellum not through its base, but immediately into its tip, which at this moment approaches the mother molecule. After receiving the quantum, the flagellum abruptly repels from the molecule, turns to it perpendicularly and then discards the quantum from the surrounding substance.

6. Perhaps spring-like, multi-hinged, rotational as well as any conceivable combined behavior of the flagellum during the emission of a quantum.

Not one, so another. Not another, so the third. Everything depends on the structure and composition of the flagellum, from the maternal molecule itself, from the place where the flagella is attached. The main thing is that such deviations there - here - back are absolutely objective and absolutely inevitable. The energy quanta can not smoothly slide off.

Perhaps the appearance of the flagellum itself raises doubts? Where did it come from? It is unlikely? - Yes, it inevitably appears in any place where there is a flux of quanta. This flux of quanta, flowing from the molecule to the environment, this swelling on the electron cloud will inevitably bring scattered atoms and small molecules to the place where the quanta flow. Also, molecules from the surrounding water will adhere to this site. And these atoms and small molecules will hang, get hooked on each other and become flagella. Just like in a river, long garlands of flowing debris are formed. It would be for that to catch on. Similar garlands are pulled from the bath and the shell with a blockage. On the other hand, it can be shown that if there is a flagellum in a molecule, then it is on it that the forces that expel the excess energy from the molecule are

concentrated. Recall once more the welding electrode and the spark that appears on its end. Therefore, the flux of radiated energy will inevitably go through this flagellum.

And as soon as the flagellum was shaken, the molecule began to move. And if it began to move, it means that it began to interact more actively with the environment.

Discussion of electronic life. There are fewer variations. There is a kind of reactive movement of the molecule-mill due to tremors in the tail of the molecule. The result is analogous to the flagellar molecules: self-moving molecules appear and everything further applies to e-Life.

Generalization. In order to preserve the uniformity of the further presentation, further, both flagella and electronic propulsors will be called: engines. Their action leads to the same result: self-moving molecules appear.

DIFFERENCES AND ADVANTAGES OF SELF-MOVING MOLECULES

How do self-moving molecules differ from ordinary molecules? What are their advantages?

1. A self-moving molecule comes out of kinetic laws! Other laws come into force, unknown in the dead nature. Maybe they somehow are related to the kinetics, but as far as the three-dimensional space is related to the one-dimensional one. The laws of self-moving molecules are multidimensional, in contrast to the one-dimensional kinetics. For them, the usual rules for the redistribution of energy and entropy are not fulfilled. The usual temperature dependences are not satisfied. Chemical laws controlling the concentration of substances are not complied with. A self-moving substance can reach many times higher concentrations at one point than a similar substance, but without movement. Here it is possible to stick to the molecules that meet and form huge new organic molecules and colloids.

Moreover, the molecules can be carriers of quanta, carriers of energy for movement! That is, the self-moving molecule, as it were, already absorbs food!

A self-moving molecule without an external shock begins to move from a state of rest, as if violating the laws of the dynamics of molecules.

2. Self-moving molecules begin to fill a new ecological niche, previously unknown in inanimate nature. This niche is huge. This is the greatest variety of both moving and conventional chemical compounds.

An important branch in this new niche. The presence of several engines (flagella) from a large molecule and the ability to move around can lead to a phenomenon such as the ability to automatically capture the gradient of energy concentration in the environment. It is possible that such molecules will appear that will include strictly those engines (flagella) that will direct them, for example, along the trajectory of constancy of this gradient! Maybe they will unfold under the action of the gradient, and maybe inside them the flow of energy will go to other engines (flagella). But as a result, the molecule will float in the ocean so as not to approach the surface, where the solar quanta are deadly. And do not swim into the depths, where there is no energy and death is also inevitable. Such mills get an advantage over other molecules, and therefore for them there is a branch from the common niche!

Furthermore. Already at the level of molecules there is absorption, digestion and excretion, at first only energy quanta. At the same time, together with the inevitable growth in the size of these molecules, the substance is drawn into the processes (for example, during the formation of flagella), metabolism begins. Begin to fulfill the necessary properties of the living.

One should pay attention to one more thing. A self-moving molecule builds up the body! It shifts the kinetic equilibrium toward large rapidly moving molecules, toward the like themselves. Until the moment when a too hot solar quantum or a fast molecule hits it, it will have time to build up a large body and several new engines (flagella)! This large body, on the one hand, will protect it, will not let it perish. Let and at the cost of detaching a small piece, but rather without it. A large molecule can hold a punch! Its energy capacity is sufficient to absorb the hardest solar quantum. And on the other hand, if it breaks up, then into pieces with engines (flagella), that is, molecules from the same family. These pieces, into which a large self-moving molecule collapses, sooner or later, through intermediate stages, will still be joined into the same molecule. And the faster these pieces move, the faster the recovery of a large molecule. This is the beginning of reproduction.

Further. In an implicit form, the process of reproduction is present even among inanimate molecules and in kinetic processes. That is, all large molecules once split into parts. And at the same time, the same molecules are formed from some other molecular pieces from time to time. This is a kinetic process, dissociation and association. This is an equilibrium state and, on average, an invariable quantity of each type of molecule. But the self-moving molecule becomes chemically more active. It quickly restores the broken pieces. The faster moves, the faster it repairs.

Earlier it was stated that the source of all life processes is solar energy pressure. Similarly, this pressure is also driven by the process of changes in the compositions and concentrations of quantum molecular mills. If you can invent the largest and fastest moving molecule - a quantum mill, then solar energy pressure will lead to it. If such a molecule has the property that after destruction from each piece grows the same, then the solar energy pressure will lead to it. If there are several variants of such molecules, all variants will be realized and a shift to one of them will occur under the effect of additional advantages. If at some stage the processes lead to the stable existence of a new substance (and this will certainly happen many, many times), this substance will be included as a building material in all new types of quantum mills.

As long as there is a movement of a molecule, its shooting with quanta or rowing with flagella with repulsion from surrounding molecules, until then there's Life! This thesis can serve as a basis for an accurate definition of the concept of Life.

Next, we need to introduce a new term for self-moving molecules. In parallel, there is a desire to pay tribute to the hypothesis of panspermia. And is it worthwhile to come up with a new term when there is already a universally recognized term? Therefore, "the bast is in line."

Definition. Pansperma is a large organic molecule - a solar quanta mill, with engines - molecular flagella or electronic motors, through which small quanta flow into the environment. Under the action of the energy flowing along them, the entire molecule is set in motion.

Such a term will be convenient in the first place for its brevity, secondly, it is accustomed to its sound, and thirdly it coincides with the meaning implied in it. This is a very good term.

Pansperms can be of all sizes. From small molecules and up to huge colloidal clumping of molecules visible to the naked eye. To put it more accurately, pansperms do not so much swim themselves forward, as they shovel around themselves.

Consequence. Life is not only a quantum-energy, but also a macro-mechanical and hydrodynamic process. This is a triune process.

Complex programs are possible. There are possible such pansperms, which in the beginning will include strictly those engines (flagella), which will direct them towards increasing the gradient of some substance dissolved in water! The molecule will float in the direction of increasing the concentration of substances or energy, upward, toward

the sun. Then, grabbing quanta or molecules of substances, this pansperm switches the action of the engines (flagella) under the influence of the received energy and goes down. There it is safe and there it absorbs the absorbed and pours out small quanta. So they run up and down all their lives. Super-sensation! Molecules are looking for food! Instinct of self-preservation of molecules! Naturally, such pansperms will also have an evolutionary advantage.

Thus, programs of behavior are already possible at the level of molecules - pansperm.

It should be remembered that, following the advent of self-moving molecules, evolution has not yet begun in pure form, but only the filling of a new and utterly huge ecological niche. Evolution will begin later, with the appearance of self-reproduction of molecules.

The great power of life is that the internal energy of molecules, given by the Sun, can effectively be transformed into the mechanical energy of its movement. This is exactly the force that was sought in panspermia. Even the term "panspermia" seems to be taken by accident, but no. In whatever language this term was used for the first time, all Indo-European languages are related. In this word veiled this very flagellum sits: Sperm! And the main role of this flagellum: Pan! And even all of us, descended from the flagellum: Pan - Sperm - and - ! Accident? I do not think so. Rather, the confirmation of the thesis that the truth is in the air. Sense, however, was not cosmic in all this, but there was no cosmos in the term. This is the aura of fantasy that always surrounds the unknown.

Just as the weight in a pendulum clock pulls the chain, which puts pressure on the internal carriage of the movement and causes ticking pendulum, and solar power generators and pressure generates every second ticking life in billions of places of the ocean. It was in antiquity, it continues today and will always, in spite of any unsuccessful experiments. It would be organic. And this life is ticking and there as long as a large molecule absorbed quantum of light pulses in the molecule and small pieces, Quantico, allowed by quantum mechanics, is sprayed onto the surrounding molecules and converted into heat. Push the mother molecule forward, to evolution.

HYPOTHESES ABOUT THE ROLE OF MOLECULAR ENGINES. AGING. DIABETES

Here is a glance in the modern era. Most of what is outlined in this chapter is hypothetical (even naive) because of the global nature of the topic and the impossibility of quickly and quickly proving even a small part of all the statements. Some of the assumptions, perhaps, are already erroneous or will later turn out to be erroneous. But they need to be understood. Hypotheses have the right to make a mistake.

The following general patterns are assumed.

Hypothesis 1. The entire flow of life, all its processes of exchange with the environment and within organisms, both in antiquity and today, differ from analogous processes in the inanimate medium by the presence of vibrating engines.

If there are any viruses that are immobile before they hit a living organism, then they come to life when the engines (flagella) come to life from the appearing flux of quanta.

Hypothesis 2. Everyone up to a single cell of a living organism, having at least an insignificant area on the shell, in contact with the atmosphere, the ocean, internal body fluids (blood, juice, lymph and the like), have engines (flagella) on this part of the shell. The only way. Absoluteness and universality of life-giving flagella in all single-celled and multicellular organisms. In all, whether animals, plants, microbes, insects or humans. These engines (flagella) cover all surfaces of the body that come into contact with the environment or the streams of any internal fluids. As for these engines (flagella), quanta

of energy still flow, like a billion years ago. And these engines (flagella) still vibrate and drive quanta, either accelerating the pumping of fluids surrounding the cell, or accelerating the release of energy or heat exchange of the body with the environment.

Hypothesis 3. It is very possible that in general every cell of a large organism, even internal, has dozens, hundreds, if not billions of flagella. With the help of these flagella carried out:

1. Bonding the cells together. They either become common to neighboring cells or their flagellates seem to sprout into each other. It is possible that some of the flagella are more truly used for mutual fastening, while the other part, shorter, is engaged in pumping the intercellular fluid;
2. Exchange of signals between cells and their chromosomes. After all, the flagellum moves energy, and so can move and signals, information;
3. The existing movement of individual cells within the body also occurs with the help of flagella. In particular, the so-called cancer metastases, this is not an unauthorized journey of a sick cell. Rather, it is an attempt to drive out the "stranger" cancer cell by neighboring cells. And this expulsion is "kicked" with the help of flagella from the side of healthy cells.
4. Heating of the quanta flowing along the slides alongside the blood cell to maintain a uniform temperature in the body; Similarly, it is possible that liquid juice is maintained in coniferous trees in winter, when engines transfer quanta from intracellular energy accumulators to capillaries. Of course, this is along with chemical antifreeze agents;
5. The exchange of energy and substances that occurs along the flagella. All substances are directed from the blood (juice) along the flagella directly to the openings in the cell membranes;
6. In particular, the movement of oxygen and substances from the blood into the cell and unnecessary substances back too, it is quite possible that it is better to occur along the flagella. It is the flagella that can direct the oxygen atoms exactly to the hole in the cell membrane. This is better than waiting for any kind of blind diffusion. It is very likely that the movement of glucose from the blood into the cell also occurs with the same involvement of flagella.
7. Likewise, it is most likely to occur in the lungs, where oxygen molecules are easily recognized and captured by appropriate molecular flagella and are easily directed to the corresponding openings in the blood-sucking vessels. Approaching this hole, it is possible that the next oxygen molecule pushes the previous one, which had previously plugged the hole.
8. It is possible that digestive processes occur with active involvement of flagella. On the surface of the small intestine and stomach are many types of flagella, each under its own substance. The mechanism is the same: a flagellum of one type or another, under the action of energy quanta flowing along it, captures the corresponding molecule and directs it to the corresponding opening in the shell of the intestine, and from there to the blood. And again the next molecule pushes the previous one. Errors in the definition of "their molecules" lead to poisoning.
9. Generalizing points 5 - 8, it can be assumed that the biological membranes known to all with one-way transmission of certain substances are nothing else than membranes with flagella. For each substance, their flagella are designed and located on the corresponding side of the membrane. Where they are located, from there the substance is pushed by these flagella through the holes. Without nudging, it can not diffuse - the holes are small. But the flagella do not work by themselves. For their work, there is a constant supply of energy quanta from the corresponding sources of the organism. Thus, nature has long ago carried out a physical scarecrow - a "thermodynamic demon" whose impossibility is "proved" almost in every textbook on physics. And this demon

efficiently sorts the molecules by composition. And maybe on energy. Although the perpetual motion machine on this all the same you will not receive: the "demon" itself needs energy supply.

10. In multicellular organisms, there was a "conformal" transformation of the flagellum from a device that increases the washing of the cell with the outer broth into the device, the pumping broth (blood, juice, lymph) already inside the body. The function has not changed. The topology of the process is also. Instead of moving the cells themselves in the surrounding fluid, the surrounding fluid now circulates past the cells.

11. On the external surface of a living organism, on the skin or bark, these flagella sometimes evolved to hairs, wool cover, horny scales and even horn shells. The appearance of limbs in all animals, fins in fish also comes from flagella. It occurred by the evolution of flagella on the surface of the first worms, by increasing their size. Also within the capillaries, molecular flagella partially evolved to optically observed hairs.

12. Animals have a heart that has taken on the job of global fluid transfer in the body. And the hairs and flagella bring the blood to the cells. While in plants the only life-drive is still the flagella. They are to this day is for all plants. They cover the walls of the vessels. And they help with their movements not only the mechanical pumping of liquids, but also other functions. The tree lives while the intracapillary flagella moves. And when they freeze, then the movement of juices stops and the tree dies.

The power of flagellum plants pierce the asphalt and crush granite rocks.

13. The muscles of the flagellum work in the muscles of animals.

Hypothesis 4. The cause of aging. It is known that with the age of the organism its vessels in some places are covered with bloom. This of course worsens the condition of the body. Blood flow is difficult. But now it turns out that there is another side. And without layers, many flagella wear out over time, partially or completely break away, undergo destruction and adherence of substances, and lose mobility. And consequently, the numerous functions performed by the flagella are extinguished. The load on the heart increases with blood pumping. Endurance is lost. The heating of blood deteriorates, since there is no flux of quanta along the flagella. The limbs of the old people become colder. Because of the destruction of the flagella, the metabolism and the supply of oxygen to the cells deteriorate. This is probably the main cause of aging. At the same time, the way of combating aging is also indicated. We must learn not only to effectively clean the vessels from plaques but also learn how to cleanse, repair and update the flagella!

It is also possible that, when aging, a change in the ratio between the pumping intercellular fluid and cell-binding flagella occurs in favor of the latter.

Hypothesis 5. Causes of type 2 diabetes. It is likely that the destruction of flagella in the capillaries worsens the process of penetration of glucose from the blood into the cells. There is a so-called impairment of cell permeability. The use of drugs that increase the production of insulin and increase the pressure of glucose on the cells does not improve the situation, which is indicative of the non-insulin cause of diabetes. At the same time, there are tools that improve the permeability of cells and restore normal blood glucose levels. This indicates that not the deposits in the capillaries worsen the permeability of cells for glucose. Most likely, the destruction of flagella affects. And these effective agents that improve cell permeability may improve the properties of flagella that help push glucose into the cells. Or somehow they help the remaining flagella.

Hypothesis 6. All animal organisms, like a billion years ago, are mills of energy quanta. Large mills, unlike molecules - mills. Only in this is their natural purpose. At the

same time secondary energy is stored, stored by plants in chemical compounds. There was an energetically favorable global division: plants store solar energy in the form of chemicals, and animals and microbes actively grind it into small quanta and turn it into heat.

Very effectively convert solar energy into heat, just warm-blooded animals. Because they won in the selection of dinosaurs. This same constant heating of the environment! Apparently, the global evolution of animals is moving along the path of effective conversion of stored solar energy into heat. And consequently, along the path of increasing body temperature. At least in the era of cooling the Earth. And if carefully measured, to a thousandths of a degree, and maybe enough to hundredths, the temperature of socially active people is not it higher than the average temperature of mankind?!

Confirmation of energy shooting is in medicine revitalization with the help of heart massage or electric shock.

EVOLUTION OF PANSPERMS. REPRODUCTION AND REPLICATION

This could be finished. The essence of Life is grasped, the term is picked up. But I wonder - what happened next? We further fantasize, create versions. At least for those opponents who like to fall asleep with questions. How is it? How is it? And gloat, if you could not immediately answer. Themselves, nothing, but questions and sypyat, and sypyat. And if you do not answer, they instantly conclude that your theory is wrong. Immediately, without reflection. And they are also called as they say, you need to deprive the diploma! However, for all their trouble, there is little benefit from them. Like the wolves in the forest.

Let's return to the ancient era. Now, when the origin of life is described, one can consider the process of its initial evolution.

In accordance with generally accepted terms, evolution is a gradual increase from generation to generation of the level of organization of living entities. From generation to generation, something can change. And these changes can accumulate in one direction or another, which is the essence of evolution.

It can be added that evolution is the gradual filling of higher and complex ecological niches. Just like if a tree next to a 10-story house is burning leaves, then the smell of smoke (this is the analog of life) gradually reaches 2, 3, 4, and higher floors. And when the fire is extinguished, the smell disappears in the reverse order. So the dinosaurs died out, when their fire was extinguished somehow, and they existed after this for many thousands of years. Most likely the end of dinosaurs was brought by small mammals, eating all the traditional food at the base of the food pyramid of dinosaurs.

This is of course good when there are generations already. When there are familiar names: reproduction, mutation, selection. And what are the terms to describe the diversity of Life at the stage of pansperm? When there is no replication yet, but does their diversity grow? When the complexity of the device pansperm grows, their size? Even if the reason is only in the cooling of the ocean.

So far, no special term has been used to refer to the process of changing the composition and concentration of living molecules over time. But among pansperms, something like a reproduction has already arisen. That is, they grow - grow, tear apart and accurately - not exactly, but restore all the same to their own kind, again pansperms. And if so, then it's time for a new term. We will be cautious and call this phenomenon **pre-evolution**.

In our understanding, pre-evolution in the pansperm environment is a slow movement toward a kinetically equilibrium state. In the situation with pansperms (and, frankly, with any living creatures) this is a very, very time-consuming process. So stretched that no

one even knows how it will look, this multi-dimensional equilibrium state. Even under stable natural conditions. If we use a mathematical term, we can not rule out the divergence of the concrete and universal process of pre-evolution and even evolution. That is, even with a gradual slowing of changes in phenotypes, and like an approaching stabilization, the end result can never be achieved. For example, theoretically, if for a thousand years the phenotype has changed by $\frac{1}{2}$, over the next thousand years by $\frac{1}{3}$, then by $\frac{1}{4}$ and so on, then this process has no end, does not converge. This is the subject of a special mathematical study. And even though the number of atoms in the pansperm is finite, then they can mutate more slowly and will never reach equilibrium.

Or, for example, evolution has slowed down by a hundred million years. But finally it happened, there was a very unlikely mutation and the avalanche went on with this mutation and demolished everything long stable. As it was, we will remember again, with dinosaurs. How many such braking was on the way to man? And maybe if we die out, then in general we can never arise again. If never, for example, those two chromosomes that have grown together in monkeys after they have descended from the trees grow together. So we would drag our hands on the ground until now, although they would have been as smart as they are now. And our beauties would drag. Maybe a little tail would remain ... Horror. Although we would think that this is a very erotic ponytail...

Sometimes evolution is impossible, as it was in the hot ocean. Complex substances quickly disintegrated. There, a kinetically equilibrium state was quickly reached, in which the ocean was for hundreds of millions of years. Then the ocean cooled down. The capacity of accumulated solar energy increased. The capacity of the substance involved in photochemical processes also increased. Then the ocean cooled down so much that life appeared in it as large pansperms. Their form will someday be set in detail by the chemists.

Unexpectedly, these reactive molecules (tailings) were given, even if not an evolutionary, but simply an advantage. It became possible to move the energy processes to higher levels, to other molecular sizes and to a greater variety of configurations of these molecules. The ecological niche of molecular quantum mills appeared and immediately expanded. How else? After all, there is constant pumping from the sun. After all, how fast is the career of those who have pumping from the top. Who it? Where from? "And he's already a deputy minister." And he already ... All of them, we are silent.

Mills of quanta capable of automatically capturing the gradient of concentration of energy and substances in the environment have already been mentioned. Naturally, such pansperms will also have an advantage in life expectancy and in the number of people.

Such small advantages can be listed further. The pre-evolution of living molecules began. Pre-evolution of configurations, forms, ways of movement, etc. Pre-evolution of engines and flagella. There were high-speed comfortable pansperms, with high efficiency. engines and good traction. Pre-evolution of sizes. Pre-evolution of absorption spectra. Pre-evolution of behavioral programs.

Step of evolution № 1 = Appearance of pre-evolution. The appearance of pansperms moving in the ocean under the influence of engines or vibrating molecular flagella.

Next, pre-evolution of one branch of pansperm will be tracked. It is impossible to assert that at least one of the stages of this branch had advantages over other surrounding pansperms. It's just that every stage is possible and probable. Just this branch of pre-evolution existed along with other branches and that's it. Sometimes the quantity of this branch increased, sometimes decreased. But this branch did not stop

and eventually led to the present state of the terrestrial ecosystem.

Among these ancient and progressive pansperms were the most bizarre forms and sometimes chains. They disintegrated and reconnected into other forms and chains. The time for all the cell-related variations took about 2 billion years. That is much more than for the whole subsequent evolution from a full-fledged diploid living cell to a modern living world. This indicates that the transition from pansperm to the cell is a difficult process. We are very fortunate that such an evolution has happened. And if the tree of pre-evolution and evolution of pansperm is compared with the tree of animal evolution, then it is likely that the second tree will seem like a small cluster of strawberries in comparison with the baobab.

Some of the ancient pansperms had the property of being reproduced after several intermediate stages. That is, several kinds of pansperms existed in a mixed community: after the destruction of any of them, any others could recover from the pieces, but also from their community. Reproduction after the destruction in a dozen - a hundred intermediate stages was always. At the same time, the intermediate stages themselves were independent and full-fledged lines of pansperms.

Once in this community there was a phenomenon when the pansperm was uncontrollably growing, and by increasing the mass and swelling from the energy, spontaneously disintegrated into pieces, from which again the similar pansperms of the same community grew again. Such reproduction can be considered very similar to reproduction, although it was not literally self-reproduction. It was self-reproduction of the whole family.

Step of evolution 2. The emergence of collective reproduction of a whole family of pansperms, without exact self-reproduction of each separately. There are no advantages to this family of pansperms.

Then in this family the leaders on repeatability and survivability were distinguished. And as a result, there were such pansperms that self-reproduced not through a hundred intertwining with other varieties of stages (and further with increasing with the growth of diversity), but only through one stage. These were pansperms of the type "A plus B". We will not detail the arrangement of such pansperms. Each of them during the movement increased the second half, then split into A and B. And then "A" increased "B", and "B" increased "A". With the advent of such pansperms, it is possible to consider the emergence and reproduction. Evolutionary advantage in multiplying pansperms is also not noted. The main thing is that they existed along with everyone.

Step of evolution 3. The emergence of pansperm type "A + B" and reproduction through one stage. That is, such a pansperm grew, disintegrated into "A" plus "B", and each of them then completed its body to "A + B".

This reproduction is exactly reproduction. It leads to a doubling of the number of pansperms after each cycle and seems to have to displace all the others. But with all the apparent evolutionary advantages of such reproduction, it does not fit in with the state of affairs in modern living cells. In them reigns reign. In all likelihood, not self-reproduction has led to the appearance of cells and information properties of chromosomes. In short, this direction is not yet considered, although it is quite promising.

The ocean cooled down. Niche pansperm expanded. The breeding pansperms of the "A + B" type evolved in different directions. Among others, there were also chains, based on the convenience of mutual replication with increasing energy intensity.

But it turned out that the chains are the next breakthrough in evolution into new energy spectra, new life processes and new volumes and rates of grinding quanta. I remember the unfortunate version of the origin of life through the chains. Alas, then did

not know about engines and flagella ...

Definition. A chain is a pansperm that has an extended form or a molecular chain. Its difference lies in the fact that it multiplies by splitting, stratification, and not by breaking into two.

Surely, among the modern viruses there are also chains, they are only difficult to detect or observe. There were many different types of chains, with flagellas or engines.

Is there an advantage of chains in front of other living molecules? If there is, then they are not too obvious. Maybe they are stronger, less prone to destruction? - Hardly. Move faster? - It's very possible. Is it better to grasp the solar quanta? - Maybe. What else? - Perhaps that they have a large relative surface area. This means that at the same weight with a spherical pansperm, an elongated pansperm has a much larger area. Hence more contact with the environment. If we add a lower resistance of water, a greater energy of motion, then in the sum we get some evolutionary advantage in needle pansperms.

But this advantage is secondary. The main thing in the other. Whether it is a little - whether it was a lot of chains, but they were. They increased their mass while moving along the entire length. Everything flowed so slowly, despite the engines and flagella. Hundreds of millions of years passed one by one, and there was no progress in evolution. And chains and chains did not exist, they performed their function as mills of solar quanta, and one day they collapsed and life died in them. But once there was a clear process of replication.

The constant energy pressure of the Sun, after quadrillion trial and error, made these chains of molecules (very energy intensive) once "learn" to build parallel to themselves the second chain. And then, swelling up from the excess of accumulated quanta, to separate into two. So that each single chain again restores its pair. And so on. When the needle-like chain moved in the primary broth, the second chain quickly recovered, because the surrounding substances were immediately embedded in the places that needed it. So there were self-reproducing "through time" chains. So the process of replication has begun.

But even at this stage it can not be asserted that those chains that have mastered this process could outrun the rest of the carriers of life - pansperm. Maybe it happened a little later, when they discovered the ability to incorporate into their life cycle almost everything else floating in the ocean organic matter.

Probably, the loss of strength in chains and their less resistance to destruction were compensated for by the appearance of replication.

Step of evolution № 4. The appearance of the process of replicating chains by constructing a second chain in parallel to itself and splitting into two. In this case, self-reproduction itself was achieved with the second division, that is, through time. Chain A produced chain B, and chain B then produced chain A, and so on. Evolutionary advantage is not noted or insignificant.

The emergence of the processes of reproduction and replication, figuratively speaking, became a victory over the stage of death in the cycle of life. The stage of death has practically disappeared for all this variety of chains and has remained only for its separate copies.

Of course, the appearance of immediately stratified chains in the primary ocean broth is an unlikely event. Without a stage pansperm at all impossible.

The following term is introduced for self-replicating and reproducing chains - prechromosomes.

Definition. The **pre-chromosomes** are that part of the chains that had the ability, under the action of the primary, secondary and higher orders of energy pressure, to

reproduce by replicating - building a second chain in parallel to itself, and then splitting into two single strings. And so on.

No horrible cosmic molecules are needed. Conventional terrestrial molecules under constant pressure of solar energy for hundreds of millions of years stick together in large formations, have engines or build up flagella, begin to move and give rise to a Great Life on Earth. Then one day they line up into self-replicating chains with engines and flagella and begin to evolve towards the cell. All this with a completely certain non-zero probability! Even today, this could happen if almost all organic matter were not involved in the current biosphere. The same pansperms and chains have certainly been and are on any planet, including and on Mars, where it is not too hot or cold and there is water, you should not fly there.

Undoubtedly, in distant space there are planets on which there is little carbon and a lot of silicon. And on some of them, where the appropriate climatic conditions are, there is a highly developed silicon or other non-carbon life, perhaps reasonable.

Immediately, after the appearance of the process of reproduction, competition and the process of natural selection intensified. It should be noted that the process of natural selection - the term is not very beloved now. I think the whole point is that this term is half-hearted, it covers only half the broader phenomenon. Namely, the phenomenon of the arrival of the ecosystem in equilibrium with the environment. After each surviving mutation begins the process of moving the ecosystem into equilibrium. The balance of genotype modifications between themselves and the environment. This transition in its complexity, multi-stage, involvement of participants and interdependence would be compared with the game in the "spot". When in order to move a square to an adjacent field, dozens of movements of other squares must be done. In nature, this is not a "speck", but at least "weaving". And also, as in a toy, there are situations that are mathematically insoluble. When even a progressive mutation does not always survive, for example, because there are no corroborating mutations in contacting species.

Undoubtedly, in the early stages of the formation of life, pansperms also multiplied - not chains. Even now they probably exist. Also, the chains could multiply by not replicating, but simply breaking into two short ones. But in the end, under the influence of solar pressure, all were gradually squeezed out precisely by replicating Pre-chromosomes based on carbon. This is a physical look. Supporters of the theory of natural selection can interpret this as a competitive struggle for the assimilation of organic matter floating in the ocean. Their life cycle, as already mentioned, consisted in increasing the thickness to double and then multiplying by splitting the double chain into two single-type "lightning". This moment of victory Pre-chromosomes is logical, because the energy-swelling molecular chain, if it grows only in length, will absorb energy too slowly. But if it grows in thickness, then its energy intensity grows much faster, because for a unit of time, many more molecules join it. The one who reproduces faster survives and wins.

Modern viruses that can be found anywhere in the terrestrial biosphere, apparently also belong to the varieties of these Pre-chromosomes. Some of them, perhaps, refer generally to pansperms and propagate in a manner different from the Pre-chromosomal stratification. It is possible that viruses are the first layer of life on earth that has changed little since its inception, for 3 billion years.

Extrusion process Pre-chromosomes of all other pansperms are not obvious. And one of the possibilities is set out below.

FORMATION OF MOLECULAR ORGANISMS

Prechromosomes at first simply existed along with all and in very small quantities. But once it happened, their number began to grow. Maybe this moment is inevitable, and maybe also due to oxygen its appearance. It seems very plausible the next version. The

first large formations on the way to the cell were analogues of multicellular organisms. Only the role of cells in them played pansperms fastened with flagella.

Secondary energy pressure on the prechromosomes is carried out through intermediaries, which at first were pansperms and simply complex molecules floating in the ocean. The process of evolution of primary panspermic organisms consisted in the continuous complication of this system of surrounding mediator molecules (and the complication of prechromosomes themselves).

One can note the possibility of various ways of evolution from primary pansperms to the modern diversity of life. It is possible that all these directions have taken place. It is also possible that a probability estimate will discard some of them. Among the possible ways can be called, firstly, the evolution of chains with subsequent fouling by matter and conversion into cells. Note that, unlike the well-known hypothesis with the "evolution of simple chains" in which the sticking substance "strangles" the chain, in the version presented here the more one clings to the chain with the flagella, the better! More will be captured by solar quanta, more will grow in tails and more fun will float. Secondly, the path of growth of teardrop pansperms with subsequent crystallization of information carriers inside them is possible - chromosomes. Thirdly, combined variants, symbioses and so on are possible to infinity. The main thing that follows from this diversity: it emphasizes the earthly origin of life. It was worse earlier, when there were few plausible options.

The main attention will be given to the first version of the evolution of chains as the most simple, understandable and logical. Because the description of the crystallization of information carriers requires great effort. Although this version is quite likely.

The energy of the Sun and the surrounding secondary energy flow were pressured, causing the prechromosomes to expand, become more complex, and absorb more and more energy. These double chains acquired complex spatial configurations, twists and cross-links and contained absorbed solutions of substances, products of vital activity, other pansperms. With them, symbioses were created. Colonies of pansperms were created! They were like multicellular organisms, consisting not only of cells, but of individual pansperms, the core of which were prechromosomes. Capillary phenomena were included in the process of vital activity. At the same time many substances participated in several consecutive chemical cycles, without going beyond the limits of this drop surrounding the prechromosome. Nothing prevented the creation of such colonies, because the more it grew, the more energy it received from the Sun.

It is very possible that the progressive part of the prechromosome possessed many flagella. But not just flagellas, serving for movement. Some flagella could be engaged in the burial of organic matter from the side closer to the prechromosome itself. Such flagella could contribute to the formation of a drop from the beneficial substances surrounding the prechromosome. Other flagella might not vibrate, but create viscosity and retain substances. Third flagella served to bind the colony of pansperms into a single whole. In general, flagella are just that evolutionary material from which all cellular connections and structures will be constructed later.

There is another interesting analogy. Many current insects, sea crayfish - they have a slightly more complicated program of behavior than large pansperms. That is, grab, absorb, allocate. And do not think of anything else. Even a large pansperm with many flagella such a program is quite possible. And the colonies of pansperms were even more able to cope with the task. They occupied before that ecological niche, which is now occupied by marine plankton. They were swarming with an oceanic surface.

The concept of a **drop** in one form or another has been encountered and is encountered in almost all works devoted to the problem of early life. Most often used terms: coacervates, microspheres, protobionts. We do not have the opportunity to understand the subtleties of their differences. Among others, we note the drop-like

colonies of pansperms with a prechromosome inside and possibly capillary-activated substances, which have become precursors of cellular organisms.

Definition. A drop. This molecular organism, which is akin to a multicellular organism, only the role of cells is played by pansperms. The leading role in the colony is assumed by the prechromosome. Its essence lies in the fact that along with an independent object - the prechromosome - there exists and lives a colony of pansperms attached to it with flagella and attached to them a drop of auxiliary substances used in the process of vital activity of the prechromosome and colony. This attachment is achieved by means of capillary phenomena and molecular flagella. This drop is also divided upon division of the prechromosome. It is a complex prechromosomal form of life that precedes the emergence of a cell.

FORMATION OF CELLULAR ORGANISMS

The appearance of drops gave rise to such a phenomenon as the absorption of small pansperms by a drop. That is the appearance of animal behavior. This was the beginning of the division of the living world into plants and animals. There was an energetically favorable division of labor. Some effectively stored solar quanta in the form of chemical energy, while others energetically turned it into heat. Along with the evolution and growth of the size of animal drops, plant drops appeared, which grew due to the assimilation of carbon dioxide and inorganic substances from the ocean. The center of the plant drop also served as a prechromosome.

It is likely that the plant drops had a flat appearance in order to better retard the sun's rays. These were, as it were, the pre-cellular algae leaves floating near the surface of the ocean. There were times when such plant flat drops completely covered the surface of the ocean or its bottom in shallow water with a green carpet. And they were scooped up by animal drops and ate them, tearing off pieces.

Next came a parallel evolution of pre-chromosomes synthesizing (plant ancestors) and non-synthesizing (animal ancestors). The only thing that bound them together was that the former were food for the latter. The acceleration of evolution, the improvement of the protection of the former led to a decrease in the number of the latter. This led to the subsequent degradation of the former due to a decrease in the factor of natural selection. Acceleration of the evolution of the latter led to a decrease in the food base and a decrease in the number of the latter, followed by the restoration of the number of the former. This is an eternal and inseparable bunch, existing to this day between plants and animals. The second can not without the first, and the first degrade without the second.

The appearance of "predatory" droplets led to the fact that many, the most perfect and beautiful plant prechromosomes and drops, which fill the primary ocean, were quickly eaten. Remained only those drops that were surrounded by the likeness of the shell. These remaining prechromosomes - droplets multiplied and gave rise to a plant cell. This cell also had flagella necessary for movement. They originated from the molecular flagella of those pansperms from the colonies that were on the outer surface of the cell.

Now let's pay attention to the following aspect. Prechromosomes are a self-sufficient, viable entity that does not carry information. They are themselves information. In contrast, as will be seen later, from intracellular chromosomes, which bear only the information function.

The primary plant cell is the formation consisting of a photosynthetic prechromosome, a droplet and the surrounding protective envelope with flagella for displacement. Its life cycle contained both the exchange of substances with the environment and the absorption of solar quanta, followed by the synthesis of new organic substances from carbon dioxide and other substances under the action of solar energy.

Apparently, the plant cell was created first, and only then, when there was nothing to

eat and animal drops began to eat each other, they also acquired a protective shell. The flagella were still present on the outer shell. An animal cell appeared, the name of which corresponds to the generally accepted terminology: the spermatozoon.

Primary animal cell - spermatozoon - is a formation consisting of a prechromosome devoid of the ability of photosynthesis, a drop and the surrounding protective envelope with one or more flagella to move. Its life cycle contained only the exchange of substances with the environment, without the absorption of solar quanta and the function of synthesis of organic substances.

Currently in the literature the main version of the origin of the cell and all its internal formations is symbiotic. The version presented here does not contradict the symbiotic theory. It is quite logical and possible to introduce any extraneous inclusions, other live pansperms, prechromosomes and cells into any elementary cell. Which later evolutionally transformed in the right direction. And even this necessary direction creates pressure on the introduced element and accelerates this transformation very quickly.

Following prechromosomes, organelles were formed in the cell. Organelles in a primitive cell performed functions similar to the internal organs of a modern animal. These are all kinds of storages, reactors and sedimentation tanks. The prechromosomes themselves, in a living cell, played approximately the same role as the intestine in the animal's body. It is very likely that in the prechromosome there were areas like stomach, intestines, mouth, anus. Sites that are analogous to the oral opening in the animal, the "input" areas take (under pressure!) Energy quanta and useful substances from the outside. Further, if the energy moves inside the intestine as useful substances, then in the prechromosome the energy moves along the prechromosome itself (possibly even inside the prechromosomal spiral, if it existed). This energy is contained and moved both in the form of excitation energy of the molecules of the prechromosome itself, and in the form of useful substances that have entered the cell. Then this energy and useful substances are distributed inside the cell for its vital activity and reproduction. And, for the sake of completeness, we can assume that there were areas similar to the anus in the intestine. Hence depart some of the unclaimed substances. The researchers have to specify how the input and anal areas of the prechromosome worked. In particular, whether there were for this purpose special openings in the outer shell of the cell or the metabolism occurs through diffusion.

THE EMERGENCE OF THE INFORMATION CHROMOSOME

The next important moment is next. As soon as the prechromosome began to form a drop, a special evolutionary process took place in it. Initially, it was an independent unit, carrying many useful substances, and able to exist and survive alone in the ocean. Its main stage was a single chain.

As already mentioned, the most probable and practicable was the process of reproduction through an intermediate stage. Actually self-reproduction was achieved not at the first stratification, but at the second. That is, the chain A spawned the chain D, and the chain B then again created the chain A, and so on. When fouling of the prechromosome droplets, the residence time of the pre-chromosomes A and B that were not disconnected was extended. At the same time, the time of their stay in the disconnected state and the construction of the second chain was gradually reduced, because there were quite a lot of necessary substances and energy in the drop. Thus, the transformation of a drop into a cell practically coincided with the degeneration of the prechromosomes into double chains A + B, which later evolved predominantly in the same form.

Further evolution of the prechromosomes of the type "A + B" consisted in their gradual

degeneration into a purely informational carrier, practically incapable of existence without the drop surrounding it. All useful substances are milled in the surrounding drop and the prechromosome itself is increasingly engaged only in the account and distribution of these substances and in the appearance (phenotype) of the organism.

In today's living world, the prechromosome completely degenerated to a purely information-genetic code and became a chromosome. Than it is healthy to mislead scientists who now can not understand, whence and as information carriers appeared on the Earth. Only from outer space ... Thus we come to an alternative to the existing opinion. That not an excess of DNA capable of coding creates a primary cell, and already in the cell of a prechromosome it gradually degenerates into an information carrier. It is possible that these processes occurred simultaneously. The evolution of the drop into the cell was progressing, and the evolution of the prechromosome into the information carrier was parallel.

Thesa. The transformation of a prechromosome into an information carrier. It occurs with the evolutionary fouling of the prechromosome with auxiliary substances and structures and with the evolutionary division of functions between the prechromosome itself and the surrounding structures. There are stages of transcription, translation. Probably in this era prechromosomes containing mononucleotides win. Maybe they were the only ones capable of information function. Appearance of the function shift and separation of the equal pair of prechromosomes onto the carrier of DNA information and the mediator in its transfer - RNA. Evolution leads to the fact that the prechromosome - DNA remains practically only an information function, and, perhaps, the role of a transfer device in the exchange of information and substances between different cellular structures.

Definition. The Info chromosome or simply the chromosome is a prechromosome that has lost its biological independence and has become an information or genetic carrier.

The degeneration of the prechromosome into an information carrier and the simplification of its structure in turn gave rise to yet another phenomenon. Now, having simplified to a simple sequence of repeating nucleotides, the chromosome has the opportunity for very large mutations. The pieces of DNA could be moved from the chromosome to the chromosome under the action of mutagenic factors, it's easy to get accustomed to this new place and after that it only remained to observe what phenotype will turn out. These pieces could be huge, of any size and they easily fit into the chromosome because of the similarity and simplicity of the constituent elements.

Thesa. After at one stage of the chromosome completely switched to the performance of one function - the information carrier, after all the processes of transcription and translation were stabilized, the chromosome itself had unprecedented opportunities for mutations.

This phenomenon can be compared with the possibility of constructing various architectural structures from bricks of the regular orthogonal form (analog of the info chromosomes), in contrast to buildings from arbitrary cobblestone (an analogue of primary prechromosomes). With the most random arrangement of bricks, they still give a stable construction. At the same time, there is a fairly high probability that even by randomly installing bricks, we will build a high, complex and stable structure. While the structure of cobblestone will certainly fall apart.

An analogue of human society is the ability to work in hardware, the ability of an employee to work in a team. It does not matter whether there is any talent for the employee, the main thing is not to interfere with the rest. In order not to conflict, do not stick out. In short, to be a complete brick. And then you will have everything and many:

a white suit, rings, a doctor's diploma, a deputy's certificate, money, cars, cottages, permits, prostitutes. Even (from TV) AJP is an Active Life Position. Just become a brick.

Thus, an evolutionary leap that allowed cells with information chromosomes to accelerate the movement toward multicellular organisms. And along with the oxygen atmosphere, to promote the evolutionary progress of multicellular organisms.

Step of evolution № 5. Occurred at the time when the prechromosome turned into an infochromosome. At this point, there was an opportunity for a wide range of mutations with the most unpredictable consequences for phenotypes. This created the opportunity for a very large variety of animal and plant life. It was at this point or close to it that multicellular animals and plants appeared.

Let's try to describe the scheme of the chromosome's life in the cell and the interaction of the chromosome and the environment. One day it is necessary to clarify what is the criterion of stability in the cell and how many of them, the criteria. As an example of a criterion, let's call its chemical composition. Obviously, this criterion is not the only one, but the example is quite obvious.

Suppose that under the influence of environmental factors the chemical composition of the cell has slightly changed. But the cell still remains under external energy pressure, and its chromosome - under the energy pressure already inside the cell. In the chromosome, the property is embedded, as in the scales: where heavier, there scales and lean. With the difference that the chromosome is a multi-dimensional scales. A lot of cups of scales and outweigh can only one. They react to the change of thousands if not millions of chemical changes in the cell. Apart from non-chemical signals that can be transmitted from the organelles or even the central nervous system of the animal and can also be perceived by the chromosome. They react in that one or another segment of the chromosome is involved in the replication and synthesis of the substance along the matrix of the chromosome. In principle, this is representable. For example, this or that chemical change in the cell can create an energy stress in one or another place of the chromosome and then turn it on for replication. This point requires detailed description. But the end result is that the inclusion of the synthesis of the necessary substance restores the chemical composition of the cell.

One can also note that energy quantum fluxes, even in primary pansperms, and then in droplets, eventually break through permanent channels, which later evolve into the rudiments of lines capable of transmitting energy impulses as signals. Such signals have an electrical basis and are quickly transmitted without moving the substance. That is, the rudiments of the future nervous system are still in the drop. It is possible that such a nervous system exists in the cell and transmits impulses from the peripheral parts and flagella to the chromosome.

Thesa. All energy and nutrients in both unicellular and multicellular organisms are delivered to the cell by the efforts of both sides. first, it draws the cell through the motion of the flagella, and secondly, they are pumped from the outside, i.e. from the environment or from the body, under pressure. This joint pressure, which starts from the sun's rays, causes different processes to take place in the cell, form all kinds of organelles, and so on. The chromosomes themselves.

The main stage in the life of the primary cell was the stage of energy swelling of the double chain, the separation of its chromosome into two chains, then the construction of the second chains (and, of course, the second flagellum from the outside). After this, the partition was built and the decay into two cells followed. As is customary in all textbooks, this division is called meiosis.

It is known that even in the higher animals of our era, meiosis is a partially reversible process. That is, homozygous spermatozoa sometimes reunite, forming two-tailed

"monsters". And even those ancient times can not be doubted. And they were divided and connected back as they wanted, depending on the weather, the availability of useful substances and the availability of a partner. For millions of years, giant schools and congestions of spermatozoa plied the primary oceans in search of food and made their life cycles, including mergers with partners and a new division into two. At the same time occasionally the crossing of parts of their chromosomes occurred, giving a new impetus to their evolution ...

These giant clouds of spermatozoa have survived to this day. It is enough to observe the fertilization of fish eggs with the milk of their males. The only difference from antiquity is that, firstly, these fish spermatozoa became carriers of many chromosomes, and not just one in antiquity. And secondly, that half of the spermatozoa in the past evolved into large caviar and lost flagella. At the same time, the other half lost the ability to merge with their own kind and merges only with eggs.

THE EMERGENCE OF DIPLOID CELLS

In the process of evolution and improvement of cellular molecular structures, the time of sperm stay in the state of a double set of chromosomes gradually increased. The existence of a spermatozoon with single chromosomes has become relatively short. Without going into details, let's say the on-duty phrase that "this created an evolutionary advantage." So there were already full-fledged unicellular animals of the same type as spermatozoa, only with a double set of chromosomes. Further, we will call them spermoids.

Definition. A **spermoid** is an animal cell, with a flagellum (or several) as a sperm, for most of its life cycle is in the state of a double (diploid) set of chromosomes.

At the initial stages of evolution, the spermoid is simply a sperm with two chromosomes.

Thesa. The appearance of the first diploid unicellular animals, close to the modern ones, occurred through the elongation of the stage of a double chromosome set from the process of reproduction of primary spermatozoa.

Later, at one of the stages, it became possible to multiply an animal cell (i.e., a spermoid) by doubling the number of chromosomes (already already there were two) and then dividing into two new cells. This division is called mitosis. Thus, both meiosis and mitosis arose at the stage of unicellular organisms. The first meiosis appeared and it was preserved forever, because it created high adaptive possibilities. Mitosis simply serves as a breeding without variation of the genotype (except for crossing).

There is a well-known dispute between different schools of biologists. According to some, evolutionary change begins when the population falls into unaccustomed conditions of existence. New external factors act directly on the ontogenesis of individuals and cause morphoses. Morphoses represent a new material for natural selection. If any of the newly appeared morphoses is able to exist under changed conditions, then natural selection leads to genetic assimilation of this morphosis. Thus, evolution begins with a change in the environment and ends in the genome. Other scientists, followers of Darwin, view evolution as the reverse sequence of events: from a new gene to a new ecosystem.

It seems, and we think so, that in the light of the above, both are right. The chromosome that lives inside the cell, although protected from the influence of the external environment, but not 100%. That is, a small reverse effect of the external environment on it necessarily exists. Therefore, on the one hand, random mutations of the chromosome itself can be fixed if they are successful. But on the other hand, changes outside create tension inside the cell, which sometimes leads to the fact that:

a) the cell weakens and becomes uncompetitive b) to the forced mutation of the chromosome in the direction of removing the external voltage. c) the competitiveness of such an accidentally mutated chromosome, which previously was consistently uncompetitive.

Recall the law of physics: every system that is under external influence behaves in such a way as to reduce this impact. Summary: evolution is possible even under unchanging external conditions. The only driver of this evolution is random mutations, although they can give out very progressive changes. The consolidation of such mutations in the ecosystem depends on the response of other members of the ecosystem. Not every, even progressive mutation is able to gain a foothold, if in parallel there are no suitable mutations of contacting species. But when the external conditions change, the intensity of the mutations increases and their direction is determined by the change in external conditions.

You can also recall our long-standing reflections that there are no stable states in Nature. The ecological niches are being filled. Nobody knows the size and shape of these niches.

Yes there is biology. That brightened in the head of a man (A.Parshin - "Why is not Russia America?") And he realized that all the troubles in Russia are coming from the climate. Truly so! And what do you want to do with your favorite writers who have covered the Russian reality? After all, these writers are wrong! Gogol, Chekhov - they are wrong! After all, like in India or Africa: jumped, ripped off a banana and you are full. And we have to work half a day to feed ourselves. They hung a rag or leaves on their hips, and you're dressed. And we - work in the second half of the day for clothes. In Europe, I built something, a building, a road, a bridge - and it costs 100 years. And we have after the winter - a mandatory repair of everything. More than three years without repair in our climate, no structure can withstand! And favorite writers laugh. And the humorists roll off, why are we so clever, and so poor? And we do not understand, and humorists do not understand. But the man understood and we all became fools. So in biology: how many theories seemed correct, intelligent, ingenious. And look wider - and complete nonsense. Well, what natural selection? Well, they eat sick, old and defective. And everything else is very doubtful.

Gradually, oxygen accumulated in the atmosphere. In the oxygen atmosphere, all the processes went much more actively and very complex molecular formations and multicellular organisms became possible.

MULTICELLULAR ORGANISMS. CANCER

Multicellular organisms appeared from 1 billion to 500 million years ago.

We can suggest several mechanisms for the appearance of multicellular animal organisms. Of minimal interest are simple coalescence of several identical cells. The largest - the formation of organisms with differentiated cells, in which the functions and responsibilities are partially or completely separated. Hardly, whether this was possible in cells with one pair of chromosomes. But with several pairs of chromosomes in a cage, this is imaginable.

The pairs of chromosomes - cohabitants evolved, gradually moving away in structure and properties from each other. And when building cellular structures, they began to interfere with each other. But if the chromosomes in one pair interfered with each other, then such an organism, probably, perished. But if different pairs of chromosomes interfered with each other, then in the course of time a molecular mechanism was developed (at first - according to probability laws), which we will call a switching mechanism.

Thesa. Switching mechanism. In the moments of mitosis of a multi-chromosome cell, one pair of them is included to construct cellular structures with parallel duplication of themselves, and the second pair (later the third and all the others) abandons the construction and takes care only to build a duplicate on time and on time divide into two new pairs.

Thesa. This state with one pair of chromosomes turned on and the others turned off remains in the process of vital activity. The whole chemical composition of the cell is controlled by only one pair of chromosomes, and the rest are taken care of only of themselves.

While it is impossible to say exactly where and what kind of this switching mechanism is located. Maybe it is permanently attached to one of the chromosomes, and maybe it does not belong to the chromosomes and floats in the cell itself as one of the organelles. Maybe (see below about cancer) is the same gene HIT (aych ay ti), accused of initiating cancer. It seems, it is more likely that such mechanisms exist on each chromosome and they work together on a program laid down from birth. But there must be only one! The need for inclusion is determined by some detector chemical composition in the cell, perhaps with the participation of the gene of aychayti.

Historically, a synchronous system of two pairs of chromosomes was first created. In all the new cells, there were again two pairs of chromosomes. The spermoids themselves were of two kinds, depending on which of the two pairs of chromosomes built the protective membrane and all the internal organelles. The advantages of such a system, perhaps, were that the same genotype had statistically two phenotypes and was more adapted to the variable conditions of life.

Later, the switching molecular mechanism was improved. Now at first several cycles of mitotic cell division were performed by one of the pairs of chromosomes, and these cells remained in the "molded" state. These extra cells served as a protection for the entire body, a supply of nutrients, etc. And then one cycle of meiotic division of the cell was controlled by the second pair of chromosomes and the homozygous unicellular spermatozoon was separated. Such a complex cycle is already completely completely similar to the cycle of any modern animal.

Consequence. The only animal on earth created during the entire evolution of life, the main core of evolution, on which the whole diversity of the animal world is strung, is the sperm. All other animal variations, all genera, species, subspecies, etc. are formed as a result of the "colonization" of the sperm cell by a variety of chromosomes in quantity and quality. And, depending on the number and structure of these chromosomes, these or other protective shells around these spermatozoa were enlarged.

The entire animal world: insects and vertebrates, fish and birds, lions and worms, lice and humans are just different kinds of shells, designed firstly to protect the spermatozoa of all these living things so that they do not become someone's food, second, to create energy pressure on them, forcing them to ripen, to separate from the body (to form gametes) and to pour out at certain moments of copulation (or at the time of docking of the protective envelopes), for the purpose of subsequent merging of these spermatozoa, the formation of sperm and the subsequent creation of new gibbreeds and growing new protective shells.

Apparently, similar words can be said about plants. The single-celled base of the plant is pollen.

It is quite obvious that the division of the sexes and the appearance of anuran sperm-ovaries does not change the general picture. Female spermatozoa lost large flagella, became ovules, but they were stocked with nutrients. It is not necessary that the oocytes disappeared from molecular flagella and electronic engines.

Mini - hypothesis. Probably, the seminal glands of male animals from the inside are lined with a layer of cells with a permanently switched meiosis sex chromosome, which continuously perform meiosis cycles, secreting spermatozoa. There is also an inverse process of fusion of the spermatozoon with the walls of the gland.

Thus, the stage of the spermoid has also been preserved in all multicellular animals, both at the stage of separation of the spermatozoon, and at the stage of fusion of the spermatozoon with the oocyte.

Modern observations of the behavior of spermatozoa indicate that the same habits remained here, as hundreds of millions of years ago. During active sexual life, spermatozoa constantly multiply. But in a difficult "sexual timelessness" spermatozoa can and connect back and even dissolve back into the body.

Returning to the pressure of solar energy as a source of earthly life, it is appropriate to note that energy, food itself is always looking for a consumer, as it were, presses on the body and thereby serves as a source of vitality. Applied to the animal world, this is absolutely true for their life center: spermatozoa. They are constantly under the pressure of energy supplied by the body, which forces them to complete the entire life cycle. And the body is the mediator between food (i.e. accumulated solar energy) and sperm, as well as a sperm defender. It does everything to create energy pressure on spermatozoa. Nature has allowed such an intermediary to exist with an emotional apparatus in which positive emotions are all that creates energy pressure on spermatozoa. This is good nutrition, good treatment and entertainment, this is the process of finding a partner for copulation and a maximum of emotions - at the time of copulation. And negative emotions - hunger, cold, illness, stagnation in the "main organs."

Recalling the old comparison between life and the clock, we can say that

Consequence. The body is the same pendulum that swings along ecological trajectories, catches portions of energy (in the form of food) and pumps them to spermatozoa.

There are many such pendulums, beginning with the flagellum of the sperm and ending with the entire body of the animal. All life consists of cycles, and in each cycle something is a pendulum.

Once again, we return to the emergence of multicellular organisms. The main result from the appearance of protective envelopes around the spermatozoon, as if a breakthrough to multicellular organisms, was the moment when several pairs of chromosomes began to live in one cell.

Thesa. As a result of the switching mechanism, one of the pairs of chromosomes in the process of vital activity and at the time of cell multiplication (the growth of any organ of the animal) takes on an "active" role, taking the entire flow of energy and nutrients. And it regulates the chemical composition of the cell or builds its colony of cells, separating a small part of the substances from other chromosomes. And other chromosomes only "passively" divide, but almost do not affect the structure of the cells of the colony created.

This point is important in the sense that multicellular bodies of living organisms have appeared, which have already become protective shells around the spermatozoon. Just like the sheath of the cell itself is the defense for her chromosomes.

This point is also important in the sense that with the advent of the first protective shell for the spermatozoon, cancer appeared on the globe. This important topic will some day be considered in more detail. Here only the solution of the problem.

Thesa. Cancer consisted of the fact that in a tissue that has already been built, which does not grow and should not grow, a "revolution" or "inclusion" of one or another chromosome into an active state occurs. This activity is directed either to participate in the regulation of the chemical composition of the cell, or to build a new tissue. Figuratively speaking, an "enraged" chromosome appears in the body.

In organisms, there are substances that can turn off frenzied chromosomes. The evidence can serve, for example, substances of Ceylones, which slow down the rate of cell division [28]. There are substances that accelerate the division of cells: some hormones, phytohemagglutinin, a complex of substances released from tissue damage. You just need to find these substances and learn how to use them. And then the cancer will be defeated.

Cancer metastases, this has already been mentioned, is an attempt to expel a cancer cell by neighboring cells. And how its future destiny is not known. Maybe she will die, or maybe she will grow into a new tumor.

Let's return to the main theme, to evolution.

The joint growth of several colonies allowed the creation of multicellular organisms of a certain geometric shape (worms, etc.). Joint and synchronous growth of several cell colonies and their constant interaction (including chemical interaction) determine the shape of the organism of modern living beings. All the bends and the entire shape of the body result from the fact that one of the adjacent layers of cells slightly outstrips the growth of the other. And also as a result of a different supply of adequate nutrition to the growing cells.

So, the two-body organism (not counting sex chromosomes), in which one of the cell colonies "grew" around the other, evolved into worms. It seems that the pre - worms were just flat rugs from one - two layers of cells.

It is possible that in chromosomes there are special areas that produce certain kinds of substances that accelerate or slow down the growth of certain cells at certain growth moments. It is possible that just such areas or the whole chromosome determines the hormonal state in an adult organism.

Mini - hypothesis. The "silent" sections of chromosomes known to the current science are not necessarily "ballast" or "stock" of genetic material just in case, as it is commonly believed. It is likely that these are the "counters" of cells in the construction of a multicellular organism. Each chromosome counts the constructed cells and, after "executing the plan," is turned off.

It is possible that at the level of genes, chromosomes, molecules in cells there is a counter of Life. It synchronizes the work of the whole organism. Every disease, every extreme condition of the body, knock down this counter. Every drink! Every sleeping pill (what scientists do to animals). And then the body is never completely restored!

Each newly constructed cell contains a "counter" in the state in which it was built. Therefore, if this cell is damaged, it begins regeneration from this moment. From the same moment, a cancerous tumor begins in the case of a mutation - the inclusion of the chromosome for construction. Figuratively speaking, all the cells of a healthy organism are "counted" and each has its own number consisting of (for a person) of 23 or 46 whole numbers. Each such number corresponds to the state of the counter of each of the 23 (46) chromosomes.

Of course, the first of the promising multicellular organisms appeared a worm that was the carrier and protective coat first for a single cell producing spermatozoa. And later - for a small "scrotum" with spermatozoa. Moreover, again and again the entire behavior of the first worm was subject to a single goal: to preserve, to deliver nutrients (and energy) and to provide a breeding process for the sperm transported by it. Worms with another life program did not survive.

Further build-up of the shells passed already around the worm, and the position of the ovaries or the monophyllum varied depending on the situation. It can be said that it was the worm that became the next (after the spermatozoon) evolutionary core, to which all subsequent protective envelopes were strung. Worms, with the appearance in the cells of the 3rd and subsequent chromosomes (and the perfection of the old ones), the protective shells grew. In the organisms, colonies of cells appeared: a) the circulatory system (with pumping blood flagella!); b) the immune system; c) nerve cells (and with them the organs of sight, hearing, smell, touch, signal transmission); d) muscles; e) bone skeleton (branching on animals with an external skeleton - insects and an internal skeleton - vertebrates); f) finitenesses; g) leather, wool; h) the brain.

Further protective shells already in the higher animals can be considered (i) clothing; j) housing; l) a piece of land; m) car, garage, barn, cottage; n) intellectual baggage, memory, ability to handle a computer, knowledge of laws, communication with the Internet; o) money; n) belonging to some collective, organization; p) dual and greater citizenship. c) an account with a foreign bank.

However, at the base of the worms also remained worms. And all aspirations and aspirations are the same. Only those that are stronger, operate simpler, eat where they want, what is horrible and who they want. Use the weak for their protection. And the weak ones, in order to survive, are looking for the mink far away, but deeper, so that it is more subtle to hide, so to get rid of the army.

The cause of the appearance of the last shells is most often not the appearance of new chromosomes. This is the result of training and a combination of circumstances.

Consequence. No matter how many protective shells in a living organism, they all serve only one, the sole purpose: to preserve, deliver nutrients, energy and provide a breeding process for the sperm transported by them or to maintain the high viability of the eggs.

Although in the case of a human, this goal is often very hidden, not obvious, blurred by "sublime matter" and "high goals." Often this goal is even forgotten in the pursuit of profit. It happens that a person is torn to capital or power simply by inertia, causing damage to the population - the people and then the existence of this individual generally loses its biological meaning. Quite elegant about human perfection. Biologically, a person is a long, eight - ten worm, wrapped in coils and staying in comfort, well - being and pleasant digestion of delicious food in a comfortable musculature shell provided with lower limbs for movement and upper to guide this food into the mouth - mouth. The inlet is provided with teeth for grinding. Nearby, on the protective shell, there are controlling organs-sight, hearing, etc., and also the processing information center-the brain. From birth to death, the human worm is chained to the kitchen table and refrigerator, and the other to the toilet, despite the wide range of its movement between these instances. Only for an hour - another per day a person is able to "forget" about his bodily and sexual function and indulge in some socially useful activity. All the rest of the time, the physiological needs are sent to the benefit of the internal worm, and through it to the seed bag. This is easily confirmed by watching men accidentally deprived of "the most expensive." They lose 99% of the meaning of life and existence.

In addition, people are often concerned about the war between different clans of the same person and sometimes sacrifices their lives, and more often - the lives of people subordinate to him to save lives for their fellow humans (and their spermatozoa). In this there is an evolutionary sense, but the discussion of this question is carried over to the subsequent chapters of our cycle.

Finally, the last. Is it possible, on the basis of all that has been said, more or less accurately defined at the level of higher animals and man, what is life?

DEFINITION. The body is considered alive if it contains at least a few cells carrying and supporting a chromosomal life. At least a few quanta per second converted into heat.

An illustration can serve, for example, in principle a deceased person (even without a head), in which life is maintained with the help of artificial circulation and artificial respiration. Chromosomes in his cells normally live. And such a person is capable of reproduction, whether he is a man or even a woman. The latter is described in the literature.

Paradox. The ideal of beauty is a slender, thin man. But just in such a person lives a weak internal worm. But in ugly, pot-bellied people live powerful worms. Because these people are pot-bellied. That is why most of the outstanding businessmen, patrons, many scientists and intellectual figures are pot-bellied. Because a healthy and powerful worm creates a strong energy pressure on the body, including the brain, causing it to work productively. But people are leaner, they all depend solely on the brain.

All of us, humans and animals, are essentially worms. And our interior - the womb!

WHEN EVOLUTION FINDS A NEW BRANCH.

The evolution of all life on Earth is unpredictable. Nobody knows what new species of animals will appear tomorrow, what a new virus and with what new dangerous property. Annually there are reports that about the pig, then about the bird flu. They warn about the possibility of influenza transmitted through money. Perhaps a virus that suddenly destroys most of all living things, and maybe all life, may suddenly appear, after which it will die. Theoretically, this is not excluded.

How unexpected such evolutionary "breakthroughs" can be traced on several examples.



Photos from the Internet.

Poisonous snakes.

When already reptiles with might and main "plowed" the land, one of the reptile species received a mutation, presumably, in the saliva. Their saliva was slightly poisonous to other animals, but not poisonous to themselves. And after mutual bites, during fights for survival, other animals weakened from their bites, and the ancestors of snakes (proto-snakes) remained in force. Having appeared once, such a mutation quickly established itself. In some teeth appeared (initially from the outside of the tooth) small hollows, in which toxic saliva accumulated. The number of protozomes quickly grew, there were millions, and maybe billions. Where there is a quantity, mutations grow there. All this oral toxic system quickly evolved, improved. And gradually the serpents had teeth that were close to modern, with a strong poison and poisonous ducts. The

jaws were also improved, they were able to spread and swallow animals, exceeding in size the proto-serpents themselves.

But ... Nobody canceled the law of Lomonosov. Wherever it is taken, the same and the same in another place will be added. Since the evolutionary advantage of proto-serpents began to increase, the symptoms of degradation of their bodies began to grow. Namely, the limbs began to degrade because of uselessness. Why run fast, if you can just lie hiding, then poison venomously, then swallow a paralyzed victim?

So, having one advantage, the snakes lost literally the whole animal. They have become ugly, terrible and disgusting. They occupied that niche which is reserved for poisonous reptiles.

However, nature is cunning and diverse. One of the snake's branches acquired a coloration mutation. The coloring masked them so well that the poison gradually became unnecessary and evolutionarily atrophied. So there was a new branch of the serpent genus: snakes and other non-venomous snakes. Other species of animals have gone along the path of color evolution. So there were chameleons and numerous small toads, masquerading as green leaves or dark twigs.

Another branch of the serpent family took the path of building up strength. These snakes first bitten the victim, and then wrapped around the weakened victim and strangled her. And this branch became huge and strong, but also lost its poisonousness. So there were boas. What has happened is what philosophers call "spiral development." This spiral movement of evolution occurs quite often. It will also meet a person, as will be discussed below.



Photos from the Internet.

Spiders.

It's possible that it all started with some small ancestor of a spider whose legs were sticky. Why, why - this is a separate issue. Something sticky stood out either in the joints or in the body. This sticky was not intended for hunting, but rather simply removed from the body is something superfluous and unnecessary. Like all animals with sweat. And about this sticky dirty paws. And suddenly it turned out that small victims effectively attached to these sticky paws, which then were sent to the mouth (or to the injection of a portion of gastric juice as a sacrifice) of the ancestors of a spider. Further, when the evolutionary advantage was identified, the number of ancestor of the spider increased and the new ability was improved. Then it was possible that this outstanding sticky mass was smeared from the body to the surrounding objects, to which the future victims also adhered. Then it turned out that from the glutinous mass were obtained strings that stretched from the object to the object. Well, further formed a real spider, weaving beautiful and diverse networks.

By the way, scientists have established that when receiving various substances in food, the spider changes the pattern of its web. This is especially noticeable when

taking drugs with a spider. What even found application in the methodology for determining the chemical composition of narcotic substances. Marijuana corresponds to one pattern of cobwebs, and heroin to another.

By the way, the influence of drugs on the spider's pattern has an analogy also with people, composers, poets and writers. The reception of drugs gives birth to unique and original melodies and works by composers, to which millions of people sit down. In fact, such narcotic melodies transmit to the listeners a particle of that narcotic buzz. Drugs also indulged in Beatles, and many - many other stars of both foreign and Soviet variety. And writers who write erotic novels preliminarily take some exciting means, such as even the simplest "undevita", after which the novels turn out to be exciting, exciting readers and well-sold.



Photos from the Internet.

Elephants.

Another advantage was once the ancestors of elephants. These were the usual four-legged, without horns, such as small horses or saigas (by the similarity of the structure of the upper lip). Their upper lip, in principle, quite mobile in all herbivores, once received an additional positive mutation, became longer than usual and received a more developed muscular component. This lip made it easier to get high hanging leaves and fruits. It became easier to manipulate leaves and twigs. The lip began to evolve, parts of the nose became involved, and the trunk gradually formed. The trunk is a solid advantage in terms of nutrition. However, the trunk is extra weight, cumbersome body, problems in fleeing and rescuing from predators. Therefore, evolution pushed elephants into the niche of animals with a large body. There was simply no other way out. And with a large body and trunk - you can live well. You do not need to escape, twist the trunk and throw it to the ground. That's the whole conversation with predators. And a predator will jump on its back - it will not be difficult to sneak it off. Around and banged the lioness on the ground. Then out of her and the spirit out.

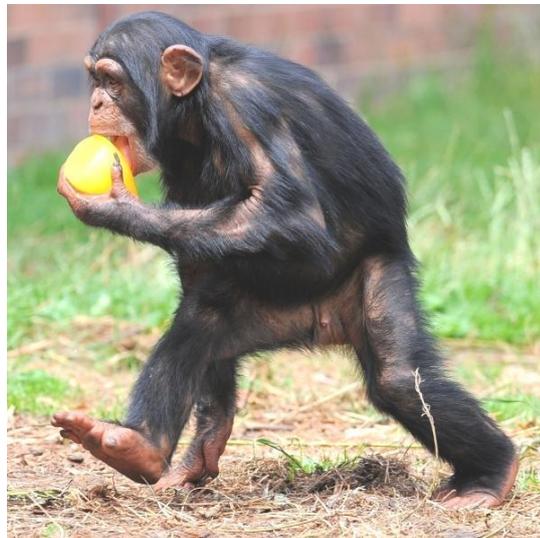


Photos from the Internet.

Horned.

A similar problem has appeared in animals with horns. Large powerful horns create problems in fleeing from predators. And when defense is not easy to harness a horned head, because the eyes are located on the head itself and the orientation in space is lost. Try to shake your head, and then immediately navigate and read the book. Do not immediately realize where you are. Therefore, with all the variations in evolution, the horned ones did not receive any special advantages. Zebra and wild mustang safely survive without horns. Their main task: to drape from a predator at their first appearance and not to engage predators in any relationship. What they do successfully. Apparently, the trunk is the best adaptation for herbivores than horns. And beautiful, and more solid and effective. And what can a horned goat do against a wolf? - Nothing. Even a huge horned cow can not do anything against a small wolf. Unless the wolf turns out to be cowardly. Even a huge horned moose can not always resist the wolf.

True, horned sometimes saves their collectivism. When the whole herd turns its horns against the predator. And the lionesses are retreating.

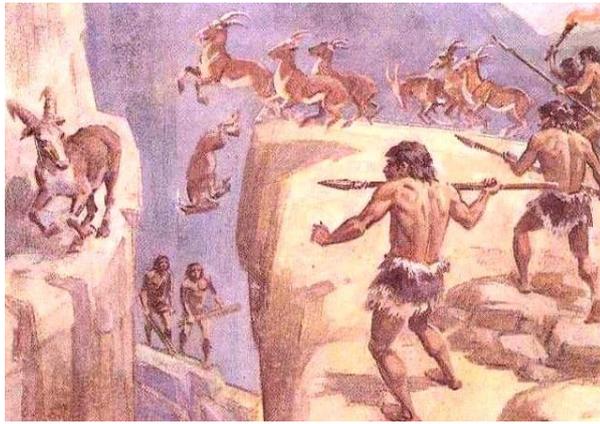


Photos from the Internet.

Monkey.

Monkey's ancestors were both cold-blooded and warm-blooded. All four-footed tried to learn the ecological niche of life in the trees. What is good to live in trees? - So that you are protected from terrestrial predators. Plus a rich diet of fruits, nuts, leaves, young shoots. And what in return? - And in return you gradually lose the opportunity to run on the ground. Your limbs of the four legs gradually turn into four hands. And the tail develops almost in the fifth limb. Just on the tail has not yet appeared fingers. But in ten million years they can appear. was a suitable mutation. So, having met the free ecological niche, all living things begin to struggle to learn this niche. And how anyone will succeed is at the will of the lot, the probability of one or another determining mutation.

Having mastered living on trees, the monkeys were later squeezed out in the direction of increasing the size of the brain. A large brain and stereoscopic vision (and hearing) are needed for monkeys for spatial coordination when moving along branches and jumping from tree to tree. The big brain was useful to monkeys, but it turned out to be a prerequisite for ... reverse descent of monkeys to the ground. But already in a new capacity. Again, "development in a spiral."



Photos from the Internet.

Human.

It is difficult to say which moment was decisive in the descent of some of the monkeys to the ground. There are several options. Perhaps overlapping each other. A defective monkey may have been born, with lower limbs poorly developed to run along the branches. Maybe a herd of monkeys fell into the conditions of forced living on the ground. Perhaps the absence of predators at this time allowed the monkeys not to wander around the trees and collect everything that can be eaten. Maybe the brain has grown so much that it allowed monkeys to control the situation when descending to the ground. Perhaps inside the monkey kingdom increased internal contradictions, internal pressure, which pushed part of the monkeys out. But one way or another, the monkeys began to slowly descend from the trees. Anyway, but for the descended monkeys the land became an absolutely new ecological niche, and they began to absorb this niche and populate it. And it would not have been an evolutionary leap if ... their liberated hands did not take a stick. Ground animals can not pick up a stick! No wolves, no tigers, no hoofed animals. Because they have no hands, all their limbs, all four are legs. With claws or hooves, they can not take a stick. And if the big monkey brain could not control this stick and control it, then evolution would not have occurred to man either. A stick in hand is a giant, absolutely new and unpredictable step in evolution. Yes, in parallel took in hand and a stone, and all that can be thrown. And birds sometimes throw stones or turtles on stones. But the stick became a favorite and compulsory subject of man's ancestors. A stick can be defended from fellow tribesmen, a stick can attack prey, a stick can drive away a wolf and a tiger. You can beat with a stick, or you can stab. The art of stick possession is preserved in the instincts of man and is used in sports such as fencing or Asian martial arts with sticks and nunchakas.

Well, then the unpredictable phenomena that he mastered one by one (thanks to the big monkey brain), which unpredictably guided his evolution, and which brought him to the modern level, went on in the ancestors' way.

- bent stick - a bow, a pointed stick - a spear
- mastering fire and boiled food
- mastering tools, making clothes
- Drawing, accumulation of social experience
- development of metals
- invention of gunpowder, weapons, explosives
- writing, printing, books
- the invention of the school, education from childhood, universities
- modern inventions and discoveries

But what happens in parallel? Lomonosov's law is unshakable. In parallel, there is a steady, uncontrollable degradation of a person both physically and flexibly. And this is

despite the fact that the volume of the brain does not decrease. The digestive system has long been unable to digest untreated animal food and in most cases is unable to assimilate unprocessed plant foods. A man can not drink from a puddle, as dogs and birds calmly do. A person sees worse, hears worse, worse smells than his ancestors - monkeys. A person already can not do much, from the fact that his ancestor knew how, and is not able to survive in the wild. Mowgli exists only in a fairy tale.

And what kind of person will take, for example, in 50,000 years? Well, if he survives at all, there are doubts. If a person survives, then:

- he will learn to use renewable energy sources
- he will learn to use renewable sources of metals, plastics and chemical elements
- he will learn to regulate his fertility
- he will master the treatment of all defects at the gene level
- it will become less aggressive towards each other
- it will become not demanding, not greedy, not selfish like the current rich people
- he will develop all the technologies to a high level of automation and robotics
- The working day and work week will be reduced, free time will be more
- a person will (like dolphins) have more time to have sex. And sports. And where to put energy?
- people will become more engaged in science, creativity

But all this is only an extrapolation to the future of known concepts and phenomena. It is possible that there will be some new human properties, new mutations of brain genes that will create such differences that will allow these mutants to surpass all others and break into even more incomprehensible spheres of thinking, creation, invention ... Maybe these mutants have been achieved and immortality. But this is beyond the current understanding. How is everything going to work out there, who will stay there?...